A CRITICAL ANALYSIS

OF

CATTELL'S MODEL OF PERSONALITY

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ABSTRACT

The personality theory expounded by R.B. Cattell and his collaborators is one of the most influential models of personality in modern-day psychology. The central and most controversial elements of this theory are the sixteen primary source traits, which make up the model.

This thesis describes research into the primary source traits as represented by Cattell's Sixteen Personality Factor Questionaire (16PF). From the responses of a large sample of general population British adults ($N \simeq 2,000$) evidence is presented to suggest that:-

1. inconsistencies exist between the relationships of Cattell's personality scales with variables such as age and social class and the relationships postulated from his model.
2. the precision of measurement afforded by certain scales is extremely low, especially in lower social class subjects.
3. the model as represented in the scales of the 16PF is untenable in terms of its internal consistency.
4. Cattell's personality scales are not in fact the most parsimonious description of the personailty domain.

SECTION 1:

GENERAL INTRODUCTION

1. INTRODUCTION

THE PERSONALITY QUESTIONNAIRE

It is generally believed that Francis Galton devised the first questionnaires in the 1880s for his studies of mental imagery at his Kensington laboratory. His statement in the 'Fortnightly Review' of 1884 that 'the character which shapes our conduct is a definite and durable "something" and therefore .... it is reasonable to attempt to measure it' is not unlike many contemporary views of personality.

Despite the problems associated with the questionnaire approach to personality measurement - one is reminded of the comment of Sir Frederick Bartlett reported by Buzzard (1971), 'I don't know ... they may be all right ... they always seem to me to overestimate the self-knowledge of the subject and to underestimate his sense of humour' - the technique flourished after World War I, until, in the 1970s there are literally hundreds of published instruments.

Most self-report personality questionnaires consist of a series of statements or questions about the individual, his interests and attitudes. These the subject endorses according to his strength of agreement. To make scoring easier and more dependable, the subject is usually required to select the most appropriate answer from choices provided in the questionnaire form. Because item formats will concern us at a later stage we shall briefly consider how items are typically presented.

First, there is the true/false technique of, for example, the Eysenck Personality Inventory, where the subject has to choose between two clear-cut alternatives.

I enjoy going to parties.

a. Yes   b. No

This approach has the advantage of being statistically manageable (cf the pass/fail dichotomy on an ability test item) and helps to overcome certain types of bias. However, it can become frustrating to the respondent who may find it both difficult and unnatural to answer every item on a yes/no basis. There is the danger that the item format will cause the subject to challenge the sense of questions being asked him, and so become inconsistent in his answers. Indeed, it is not unknown for respondents to invent a middle response category.

A second approach is the use of the forced choice technique, where one or more of a number of alternatives are chosen by the subject as most or least characteristic of himself. For example:

Mark the statement which shows which you prefer doing:

a. Going to parties.

b. Reading a serious book.

Inventories based on this system are the Gordon Personal Profile, the Gordon Personal Inventory and the Edwards Personal Preference Schedule (EPPS). One attraction of this approach is that by matching the items, social desirability response sets (the tendency for subjects to put up a good front and show socially acceptable characteristics) can to some extent be controlled. In practice it has proved difficult to match items exactly in terms of social desirability and it appears that instruments like the EPPS can in fact be deliberately faked to create more favourable impressions (Dickens, 1959). It is probable also that items matched in social desirability for one occupation or set of circumstances will not be matched for other occupations or other sets of circumstances. In addition, because certain personality types are more prone to presenting answers in a favourable light, it has been argued that attempting to eradicate the effects of social desirability is like throwing the baby out with the bath water.

Another problem concerns scaling properties. The strength of each variable is gauged relative to the strengths of all other variables and as a result,it is impossible to gain high or low scores across all scales. Cattell (1944) has termed this 'ipsative' measurement and strictly we should not compare scores of different individuals, although this is often done and extensive norm tables produced.

The third type of item format is an extension from the true/false item to three or more possible choices. For example:

I like going to parties.

a.	b.	c.
True	False	?

<u>or</u> I like going to parties

a.	b.	c.
Frequently	Occasionally	Never

or I like going to parties.

a.	b.	c.	d.	e.
Always	Frequently	Occasionally	Rarely	Never

The first example is similar to the method of item presentation in the Minnesota Multiphasic Personality Inventory (MMPI) and the second to the personality questionnaires developed by R B Cattell. This approach is more acceptable to the subject, although the dimensionality of the middle response is often a problem, especially if it becomes a waste-bin category of 'don't knows', 'in betweens', 'occasionally' and 'I don't understand the question'. In these multiple choice formats the effects of faking and social desirability are not so much controlled but detected by lie, motivational distortion and other such keys. In the case where there are three choices the responses become statistically less manageable, whilst five or more may cause a practical problem in the hand marking of the questionnaires.

Obviously with most questionnaire items the prior assumption has already been made that the underlying trait represents a continuum. It is not usually acceptable for a subject to endorse two answers even though he may feel that both are equally appropriate and it is this lack of flexibility which many criticise in the questionnaire approach.

Goldberg (1970), commenting upon the current proliferation of personality inventories ('inventory' and 'questionnaire' will be used interchangeably throughout this thesis), distinguished between those inventories developed in response to pressures from society to deal with specific problems and those stemming from theoretical concepts about the nature of personality. In the first group are questionnaires like the California Psychological Inventory (CPI), designed to measure practical outcomes of social behaviour, and the Minnesota Multiphasic Personality Inventory (MMPI), which measures aspects of personal adjustment, and those which are concerned with vocational choice, such as the Strong Vocational Interest Blank. Instruments of this kind tend to be constructed on an empirical basis where items are selected which discriminate between different groups of people.

The second category of questionnaire includes the inventory measures of introversion-extraversion, those based on Murray's (1938) system of needs like the Edwards Personal Preference Schedule, those which are psychoanalytic in conception like the Dynamic Personality Inventory and the various questionaires which have been based on factor analytic methods of construction.

THE FACTOR ANALYTIC APPROACH TO PERSONALITY MEASUREMENT

Many questionnaires have been produced, each, as Cronbach (1970) has pointed out, using items from its predecessors, adding new ones and scoring them in new combinations of traits and scales. Cattell (1973) has written "... let us be clear that nothing stops anyone from making up questionnaires for any trait he cares to imagine and since there are an indefinitely large number of conceivable traits and roughly 50,000 psychologists, questionnaires have in fact been the prolific rabbits of the psychomobic world!".

Trait names become a source of much confusion. What was 'Introversion' to one author was not introversion to another; 'Dominance' in system X bore a striking resemblance to the trait of aggression in system Y. It was the construction of what appeared to be arbitrary personality scales that the factor analysts attacked. The only way to resolve this Tower of Babel, the factor analytic school argued, was to 'discover' clearly defined personality variables, building blocks, which would serve the psychologist as the table of elements serves the chemist. Rather than have a multitude of scales to predict all sorts of social, educational and clinical outcomes (the criterion - related or empirical approach), is it not possible to find a basic set of constructs by which we can understand human personality? The factor analysts believe it is.

Although there is considerable variation within the school, the basic principles are simple. Working with a set of questionnaire scales which has been administered to a large group of subjects, it is possible to measure the degree of association between the variables by correlating every scale with every other scale. The correlations between each pair of variables are represented in a correlation matrix as in the example, Table 1.1.

Looking closely at Table 1.1, we can ask whether any of these hypothetical variables are related to any degree with one another. For example, do subjects consistently gain a high score on one scale and not on another? The latter is clearly the case with scales R and S;

TABLE: 1.1. Example of a hypothetical 5x5 correlation matrix

VARIABLE		VARIABLE R	S	T	X	Y
	R		-.92	.13	-.11	.82
	S	-.92		.01	.27	-.86
	T	.13	.01		.89	.08
	X	-.11	.27	.89		.21
	Y	.82	-.86	.08	.21	

the negative correlation of -0.92 means that there is a strong tendency for those getting high scores on Scale R to get low scores on Scale S and vice versa. The direction of the relationship is of no major importance because it merely reflects the scoring conventions of the scales, but what is important is the presence of a strong association between the two variables. Indeed, the relationship is so high that we might wonder whether these scales were in any way distinct and whether R and S are simply different names for the same underlying variable.

Visual inspection of this correlation matrix suggests the presence of two underlying dimensions or 'factors' - the first common to variables R,S and Y and the second to T and X. This kind of visual examination of correlation matrices of course illustrates only the logic of factor analysis, However it is in fact true to say that one of the most sophisticated factor theories of personality, that developed by R.B. Cattell, was to some extent formulated by such methods (Cattell 1943).

CATTELL'S MODEL OF PERSONALITY

There can be little doubt of the importance of R B Cattell and his collaborators to current personality theory. Cattell's research into personality has spanned more than thirty years of large scale study and experiment and his writings have introduced not only new ways of investigating the domain but also new ideas on the very structure and functioning of personality. Howarth (1976) writes 'Cattell's long continued and widely documented research into personality factors represents the single most monumental effort to operationalize those sources of individual differences often referred to as 'temperament' or 'personality' (and is comparable to that of Guilford on cognitive factors)". According to Berg (1972), "Cattell's major contribution will undoubtedly be seen as the discovery of the major factorial dimensions in rating, questionnaire and objective tests".

Cattell (1950) has provided us with a deliberately general definition of personality as "that which permits a prediction of what a person will do in a given situation. The goal of psychological research in personality is thus to establish laws about what different people will do in all kinds of social and general environmental situations ... personality is ... concerned with <u>all</u> the behaviour of the individual, both overt and under the skin".

Thus, Cattell's theory of personality stresses both the empirical and descriptive and is concerned with establishing a set of personality elements shared by all individuals. Rather than have a multitude of scales to predict all sorts of social, educational and clinical outcomes, Cattell set himself the task of discovering a basic set of constructs by which human personality could be fully understood.

It was in fact by way of behaviour ratings of one group of people by another ('L' or 'Life data') that Cattell's major dimensions of personality were derived (Cattell, 1943). Using the adjectives and adverbs descriptive of behaviour listed in the English dictionary, Cattell first defined the clusters upon which his traits were to be used by eliminating synonyms and visually inspecting correlation matrices. Cattell then extended this work to self-ratings (questionnaires or 'Q' data) and to objective tests (laboratory experiment or 'T' data).

At the first level of Cattell's model of personality there are the many surface traits of personality. Surface traits are directly observable aspects of human behaviour, the labels which are frequently used in our everyday experience. At the next level are the first order or primary source traits of personality which are combined to produce the complex and many observable surface traits. It is the primary source traits which are the universal basic variables in the total personality structure. They are defined both by letters of the alphabet, technical names and popularly descriptive labels.

The order of the primaries (which are labelled from A through to Q4) are based on their descending contribution to behavioural variance as estimated from Cattell's studies. Whilst Cattell refers to the first order factors as functionally unitary, they are oblique factors, ie. they show some correlation between themselves.

Because the primary source traits are in fact correlated, Cattell has factor analysed his variables to some eight second order factors. A list of these and the primary source traits is contained in Tables 1.2. and 1.3.. In addition, Figure 1.1. shows the relationship between the primary traits and the major second order factors.

To Cattell the problems of studying personality are extricably wrapped up with the problems of measurement in psychology. In early studies he used correlational techniques on personality ratings ('L' data) but as computer technology became more developed, his ideas and theories rested more and more on the technique of factor analysis (leading at times to bitter argument with other members of the factor analytic school, Cattell, 1972 and Eysenck, 1972). Still later work was with self-ratings into what has become the more heavily researched area of questionnaire measurement and it is the personality questionnaire which has become the most developed vanguard of his model. Certainly, Cattell's personality scales have had very wide applicability in the western world,only rivalled by the MMPI and the measures developed by Eysenck.

TABLE: 1.2.

FIRST ORDER (PRIMARY) FACTORS OF THE 16PF

LOW SCORE DESCRIPTION	SOURCE TRAIT	HIGH SCORE DESCRIPTION
RESERVED, DETACHED, CRITICAL, ALOOF (Sizothymia)	A	**OUTGOING,** WARMHEARTED, EASY-GOING, PARTICIPATING (Affectothymia, formerly cyclothymia)
LESS INTELLIGENT, CONCRETE-THINKING (Lower scholastic mental capacity)	B	**MORE INTELLIGENT,** ABSTRACT-THINKING, BRIGHT (Higher scholastic mental capacity)
AFFECTED BY FEELINGS, EMOTIONALLY LESS STABLE, EASILY UPSET (Lower ego strength)	C	**EMOTIONALLY STABLE,** FACES REALITY, CALM, MATURE (Higher ego strength)
HUMBLE, MILD, ACCOMMODATING, CONFORMING (Submissiveness)	E	**ASSERTIVE,** AGGRESSIVE, STUBBORN, COMPETITIVE (Dominance)
SOBER, PRUDENT, SERIOUS, TACITURN (Desurgency)	F	**HAPPY-GO-LUCKY,** IMPULSIVELY LIVELY, GAY, ENTHUSIASTIC (Surgency)
EXPEDIENT, DISREGARDS RULES, FEELS FEW OBLIGATIONS (Weaker superego strength)	G	**CONSCIENTIOUS,** PERSEVERING, STAID, MORALISTIC (Stronger superego strength)
SHY, RESTRAINED, TIMID, THREAT-SENSITIVE (Threctia)	H	**VENTURESOME,** SOCIALLY BOLD, UNINHIBITED, SPONTANEOUS (Parmia)
TOUGH-MINDED, SELF-RELIANT, REALISTIC, NO-NONSENSE (Harria)	I	**TENDER-MINDED,** CLINGING, OVER-PROTECTED, SENSITIVE (Premsia)
TRUSTING, ADAPTABLE, FREE OF JEALOUSY, EASY TO GET ALONG WITH (Alaxia)	L	**SUSPICIOUS,** SELF-OPINIONATED, HARD TO FOOL (Protension)
PRACTICAL, CAREFUL, CONVENTIONAL, REGULATED BY EXTERNAL REALITIES, PROPER (Praxernia)	M	**IMAGINATIVE,** WRAPPED UP IN INNER URGENCIES, CARELESS OF PRACTICAL MATTERS, BOHEMIAN (Autia)
FORTHRIGHT, NATURAL, ARTLESS, UNPRETENTIOUS (Artlessness)	N	**SHREWD,** CALCULATING, WORLDLY, PENETRATING (Shrewdness)
SELF-ASSURED, CONFIDENT, SERENE (Untroubled adequacy)	O	**APPREHENSIVE,** SELF-REPROACHING, WORRYING, TROUBLED (Guilt proneness)
CONSERVATIVE, RESPECTING ESTABLISHED IDEAS, TOLERANT OF TRADITIONAL DIFFICULTIES (Conservatism)	Q1	**EXPERIMENTING,** LIBERAL, ANALYTICAL, FREE-THINKING (Radicalism)
GROUP-DEPENDENT, A "JOINER" AND SOUND FOLLOWER (Group adherence)	Q2	**SELF-SUFFICIENT,** PREFERS OWN DECISIONS, RESOURCEFUL (Self-sufficiency)
UNDISCIPLINED SELF-CONFLICT, FOLLOWS OWN URGES, CARELESS OF PROTOCOL (Low integration)	Q3	**CONTROLLED,** SOCIALLY PRECISE, FOLLOWING SELF-IMAGE (High self-concept control)
RELAXED, TRANQUIL, UNFRUSTRATED (Low ergic tension)	Q4	**TENSE,** FRUSTRATED, DRIVEN, OVERWROUGHT (High ergic tension)

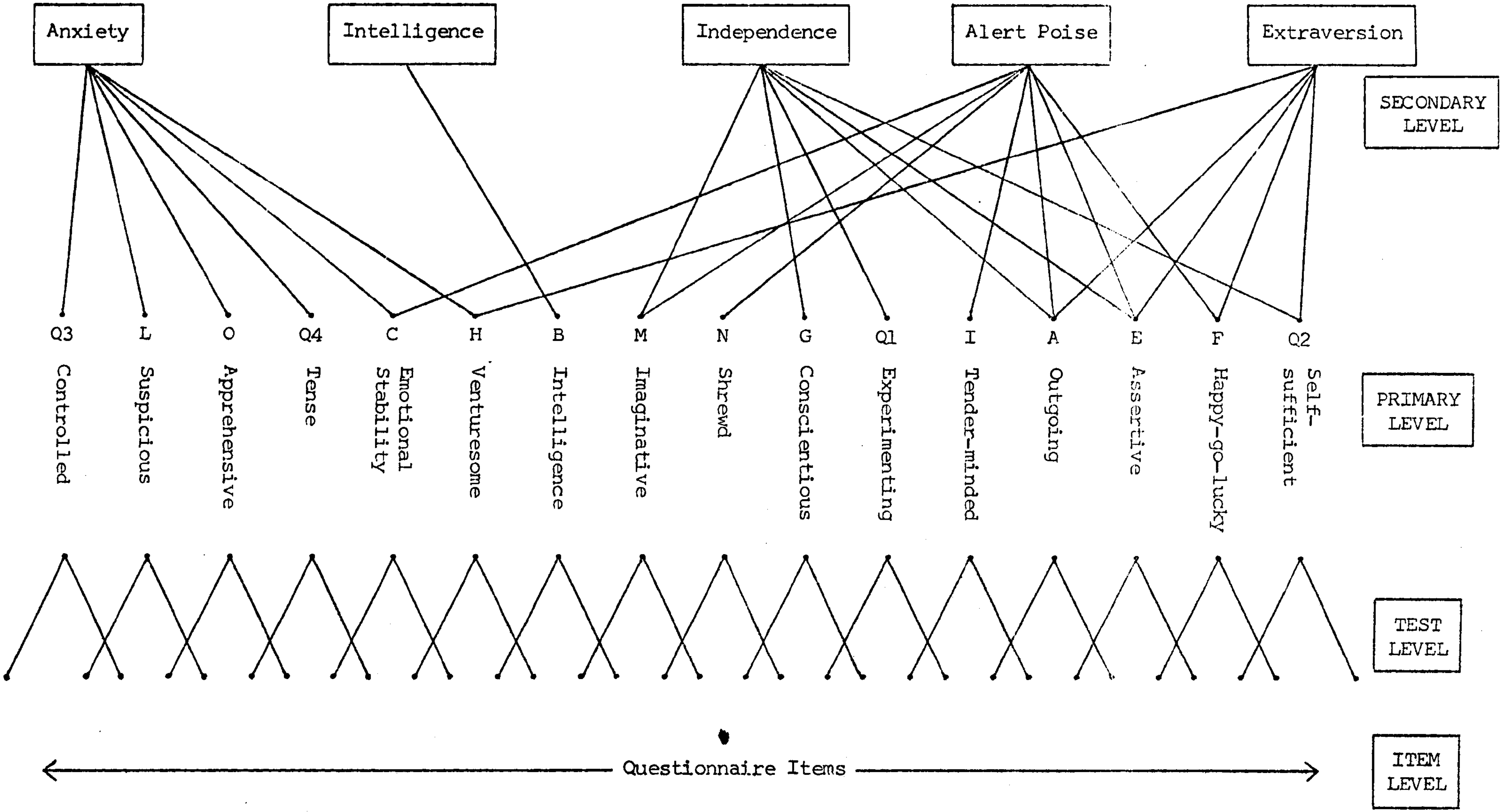
TABLE:1.3.

SECOND ORDER FACTORS OF THE 16PF

LOW SCORE DESCRIPTION	SECOND ORDER FACTORS	HIGH SCORE DESCRIPTION	CHIEF FIRST ORDER FACTORS INVOLVED
INTROVERSION Invia	QI	EXTRAVERSION Exvia	A+, E+, F+, H+, Q2–
LOW ANXIETY Adjustment	QII	HIGH ANXIETY Anxiety	C–, H–, L+, O+, Q3–, Q4+
SENSITIVITY Pathemia	QIII	TOUGH POISE Cortertia	A–, I–, M–, E+, L+.
DEPENDENCE Subduedness	QIV	INDEPENDENCE Independence	E+, L+, M+, Q1+, Q2+
NATURALNESS	QV	DISCREETNESS	N+, A+, M–, O–
COOL REALIST	QVI	PRODIGAL SUBJECTIVITY	I+, M+, L–
LOW INTELLIGENCE	QVII	HIGH INTELLIGENCE	B+
LOW SUPEREGO STRENGTH	QVIII	HIGH SUPEREGO STRENGTH	G+, Q3+, F–

FIGURE 1.1.

CATTELL'S FACTOR THEORY OF PERSONALITY



DESCRIPTION OF CATTELL'S PRIMARY SOURCE TRAITS

As is to be expected with a trait psychologist, Cattell's theory is very much rooted in the constructs he uses in describing individual differences in personality.

We shall see that Cattell borrows heavily from a long list of other psychologists to describe the traits derived from his factor analytic research. He makes reference for example to the work of James, Freud, Jung, McDougall, Thurstone, Maslow, Eysenck and Guilford. Indeed Cattell frequently uses nautical expressions and analogies, seeing himself and his researchers as modern-day explorers discovering and re-discovering concepts and ideas observed by previous less well equipped voyagers. This is not to say that Cattell denies the possibility of traits unique to the individual but he believes that the primary goal of psychology is to discover and measure the core of primary source traits common to all individuals. Once this is achieved, it will then be possible to observe the inter-relationships of such traits which make each individual unique and which will allow actual predictions of their likely behaviour under different environmental conditions.

FACTOR A - RESERVED VS. OUTGOING

(a) Low Score Description

Reserved, Detached, Critical, Cool
(Sizothymia, previously Schizothymia)

The person who scores low (sten of 1 to 3) on Factor A tends to be stiff, cool, skeptical and aloof. He likes things rather than people, to be precise and 'rigid' in his way of doing things and in personal standards, and in many occupations these are desirable traits. He may tend, at times, to be critical, obstructive, or hard.

(b) High Score Description

Outgoing, Warmhearted, Easy-going, Participating
(Affectothymia, previously Cyclothymia)

The person who scores high (sten of 8 to 10) on Factor A tends to be goodnatured, easy-going, emotionally expressive (hence naturally Affectothymia), ready to cooperate, attentive to people, softhearted, kindly, adaptable. He likes occupations dealing with people and socially-impressive situations. He readily forms active groups. He is generous in personal relations, less afraid of criticism, better able to remember names of people.

(c) Origins in Psychological Theory

Cattell traces this concept back to the cyclothymia-versus-schizothymia dichotomy of Kretschmer (1921) which in turn was adapted from Bleuler's (1911) cyclic-versus-schizophrenic label of the functional psychoses. In rating studies and questionnaire studies this is the largest variance factor.

(d) Life Associations

Cattell claims that affection is associated with a warm home background. Higher scorers on affectia get married earlier, usually stay married longer and have an endomorphic bodybuild. Women score significantly higher than men. A fairly substantial genetic component is hypothesised for this trait.

(e) Age Trend

Cattell states that this trait decreases until about 10 years of age; then there is a steady and relatively rapid increase to 30 where it levels off.

FACTOR B - LESS INTELLIGENT VS. MORE INTELLIGENT

(a) Low Score Description

Less Intelligent, Concrete-Thinking
(Lower scholastic mental capacity)

The person scoring low on Factor B tends to be slow to learn and grasp, dull, given to concrete and literal interpretation. His dullness may be simply a reflection of low intelligence, or it may represent poor functioning due to psychopathology.

(b) High Score Description

More Intelligent, Abstract-thinking, Bright
(Higher scholastic mental capacity)

The person who scores high on Factor B tends to be quick to grasp ideas, a fast learner, intelligent. There is some correlation with level of culture, and some with alertness. High scores contraindicate deterioration of mental functions in pathological conditions.

(c) Origins in Psychological Theory

Cattell's view of intelligence remains very similar to the hierarchical theories of British psychologists like those of Spearman and Vernon (Cattell 1965). He has certainly not rejected the meaning of an overall processing factor ("g") although he has spent much time in trying to isolate two main influences within such a construct. These he has named fluid (processing ability unaffected by cultural influences) and crystallized (intelligence gained as a result of learning experiences) general ability.

(d) Life Associations

Cattell (1965) believes that some intelligence is important to predicting behaviour in a great many situations such as future academic and occupational performance.

(e) Age Trend

Following increases up to adolescence, fluid ability then starts to decline whilst crystallized ability can improve until about 40 years of age when it declines.

FACTOR C - AFFECTED BY FEELINGS VS. EMOTIONALLY STABLE

(a) Low Score Description

Affected by Feelings, Emotionally Less Stable, Easily Upset
(Lower ego strength)

The person who scores low on Factor C tends to be low in frustration, tolerance for unsatisfactory conditions, changeable and plastic, evading necessary reality demands, neurotically fatigued, fretful, easily emotional and annoyed, active in dissatisfaction, having neurotic symptoms (phobias, sleep disturbances, psychosomatic complaints, etc.). Low Factor C score is common to almost all forms of neurotic and some psychotic disorders.

(b) High Score Description

Emotionally Stable, Faces Reality, Calm, Mature
(Higher ego strength)

The person who scores high on Factor C tends to be emotionally mature, stable, realistic about life, unruffled, possessing ego strength, better able to maintain solid group morale. Sometimes he may be a person making a resigned adjustment to unsolved emotional problems.

(c) Origins in Psychological Theory

Cattell claims that this pattern in questionnaire items is clearly the reality behind Freud's concept of ego structure strength.

(d) Life Associations

Low ego strength we are informed by Cattell is associated with unemployment, truency and delinquency; high scores go with group participating and skilled occupations. It is low in those from family backgrounds of matriarchal dominance and high among those who are disciplined by reasoning as opposed to punishment by the father. Low ego strength is also shown in some chronic physical disabilities and in marital instability.

(e) Age Trend

Increasing strongly with age and then levels off at about 40 years.

FACTOR E – HUMBLE VS. ASSERTIVE

(a) Low Score Description

Humble, Mild, Accommodating, Conforming
(Submissiveness)

The person who scores low on Factor E tends to give way to others, to be docile, and to conform. He is often dependent, confessing, anxious for obsessional correctness. This passivity is part of many neurotic syndromes.

(b) High Score Description

Assertive, Independent, Aggressive, Stubborn
(Dominance)

The person who scores high on Factor E is assertive, self-assured, and independent-minded. He tends to be austere, a law to himself, hostile or extrapunitive, authoritarian (managing others), and disregards authority.

(c) Origins in Psychological Theory

This trait has a long history (Maslow,1940, 1954). It has a second tributary in animal ethology from McDougall (1932).

(d) Life Associations

Those high on this factor are seen as unconventional and rule breaking in group behaviour. There are significant relations we are told to an early authoritarian family atmosphere and to stricter application of discipline. Among 18-22 year olds there is a tendency to reject sexual restraints (Maslow, 1940), to have a great number of social contacts, to drink immoderately and to have less than average sleep needs. This factor is high in psychopaths and low in neurotics, alcoholics, drug addicts, all psychotics except manics, in stably married wives and unstably married husbands (Cattell and Nesselroade, 1968). Males score significantly higher than females on this factor.

(e) Age Trend

Increasing rapidly in early life, then levels off and declines in the middle years.

FACTOR F - SOBER VS. HAPPY-GO-LUCKY

(a) Low Score Description

Sober, Prudent, Serious, Taciturn
(Desurgency)

The person who scores low on Factor F tends to be restrained, reticent, introspective. He is sometimes dour, pessimistic, unduly deliberate, and considered smug and primly correct by observers. He tends to be a sober, dependable person.

(b) High Score Description

Happy-go-Lucky, Impulsively Lively, Gay, Enthusiastic
(Surgency)

The person who scores high on this trait tends to be cheerful, active, talkative, frank, expressive, effervescent, carefree. He is frequently chosen as an elected leader. He may be impulsive and mercurial.

(c) Origins in Psychological Theory

Cattell points out that in early years this was confused with his second order factor of exvia (extraversion). In Cattell's model, surgency is a distinct component, similar to one of the four components in extraversion conjectured by Jung.

(d) Life Associations

Cattell (1973) hypothesises that this trait is related to high economic status of the family but fewer work responsibilities. There is low restraint in sexual activities, there are many social contacts and in small groups a high scoring person is often voted an effective speaker and leader. There will be appreciable cultural differences on this trait we are informed: for example, it is high in Australians and low in the Chinese and Japanese.

(e) Age Trend

Rising in adolescence but decreasing in adulthood.

FACTOR G - EXPEDIENT VS. CONSCIENTIOUS

(a) Low Score Description

Expedient, Evades Rules, Feels Few Obligations
(Weaker superego strength)

The person who scores low on Factor G tends to be unsteady in purpose. He is often casual and lacking in effort for group undertakings and cultural demands. His freedom from group influence may lead to anti-social acts, but at times makes him more effective, while his refusal to be bound by rules causes him to have less somatic upset from stress.

(b) High Score Description

Conscientious, Persevering, Staid, Rulebound
(Stronger superego strength)

The person who scores high on Factor G tends to be exacting in character, dominated by sense of duty, persevering, responsible, planful, 'fills the unforgiving minute'. He is usually conscientious and moralistic and he prefers hard-working people to witty companions. The inner 'categorical imperative' of this essential superego (in the psychoanalytic sense) should be distinguished from the superficially similar 'social ideal self' of Q_3+.

(c) Origins in Psychological Theory

The concept of conscience, Cattell points out, is dateless; it is discussed by Hebrew prophets and Greek dramatists. Of course this was an important construct in Freud's personality system but Cattell claims that the factor-analytic evidence of a distinct and measurable unitary structure in questionnaire data is only about twenty years old.

(d) Life Associations

Higher superego strength is related to such life associations as: election to leadership in small groups, higher sexual morals, having suffered a bereavement, working long hours and being dedicated to some form of work. In the home background high G is related to more years of education of parents and greater warmth of the parental relationship. Women tend to score significantly higher than men on this factor.

(e) Age Trend

Moderate but decelerating increase with age.

FACTOR H - SHY VS VENTURESOME

(a) Low Score Description

Shy, Restrained, Diffident, Timid
(Threctia)

The person who scores low on this trait tends to be shy, withdrawing, catious, retiring, a 'wallflower'. He usually has inferiority feelings. He tends to be slow and impeded in speech and in expressing himself, dislikes occupations with personal contacts, prefers one or two close friends to large groups, and is not given to keeping in contact with all that is going on around him.

(b) High Score Description

Venturesome, Socially-bold, Uninhibited, Spontaneous
(Parmia)

The person who scores high on Factor H is sociable, bold, ready to try new things, spontaneous, and abundant in emotional response. His 'thick-skinnedness' enables him to face wear and tear in dealing with people and gruelling emotional situations, without fatigue.

However, he can be careless of detail, ignore danger signals, and consume much time talking. He tends to be 'pushy' and actively interested in the opposite sex.

(c) Origins in Psychological Theory

Like surgency this factor has been mistaken for extraversion but Cattell claims that it has been isolated in questionnaire data as a sub-factor of exvia since the late 1940s. Parmia is an acronym to express the theory that it represents parasympathetic predominance at the H+ pole and sympathetic system predominance at the H- pole. The latter amounts to high susceptibility to threat - hence threctia.

(d) Life Associations

This factor is associated positively with the demonstration of affection by parents and negatively with strict discipline (Barton, Cattell, 1972). High H is significantly related to numerous social contacts, a rating as cooperative and friendly as a child but lazy and unorganised, an indication of association with endomorphic or mesomorphic, pyknic build. Parmia tends to be high in psychopaths and moderately young delinquents but it is low in alcoholics, neurotics and attempted suicides. Men on average tend to score higher than women.

(e) Age Trend

The trait increases strongly through middle age for men but only slightly for women.

FACTOR I - TOUGH-MINDED VS. TENDER-MINDED

(a) Low Score Description

Tough-minded, Self-reliant, Realistic, No-nonsense
(Harria)

The person who scores low on Factor I tends to be practical, realistic, masculine, independent, responsible, but skeptical of subjective, cultural elaborations. He is sometimes unmoved, hard, cynical, smug. He tends to keep a group operating on a practical and realistic 'no-nonsense' basis.

(b) High Score Description

Tender-minded, Dependent, Overprotected, Sensitive
(Premsia)

The person who scores high on Factor I tends to be tender-minded, day-dreaming, artistic, fastidious, feminine. He is sometimes demanding of attention and help, impatient, dependent, impractical. He dislikes crude people and rough occupations. He tends to slow up group performance, and to upset group morale by unrealistic fussiness.

(c) Origins in Psychological Theory

Cattell points out that the concept of a dimension of this kind is even older than extraversion and goes back to the tender-versus-tough minded trait of William James and earlier sources traced by Roback (1927). As a demonstrably distinct questionnaire data factor it was replicated in the mid-1940s by Cattell and soon after as a pattern in attitudes by Eysenck (1952). This factor,it is claimed, is particularly important in terms of the behavioural variance it accounts for in children. In some studies the premsia-versus-harria pattern has been called masculinity-versus-femininity but Cattell claims that this is a gross oversimplification in that only a fraction of the male-female difference resides in I.

(d) Life Associations

Premsia has significant positive relations to lax discipline in the home background, warmth in permitting free aggression and more control by reasoning than by punishment. It is also associated with poor health, chronic illness, hypochondria and low athletic interest and performance. This factor also distinguishes those who go to higher education, take up social responsibilities and who enter the professions. Women score higher than men in premsia.

(e) Age Trend

Steep decrease into adolescence followed by slight continuous rise throughout life.

FACTOR L - TRUSTING VS. SUSPICIOUS

(a) Low Score Description

Trusting, Adaptable, Free of Jealousy, Easy to Get on With
(Alaxia)

The person who scores low on Factor L tends to be free of jealous tendencies, adaptable, cheerful, un-competitive, concerned about other people, a good team worker.

(b) High Score Description

Suspicious, Self-opinionated, Hard to Fool
(Protension)

The person who scores high on Factor L tends to be mistrusting and doubtful. He is often involved in his own ego, is self-opinionated and interested in internal, mental life. He is usually deliberate in his actions, unconcerned about other people, a poor team member.

(c) Origins in Psychological Theory

In his survey of questionnaire factors Cattell (1946) found several suggestions of a dimension resembling paranoid introversion. In the questionnaire realm he defines this factor as a general use of projection as a defence mechanism. The low end of the pole, alaxia, implies the quality of resigned relaxation and acceptance of a socially low expression of individuality.

(d) Life Associations

As a child the protensic person had a high confidence in himself, found school unpleasant but felt superior. In adulthood he is often a strong drinker, does not marry early and tends to be socially unpopular. This factor is high in criminals, drug addicts, neurotics and attempted suicides. Males tend to score higher than females.

(e) Age Trend

Declines entering the middle years but increases appreciably after forty.

FACTOR M - PRACTICAL VS. IMAGINATIVE

(a) Low Score Description

Practical, Careful, Conventional, Regulated by External Realities, Proper
(Praxernia)

The person who scores low on Factor M tends to be anxious to do the right things, attentive to practical matters, and subject to the dictation of what is obviously possible. He is concerned over detail, able to keep his head in emergencies, but sometimes unimaginative.

(b) High Score Description

Imaginative, Wrapped up in Inner Urgencies, Careless of Practical Matters, Bohemian
(Autia)

The person who scores high on Factor M tends to be unconventional, unconcerned over everyday matters, Bohemian, self-motivated, imaginatively-creative, concerned with 'essentials', and oblivious of particular people and physical realities. His inner-directed interests sometimes lead to unrealistic situations accompanied by expressive outbursts. His individuality tends to cause him to be rejected in group activities.

(c) Origins in Psychological Theory

Cattell claims that this source trait had no early recognition clinically but only became evident through his factor-analytic work in the 1940s. Those high in autia have been hypothesised to produce a greater intensity of images and ideas relative to sensory stimuli. In essence their behaviour is one of accepting an intense inner subjective life relative to the reality of the outer world and its demands.

(d) Life Associations

Autious people are likely to choose further and higher education rather than a job, take part in social organisations but are dissenters and are rejected by groups although they are called significant members. There is some history of delicate health. Their parents disapproved of their sex life and companions; they lack regard for order and are untidy in dress. This factor appears in scientists and writers. They are accident-prone and often change jobs. Culturally, the latin countries are more autious than, for example, Britain and Australia. In American groups females tend to score higher than males on this factor.

(e) Age Trend

Increases in early life and then declines.

FACTOR N - FORTHRIGHT VS. SHREWD

(a) Low Score Description

Forthright, Natural, Artless, Sentimental
(Artlessness)

The person who scores low on Factor N tends to be unsophisticated, sentimental, and simple. He is sometimes crude and awkward, but easily pleased and content with what comes, and is natural and spontaneous.

(b) High Score Description

Shrewd, Calculating, Worldly, Penetrating
(Shrewdness)

The person who scores high on Factor N tends to be polished, experienced, worldly, shrewd. He is often hardheaded and analytical. He has an intellectual, unsentimental approach to situations, an approach akin to cynicism.

(c) Origins in Psychological Theory

Again, this factor was not recognised in the clinical literature but was identified hesitatingly Cattell informs us in the 1940s and has been confirmed since then: it does not account for a great deal of questionnaire variance but apparently adds to criterion variance predictions.

(d) Life Associations

Positively related to social status and freedom from pathology. In small groups such people are positive influences in problem solving and are rated high in keeping to the point. This trait relates to less social integration in marriage (Barton et al 1972) and, we are informed, manic depressives and schizo-affectives. Males tend to be higher on this factor.

(e) Age Trend

Tends to show a steady slight increase throughout life.

FACTOR O - PLACID VS. APPREHENSIVE

(a) Low Score Description

Placid, Self-assured, Confident, Serene
(Untroubled adequacy)

The person who scores low on Factor O tends to be placid, with unshakable nerve. He has a mature, unanxious confidence in himself and his capacity to deal with things. He is resilient and secure, but to the point of being insensitive of when a group is not going along with him, so that he may evoke antipathies and distrust.

(b) High Score Description

Apprehensive, Worrying, Depressive, Troubled
(Guilt proneness)

The person who scores high on Factor O tends to be depressed, moody, a worrier, full of foreboding, and brooding. He has a childlike tendency to anxiety in difficulties. He does not feel accepted in groups or free to participate. High Factor O score is very common in clinical groups of all types.

(c) Origins in Psychology Theory

This trait has a long history in clinical psychology - under such titles as melancholy agitation, depressive tendency, moodiness and cycloid tendency. It is not a liability to particular pangs of guilt so much as a global sense of inadequacy, loneliness and tears. It might also be considered (Cattell 1973) as a heightened demand of the gregarious erg which leaves an insatiable loneliness when it is not met.

(d) Life Associations

Those of high guilt proneness are loyal in friendship, take social failure badly and more observed to be moody. In home background guilt proneness is associated with discipline by physical punishment and less overall behavioural guidance. Females tend to score significantly higher on this factor. High guilt proneness is associated with less than average school participation and occupationally is high in those of need of rehabilitation. High O is almost universal in clinical cases.

(e) Age Trend

Falls after early adolescence, tending to rise slightly after middle age.

FACTOR Q1 – CONSERVATIVE VS. EXPERIMENTING

(a) Low Score Description

Conservative, Respecting Established Ideas, Tolerant of Traditional Difficulties
(Conservatism)

The person who scores low on Factor Q1is confident in what he has been taught to believe, and accepts the 'tried and true', despite inconsistencies, when something else might be better. He is cautious and compromising in regard to new ideas. Thus, he tends to oppose and postpone change, is inclined to go along with tradition, is more conservative in religion and politics, and tends not to be interested in analytical 'intellectual' thought.

(b) High Score Description

Experimenting, Critical, Liberal, Analytical, Free-Thinking (Radicalism)

The person who scores high on Factor Q1 tends to be interested in intellectual matters and has doubts on fundamental issues. He is skeptical and inquiring regarding ideas, either old or new. He tends to be more well informed, less inclined to moralise, more inclined to experiment in life generally, and more tolerant of inconvenience and change.

(c) Origins in Psychological Theory

This factor was discovered as a unitary trait of large variance by Thurstone and Chave (1929) and by Guilford before Cattell's early factor analytic work. It has consistently appeared in attitude studies conducted by Eysenck (1944) but apparently shows instability of pattern across subcultures such that it is difficult to use the same scale across groups varying in terms of age and sex. Cattell regards this factor not as a narrow trait of political attitude but as a more general predisposition to try the new.

(d) Life Associations

There is a positive relationship with affiliation with progressive political parties and the conservative pole is related to strong family ties and more than average male dominance in the family. The trait is moderately associated with good school achievement and entering higher education. Males tend to score significantly higher than females on this trait.

(e) Age Trend

Cattell claims no clear age trend for this factor.

FACTOR Q2 - GROUP-DEPENDENT VS. SELF-SUFFICIENT

(a) Low Score Description

Group-dependent, A 'Joiner' and Sound Follower
(Group adherence)

The person who scores low on Factor Q2 prefers to work and make decisions with other people, likes and depends on social approval and admiration. He tends to go along with the group and may be lacking in individual resolution. He is not necessarily gregarious by choice; rather he needs group support.

(b) High Score Description

Self-sufficient, Prefers Own Decisions, Resourceful
(Self-sufficiency)

The person who scores high on Factor Q2 is temperamentally independent, accustomed to going his own way, making decisions and taking action on his own. He discounts public opinion, but is not necessarily dominant in his relations with others (See Factor E). He does not dislike people but simply does not need their agreement or support.

(c) Origins in Psychological Theory

This is one of Cattell's major introversion traits which he is claimed to have broken down into sub-factors. It seems that those high on self-sufficiency have a lack of gregariousness and a steadiness of emotion that favours dependence on the self and a lack of rewarding response by others.

(d) Life Associations

Positively related to those whose parents were maritally harmonious; those with this trait were seclusive as children and stubborn in school. They developed early, were considered mature and in general showed good scholastic achievement. No clear pattern of differences between males and females has developed on this primary source trait.

(e) Age Trend

No age change in males; slight increase in females.

FACTOR Q3 - UNDISCIPLINED SELF-CONFLICT VS. CONTROLLED

(a) Low Score Description

Undisciplined Self-conflict, Careless of Protocol,
Follows Own Urges
(Low integration)

The person who scores low on Factor Q3 will not be bothered with will control and regard for social demands. He is not overly considerate, careful, or painstaking. He may feel maladjusted, and many maladjustments (especially the affective, but not the paranoid) show Q3-.

(b) High Score Description

Controlled, Socially-precise, Following Self-image
(High self-concept control)

The person who scores high on Factor Q3 tends to have strong control of his emotions and general behaviour, is inclined to be socially aware and careful, and evidences what is commonly termed 'self-respect' and regard for social reputation. He sometimes tends, however, to be obstinate. Effective leaders, and some paranoids, are high on Q3.

(c) Origins in Psychological Theory

Cattell (1965) follows the notion of a dynamic structure different from either the ego or superego strength from McDougall (1932). Cattell also acknowledges the work of Thurstone who discovered a reflective factor in questionnaire. This factor is supposed to represent the clarity with which the individual has developed a self-concept and the strength with which he adheres to it.

(d) Life Associations

As a child the person of high sentiment was usually healthy and the family harmonious. He controls his temper and especially likes science and mathematics at school. The loading on scholastic success is usually positive and this trait is usually higher in those following professional occupations. Males tend to score higher than females on this factor.

(e) Age Trend

After adolescence it increases positively levelling off in middle adult years.

FACTOR Q4 - RELAXED VS. TENSE

(a) Low Score Description

Relaxed, Tranquil, Torpid, Unfrustrated
(Low ergic tension)

The person who scores low on Factor Q4 tends to be sedate, relaxed, composed, and satisfied (not frustrated). In some situations, his oversatisfaction can lead to laziness and low performance, in the sense that low motivation produces little trial and error. Conversely, high tension level may disrupt school and work performance.

(b) High Score Description

Tense, Frustrated, Driven, Overwrought
(High ergic tension)

The person who scores high on Factor Q4 tends to be tense, excitable, restless, fretful, impatient. He is often fatigued, but unable to remain inactive. In groups he takes a poor view of the degree of unity, orderliness and leadership. His frustration represents an excess of stimulated, but undischarged, drive.

(c) Origins in Psychological Theory

This factor can be initially traced back to Freud's 'id', McDougall's 'total instinctual energy' and even Aristotle's 'conation'.

(d) Life Associations

In home upbringing, ergic tension is associated with use of punishment and lack of demonstration of affection. This trait is associated with high blood pressure and poor ability to perform under stress, loading negatively on school achievement. No clinical groups are low on ergic tension. This factor is high in alcoholics, homosexuals, exhibitionists and all neurotic syndromes. Frustration and depression increase this factor; low rank in school and job, unhappy love affairs, bereavements. Females tend to score higher on this scale.

(e) Age Trend

Increases in early life, then declines throughout adulthood until about 40 years of age.

CATTELL'S MEASUREMENT OF PERSONALITY BY QUESTIONNAIRE

As we have already noted, the Sixteen Personality Factor Questionnaire (16PF), developed by Cattell and his associates in the United States, has found wide acceptance in Britain, Ireland and the rest of the Western World. Buros (1972) shows a yearly average of 80 references between 1965 and 1969 for the 16PF and the trend is upwards.

The instrument has been put to a multitude of uses, impossible to review here but the list includes studies on academic achievement (Warburton et al., 1963; Crotis, 1968), teacher training (Start, 1966, 1968), computer programmers (Morris and Martin, 1972), birth order (Allman and White, 1968), racing drivers (Johnsgard and Ogilvie, 1968), sensory deprivation (Arnhoff and Lean, 1963), angina pectoris (Bakker and Levenson, 1967) and hypnotic susceptibility (Hartman, 1966).

Cattell has never held that the sole or even the best method of investigating human personality is the questionnaire. Whilst it is true, possibly as a result of the practical advantages and economies of the self-report technique, that his work has in recent years centred on the questionnaire, Cattell has strongly emphasised the importance of ratings and laboratory tests in personality measurement.

Cattell regards the life record (L-data), self-rating (Q-data) and objective test (T-data) as different ways of measuring the fundamental traits which are descriptive of human personality. Much time has been spent, not always with complete success (Becker, 1960), in attempting to match the factors across these three approaches to personality measurement.

It is perhaps a little surprising that Cattell should have so early adopted this view. After all it is not unreasonable to suspect that the constructs used by an individual in rating himself may vary from those used to rate others. Such difficulties have been acknowledged in practice by the presence, for example, of four factors in the 16PF which have not been discovered in L or T data.

The first editions of the 16PF appeared in the early 1950s with the issue of revisions over the next 15 years or so. The latest and most refined versions were published in 1968 and 1969 - parallel (alternate) Forms A and B, each of 187 items and the somewhat easier language Forms C and D each of 105 items. Forms A and B take approximately 50 minutes each to complete and C and D approximately 35 minutes. In addition to the main primaries and secondaries, Cattell has provided weights to apply to the first order scales for the calculation of four 'derived criteria'. These are amorphous measures related to external criteria.

We should also mention the questionnaires which Cattell has developed for measuring children's personality (High School Personality Questionnaire, Children's Personality Questionnaire and Early School Personality Questionnaire), motivation - (Motivation Analysis Test and School Motivation Analysis Test) and pathological dimensions (Clinical Analysis Questionnaire).

CRITICISMS OF CATTELL'S MODEL OF PERSONALITY

Despite Cattell's prodigious research output, his theories have not gone without question. It is true to say that most criticism has centred on the primary source traits which make up his model. Here three main areas of debate can be distinguished. First there is the matter of the consistency of group differences postulated by Cattell from his model. Second is the reliability of measurment afforded by Cattell's first order personality scales and third, the internal consistency and very structure of the model itself.

1. Group Differences

In a study of undergraduate personality using the 16PF, Saville and Blinkhorn (1975) reported that the primary source traits showed an inconsistent pattern of differences between arts and science and student and non-student groups depending upon the particular form of the questionnaires in use.

Similarly these authors were able to demonstrate that the relationship between Cattell's source traits and academic attainment as measured by degree class showed considerable variations between questionnaire forms. They conclude:-

"There is very considerable inter-form variation in the direction and size of inter-group differences, such that to specify differences in terms of 'Cattell's Factor N', for instance, rather than '16PF Form A, Factor N', may be to invite immediate contradiction by those using another form of the test."

and they continue:-

"This inter-form variation may be thought to account for the vanishingly small increment in multiple correlations with degree class obtained by summing scale scores on alternate forms. It would seem that at least for the purposes of multiple regression, 16PF 'alternate' forms should be treated as independent."

We have also seen that Cattell places a great deal of emphasis upon the relationship of the primary source with variables such as age, sex and social class. How the source traits change over age for example, is of very great importance to the understanding of his model. Indeed, Cattell is one of the few authors who provides graphical and mathematical expressions of age trends in personality. Despite this fact, there has been no independent research on this aspect of the theory nor for that matter on other important group differences which Cattell has postulated from his model of personality.

2. The Reliability of Measurement Afforded by the Model

One of the principal areas of criticism of Cattell's primary source traits has been the severe lack of reliability which certain scales demonstrate. Saville and Blinkhorn (1975) in their study of approximately 2,500 British university students found that as judged by the alternate form method on Forms A and B of the 16PF, seven factors had reliability coefficients between values of .44 to

.60 (C, E, G, I, Q1, Q2 and Q3) whilst four scales (B, L, M and N) had an estimated reliability as low as .43 or less.

In an interesting paper Eysenck (1972) considered the question of the unreliability of Cattell's source traits and their interrelationship with other scales. Taking the published table of intercorrelations between the 16PF scale scores of 423 male and 535 female American college students (Cattell et al, 1970), Eysenck corrected the coefficients for attenuation (unreliability), paying particular attention to the five 'anxiety' scales (C-, L, O, Q3- and Q4) and five 'exvia' scales (A, E, F, Q2- and H).

On the five scales which contribute to Cattell's anxiety second order factor, twelve of the twenty intercorrelations exceeded unity. On this evidence Eysenck states that "as far as one can see, practically all the information contained unreliably in the primaries is contained reliably in the second order factor; very little information indeed is left over for contribution by the primaries".

In the case of the exvia-invia factors, the position was less clear cut in that whilst eight of the twenty coefficients exceeded .9, twelve correlations were below this level. Eysenck points out this in part is due to certain of Cattell's exvia primaries overlapping with the anxiety and other second orders. He concludes: "The figures given are not incompatible with a general view which would regard the primaries advocated by Cattell as random groupings of items either measuring extraversion or neuroticism or occasionally both. Such a view would also be compatible with the fact that several writers have found it impossible to replicate Cattell's factors in independent analyses, using both his items and his methods of analysis and rotation".

3. <u>The Internal Consistency of the Model</u>

In addition to criticisms of the reliability of Cattell's source traits as scale scores, considerable debate has centred on the internal consistency of the model as represented by the items in Cattell's personality questionnaires.

In an early study Levonian (1961) using Form A of the 16PF on 252 American psychology students, intercorrelated item responses and factor scores and found low internal consistency for many of Cattell's factors. He concluded, "while item homogeneity is not the sine qua non of test construction, the extreme item heterogeneity demonstrated in the study would seem to indicate a critical appraisal of the 16PFQ".

Becker (1961) who had earlier demonstrated low correspondence between Cattell's Questionnaire ('Q' data) and rating ('L' data) studies, showed in relating the 16PF with some of Guilford's scales, that with psychology students, certain of Cattell's factors were of low reliability and that at best only eight factors could be distinguished in the 16PF.

In two well-known papers Howarth and Browne (1971) and Howarth, Browne and Marceau (1972) claim that despite its prominence Cattell's

16PF has been developed along unsatisfactory lines and as a consequence does not measure univocal primary factors as is the "often reiterated claim of its originator and proponent". They point out that Cattell's preferred method of analysing clusters of inter-related items is probably based not upon any technical superiority but rather that total item factoring was not available in terms of computer technology when the scales were originally developed. They point out that Comrey and Duffy (1968) tried to group Cattell's items into 'factored homogeneous item dimensions (FHIDS)' leading them to conclude that Cattell's factors were complex rather than unitary.

Arguing that items chosen to represent or 'mark' a factor would intercorrelate highly among themselves and not outside the given factor, Howarth et al (1972) took the responses of 567 university students and calculated the some 17,000 inter-item correlations on Form A of the 16PF. They, in fact, found that only about 30% of the intra-factor item correlations were significant at the .01 level; the most homogeneous item groupings being found in Factors F (Surgency), H (Social Boldness) and Q4 (High Tension).

In addition to the packaging of items into FHIDS, they criticise Cattell's method of targetting his factor solution to the twelve factors, which he observed in two early rating studies (Cattell, 1945, 1947); for when the item intercorrelation matrix was factor analysed by the method of Householder-Wilkinson only ten factors were extracted.

The latest appraisal of Cattell's system is in a recent paper by

Howarth (1976). Whilst the author remains in sympathy with Cattell's strategy regarding multivariate definition and comprehensive choice of variables, he believes there were questionable aspects to Cattell's tactics. Rather than a system defence, Howarth argues, what is now needed is a movement of investigators towards "a consensus buttressed by co-ordinating studies". As one important factor in such work, he continues, populations should be tested from various social levels.

CATTELL'S METHODS OF SCALE CONSTRUCTION

All the studies summarised above have in some respect or the other revolved around the reliability of Cattell's scales. Indeed, the issue of test reliability and more specifically item homogeneity, is central to the dispute on the validity of Cattell's model of personality. The papers by Howarth et al (1971 and 1972), Eysenck (1972), Levonian (1961) and Becker (1961) have all taken issue with the low homogeneity of item content of Cattell's first order primary personality traits as represented in the 16PF.

Perhaps it is not altogether surprising that the central issue in personality measurement by questionnaire has been reliability theory. Because we can never be absolutely sure of what we are measuring in psychology, because our constructs are always to some extent arbitrary in nature and because they have no real existence in themselves, it is imperative with general purpose instruments that they cover the domain to be measured as completely, succinctly and accurately as possible. What is more the use of factor analysis in terms of identifying or 'discovering' the major dimensions of personality means that any model rests to a great extent on the homogeneity of the items concerned.

It is certainly true that a classical test and factor theory have emphasised the importance of measuring clear cut, non over-lapping variables and this is generally achieved by producing scales made up of items of high intra-factor consistency and low extra-factor correlation. Moreover, it is perhaps significant that the aim of apparently less orthodox approaches to measurement, such as Rasch Item Analysis and Scaling (1960), is to produce scales of high homogeneity.

In answer to the criticisms on his first order factors, Cattell has been clear and prolific in reply. "The primary factors give one most information and we would advocate higher strata contributors only as supplementary concepts ...it is a mistake, generally, to work at the secondary level only, for one certainly loses a lot of valuable information present initially at the primary level" (Cattell 1970, Cattell, 1974).

On the connected and important matter of item structure, Cattell has taken a radical departure from orthodox thinking and argued the case that in many respects the aim of ever increasing homogeneity is unrealistic. In simple terms he reasons that if we accept a definition of homogeneity as the average correlation between all the items in a scale, then perfect homogeneity suggests a scale which provides no more information than a single item. In personality measurement he claims that the desire for scales of high internal consistency has led authors to repeat almost identical items; a practice which may be suitable for measuring narrow, specific factors but not appropriate to the measurement of general influences in behaviour.

Cattell (1972) has argued: "The charge that item intercorrelations are low .... are therefore correct; but one would have thought that well informed psychometrists today would have recognised that .... this might actually be a virtue. Indeed, it is actually a deliberate feature of the design of the 16PF and other tests by the present writer which aimed to measure a broad personality factor over so widely diversified a set of items that no specific variance due to situations will be spuriously included to raise the correlations". Cattell continues ".... the ideal homogeneity <u>is not</u> the greatest attainable but an optimum low value based on various combined psychometric considerations".

Cattell in this paper entitled 'The Importance of Factor Trueness and Validity Versus Homogeneity and Orthogonality in Test Scales' (Cattell 1964) goes on to point out that classical test theory has almost exclusively concerned itself with what he has termed 'item metrics' (Kuder and Richardson 1937, Cronbach 1951). He points out that it is not sufficient to examine the homogeneity of the test as a whole but "good, adapted construction often requires that the test, like a watch, shall have parts with different functions, properly balanced in certain ways". The essence of Cattell's argument is that the best combination of items to measure a factor are those which have high loadings with the pure factor but in fact have low correlation amongst themselves. He develops the concept of <u>factor trueness</u> as the extent to which the scale as a whole measures only the required factor. Contrary to orthodox reliability theory, he makes the case that the addition of suppressor items, that is items which have a zero or negative loading on a factor and which would usually be considered unsatisfactory by conventional reliability methods,can have a definite advantage in purifying the measurement of the underlying trait afforded by a given scale of items.

Thus, his'concept of direct validity' is concerned with the multiple correlation of a set of items with the pure factor. Clearly, as with any multiple regression problem, maximisation of the relationship of the sum of item responses which represents the scale score tend to be higher with low rather than high homogeneity. The primacy of high homoegeity is rejected in that it tends to bring lower <u>total</u> validity for the multiple correlation of items with the pure factor.

1 Cattell (1964) has provided a simple graphical representation which is reproduced in Figure 1.2. Here items j and k are loaded to the extent of .71 on the wanted factor w but in opposite directions on the unwanted factor u. They are said to suppress each other on the unwanted and re-enforce each other on the wanted factor. It is then possible to get full validity in that j + k gives a factor true scale score with complete heterogeneity in that the two items correlate zero.

Thus, it has become clear that the validity of Cattell's theory is very much rooted in the psychometric characteristics of the scales which he has developed to measure the variables in this personality model. More specifically the arguments have centred upon the internal consistency of the 16PF and Cattell's aim to produce 'buffered' scales of low homogeneity. Cattell (1974) also indicates that much criticism has been based upon obsolete editions of his questionnaires collected on university samples.

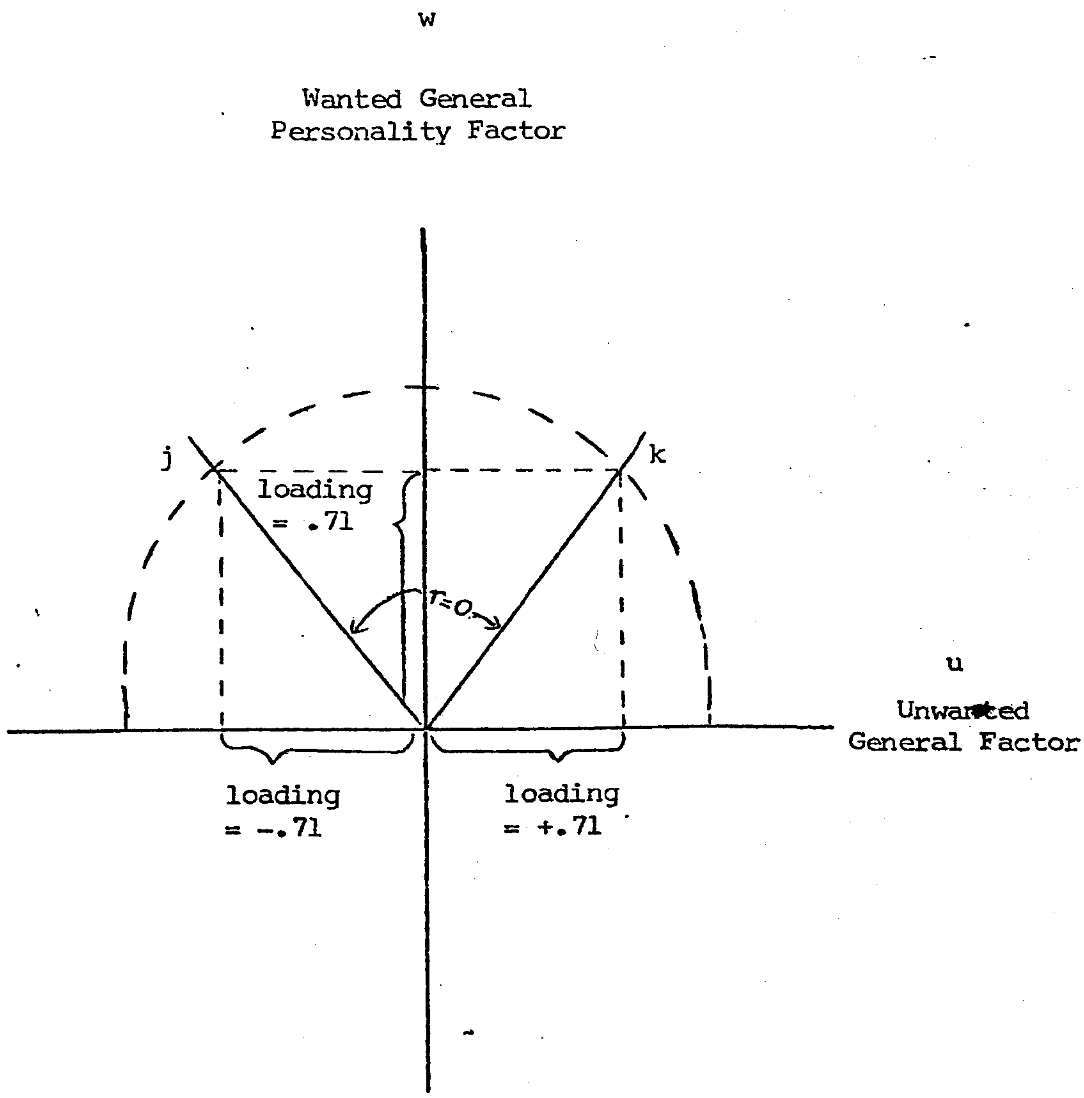
Whilst scale homogeneity has been the central issue in the controversy, there have been other and more general matters related to reliability theory; questions focused on reliability of measurement as a person as much as a test characteristic. First, there is the point mentioned above that very little is known about the reliability of questionnaire measurement, let alone the 16PF, on groups other than university students. This is concerned with the effect of what Ghiselli (1967) has termed 'moderator variables' on reliability. In test theory is is commonly assumed that error variance is uncorrelated with true variance. In moderator theory however, error scores may be related to other variables. Probably the more important moderators (Cattell 1974) are likely to be the sex, social group and age of respondent but whereas it is fair to hypothesise that the accuracy of measurement might vary from one specific subject cluster to another, there have been no reported studies of its effect on personality scale measurement.

In summary then, as have been pointed out by Howarth (1972) a critical evaluation of the item structure of the 16PF, how it is affected by certain moderator variables such as age, social class and score level and an exploration of Cattell's concepts of factor trueness and direct validity as they relate to orthodox reliability theory, are long overdue.

Certainly, if Cattell is correct in his assertion that item homogeneity has become an unnecessary and unrealistic goal in psychometrics, it will have far ranging implications for conventional measurement theory as it is practised today. It is the aim of this research to investigate these areas as well as the topics of suppressor action in scale measurement, and the role of potential moderators in personality measurement in the questionnaire realm.

FIGURE 1.2.

A GRAPHICAL REPRESENTATION OF CATTELL'S CONCEPT OF 'BALANCE SPECIFICS' IN SCALE CONSTRUCTION



SECTION 2:

HYPOTHESES, METHODOLOGY, PROCEDURE, THE SAMPLE

2. AIMS AND HYPOTHESES

INTRODUCTION

In view of the criticisms outlined in the previous chapter, it would seem that Cattell's theory of personality is much in need of independent research. Like most complex theories, there is unlikely to be a definitive once and for all test of Cattell's model. What is required is careful programmatic research conducted on various aspects of the model with the aim of observing how well the theories fit well collected data bases. Accordingly, a general hypothesis has been developed from the literature review and from this three groups of subordinate hypotheses have been distinguished.

GENERAL HYPOTHESES

The general hypothesis has been developed that:-

Cattell's theory of personality rests on a system of primary traits which are untenable in terms of:-

(a) the verifiability of important group differences in personality postulated from Cattell's theory.

(b) the reliability of measurment afforded by the personality scales which represent the model.

(c) the internal consistency and structure of the items defining the primary source traits

and that despite the existence of some independent, reliable and descriptively useful factors, Cattell's model of personality is in part made up of redundant traits. That is, Cattell's primary source traits cannot be described as the simplest, most reliable definition of the personality domain.

The first of the three groups of subordinate hypotheses concerns the strength and direction of differences between certain groups of subjects which have been hypothesised from Cattell's model. Of course, there are an infinitely large number of such groups but the most important would seem to be the effects upon the primary source traits of cross-national variation, sex, social class and age. Second, there is the question of the reliabilities of the primary source traits and their fluctuation as a result of sex, social class and age acting as moderator variables. Finally, there is the related issue of the internal consistency, homogeneity, factor trueness and construct validity of the model.

HYPOTHESES ON GROUP DIFFERENCES IN THE PRIMARY SOURCE TRAITS

We have seen (Chapter 1) that Cattell's theory of personality, at least as regards the primary source traits, is relatively rich in potential hypotheses. It is difficult at times to be absolutely sure which of his statements remain theoretical and which are backed up by scientific evidence. Nevertheless, it is possible to take these factor descriptions and generate meaningful hypotheses on expected cross-national sex and social class differences and age trends in the primaries. These hypotheses are listed in Table 2.1.

The table contains a total of sixty-six hypotheses, twenty of which are the null hypotheses of no difference between means. It is thought unnecessary to review these here, especially as they originate in the descriptions of the primary source traits as postulated by Cattell which were summarised above.

As for the nature of these hypotheses, it is evident that the sex difference cells for each of the primary traits in the table simply contain either the null hypothesis of no difference between the sexes, or the hypothesis that males or females will be found to be the higher scoring sex. The social group variable is hypothesised either to have no relationship with each of the primary source traits or to show a moderate or slight and positive or negative linear association; this gives a total of five types of hypothesised relationships. In addition, we shall also seek to test the hypothesis of the non-linearity of the regression of personality on social class.

The age variable is a little more complicated. Whilst certain personality factors have a hypothesised positive or negative straightline relationship with age, the majority, Cattell claims, depart from the simple linear model. Accordingly, the hypothesised age trends in personality have been abstracted in Figure 2.1., which shows more clearly the six trend lines which Cattell envisages for his source traits.

Cattell (1972) has recently provided age curves for the primary source traits but it is necessary to replicate these on groups of subjects selected by better sampling methods than those originally employed by Cattell. As with social class, it will also be possible to test for the non-linearity of regression of the primary source traits on age.

TABLE: 2.1.

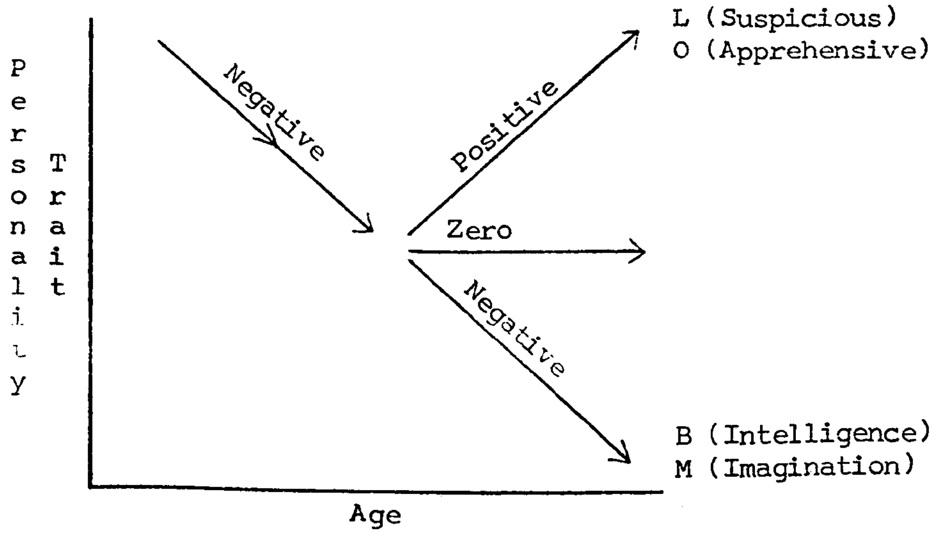
SEX AND SOCIAL GROUP DIFFERENCES AND AGE TRENDS IN THE PRIMARY SOURCE TRAITS HYPOTHESISED FROM CATTELL'S PERSONALITY MODEL

PRIMARY SOURCE TRAIT	SEX DIFFERENCE (ON AVERAGE)	CROSS-NATIONAL DIFFERENCE (ON AVERAGE)	AGE TREND	SOCIAL GROUP DIFFERENCE
A Outgoing	Females higher	American higher	Increases 17-30 yrs, then levels off.	No Differences
B Intelligence	No difference	No difference	Negative relationship	Moderate positive relationship
C Emotional Stability	No difference	No difference	Increases up to 40 years, then levels off.	Slight positive relationship
E Assertive	Males higher	American higher	Level up to 40, then slight decline.	No Differences
F Happy-Go-Lucky	No difference	American higher	Rises in adolescence then decreases	Slight negative relationship
G Conscientiousness	Females higher	No difference	Moderate positive but decelerating increase with age	Moderate positive relationship
H Venturesome	Males higher	American higher	Strong positive males, Weak positive females.	No Differences
I Tender-minded	Females higher	No difference	Slight positive	Slight positive relationship
L Suspicious	Males higher	No difference	Declines up to 40, then increases.	No Differences
M Imagination	Females higher	American higher	Declines after adolescence	Slight positive relationship
N Shrewd	Males higher	No difference	Slight positive increase	Slight positive relationship
O Apprehension	Females higher	No difference	Falls after adolescence, rises slightly after 40.	Slight negative relationship
Q1 Experimenting	Males higher	No difference	No clear trend	Moderate negative relationship
Q2 Self-sufficient	No difference	No difference	No trend in males, slight increase in females.	Slight positive relationship
Q3 Controlled	Males higher	British higher	Strong & positive, levels off at 40 years.	Slight positive relationship
Q4 Tense	Females higher	No difference	Increases until 40, then levels off.	Slight negative relationship

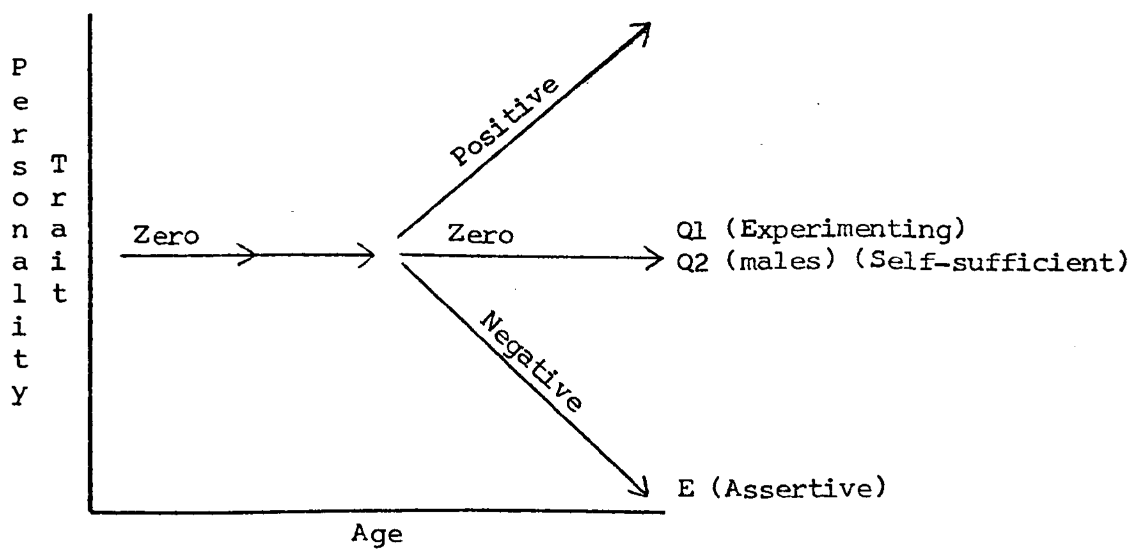
FIGURE: 2.1.

ABSTRACTED PERSONALITY - AGE RELATIONSHIPS FOR EACH OF CATTELL'S PRIMARY SOURCE TRAITS

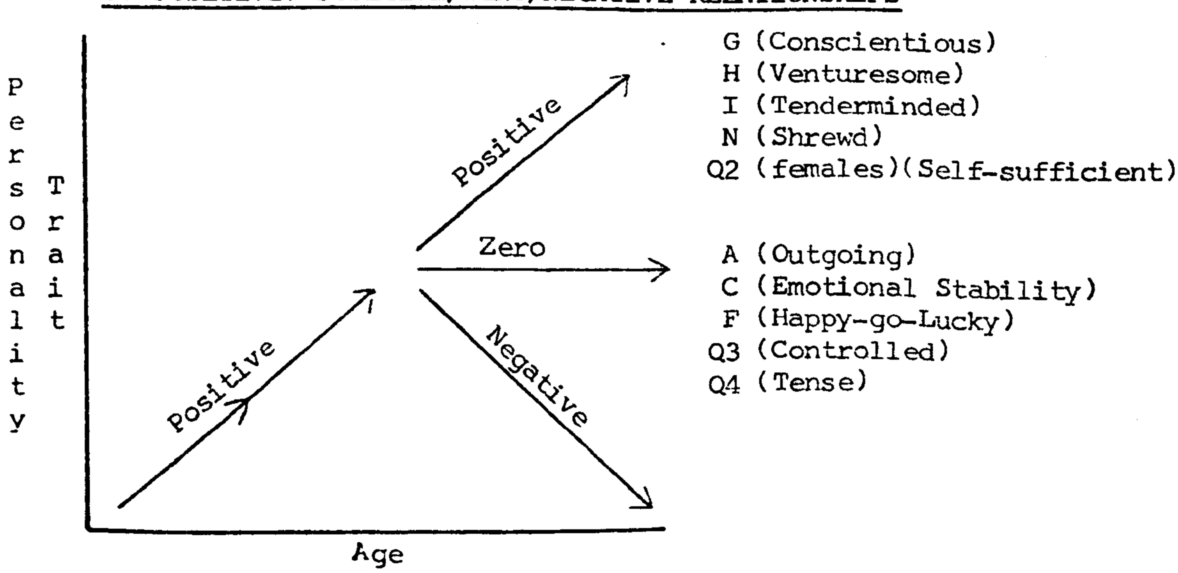
A: NEGATIVE: POSITIVE/ZERO/NEGATIVE RELATIONSHIPS



B: ZERO: POSITIVE/ZERO/NEGATIVE RELATIONSHIPS



C: POSITIVE: POSITIVE/ZERO/NEGATIVE RELATIONSHIPS



HYPOTHESES ON THE RELIABILITY OF THE PRIMARY SOURCE TRAITS

We have seen that a great deal of controversy has revolved around the question of the reliability of Cattell's primary source traits. Eysenck (1972), for example, does not so much deny the existence of lower order factors, but claims that at present they are too fickle and of such low reliability as to be of little practical value within a nomothetic personality system. Moreover, if such scales are of very low measured reliability, the fractionalization of more general order variables like extraversion and neuroticism into sub-factors is at best arbitrary and at worst propagating the existence of traits which have no functional independence or substance.

An associated issue which is likely to extenuate the reliability problem is the fact that estimates have more usually been made for relatively sophisticated student samples, which are closely comparable with groups used in the original model development. This is the question of the transferability of the reliabilities of the primary source traits to other, less sophisticated and older groups of subjects. Should there be a demonstratable loss of reliability across various sub-groups of adults, there are likely to be serious consequences for the generalisability of the factor structure.

Ghiselli (1967) refers to this as the role of moderator effects upon reliability; a test which is reliable or for that matter valid in one group of the population may not be so for another. The number of empirical studies, however, on moderator effects have been remarkably few and the literature appears to contain no large scale research on moderator effects in personality data.

The issue of moderator effects is of course crucial to the general hypothesis stated above that Cattell's model of personality has been derived from inadequate data bases for a generalised theory. Moreover, it is likely that the more divorced the particular sub-group under investigation is from the student population the less transferable the theory becomes. Thus, the hypotheses have been developed that the reliabilities of the primary source traits will be lower in adult than in student groups and in the lower socio-economic and higher age groups of the adult population. It is hypothesised, on the other hand, that the sex of the subject will have no appreciable effect upon the reliabilities of the primary source traits.

HYPOTHESES ON THE INTERNAL CONSISTENCY OF THE PRIMARY SOURCE TRAITS

We have seen that the debate over the item structure of Cattell's primary source traits has been a long and complex one. Cattell (1972) claims that his items are deliberately heterogeneous in order to maximise the multiple correlation of the items with the pure factor which the scale is designed to measure. Whilst many critics (Howarth and Browne,1971, Levonian,1961, Eysenck,1972) have analysed the 16PF by conventional factor and item analysis methods, none has investigated whether Cattell's specific claims hold up under closer empirical scrutiny.

Accordingly, the first hypothesis that we shall test is that the primary source traits will show low intra factor homogeneity of item content. Assuming that Cattell's factor solution can in some way be re-derived, we shall also test the hypothesis that items will show high multiple correlations with their own scale. That is, they will have high factor validity. These investigations and whether estimates of factor purity can be made through conventional reliability theory, will form the third major section of this thesis.

ALTERNATIVE MODELS IN THE PERSONALITY DOMAIN

Should it be necessary to reject the hypotheses on factor validity, the possibility of alternative and perhaps more parsimonious explanations of the personality domain will be investigated. Perhaps the most obvious alternative model to that of Cattell is Eysenck's (1972) three factor description of personality. From the information collected in the various sections of this thesis, it will be possible to test, for example, hypotheses on Cattell's main anxiety primary source traits to see whether they have separate identities demonstratable in terms of group differences, reliabilities and the internal and factor structure.

AIMS

The aims of this research can be summarised as follows:-

1. To administer parallel forms of Cattell's personality inventories to a large sample ($N \simeq 2000$) of general population adults representative in terms of age, region and socio-economic class.

2. To test specific hypothesis on Cattell's model of personality under three main headings:-

   2.1. the verifiability of important group differences in personality hypothesised from Cattell's theory.

2.2. the reliability of Cattell's primary source traits.

2.3. the internal consistency and structure of the model.

3. To investigate alternative theoretical models in the personality domain.

SUMMARY

In summary we are to research in Section 3 of this thesis, the relationship between the parameters of Cattell's model of personality and such external factors as sex, age and social class. In section 4 we shall next investigate the precision of measurement afforded by the model as expressed by Cattell's first order 16PF personality scales. Finally in Section 5 of this thesis we shall undertake a number of researches into the question of the internal consistency of the questionaire items which are defined by and are central to, Cattell's model of personality at the first order level.

FIGURE: 2.2.

A STUDY OF RELIABILITY AND STRUCTURE IN CATTELL'S MODEL OF ADULT PERSONALITY

Cattell's Model of Personality

has been derived from inadequate data sources and rests on a system of primary source traits untenable in terms of:-

I.

Verifiability of Group Differences

Cattell's traits will show relationships with external variables of such strength and prediction as predicted by his theoretical model of personality.

Sex Differences

Social Class Differences

Age Trends

II.

Precision of Measurement

Cattell's traits will show a loss of reliability across certain sub-groups of the population, ie. there are significant moderator effects on reliability.

Social Class

Educational Group

Sex

Age

That the precision of measurement will vary across the factor score range.

III.

Internal Consistency and Scale Structure

That conventional reliability theory and construct validity as propounded by Cattell are closely linked.

That from reliability theory it is possible to make estimates of how well Cattell's scales measure the traits they purport to measure.

That alternative models can provide more parsimonious descriptions of the personality domain.

3. METHODOLOGY

INTRODUCTION

The first methodological problem was that of selecting the sample. An important aim of the research was to investigate Cattell's model on adult rather than student groups. It was also clear that in order to undertake studies on the effect of moderator variables and of social class and age trends in personality, a relatively large sample size would be required.

The problems of gaining large representative samples of adults, however, should not be underestimated. Any sampling procedure of adults contains some bias. If there are dangers in taking results from students as if they represented firm conclusions for the general population, then it is equally problemmatical to infer that military personnel, subjects known to the experimenter, those employed as clerks, apprentices, managers or indeed those employed in any occupational field will represent the archtypical personality type.

It is true that most personality inventories have been developed on little more than ad hoc occupational, clinical, educational and student groups (Eysenck,1964, Cattell,1968). This may be of less importance for standardisation purposes in that an author can go some way to justify his procedures by using the random error philosophy. That is, whilst all of the constituent groups will have their own specific bias, these will in some convenient fashion cancel out when placed in the statistical melting pot.

This is a rather dangerous philosophy if any form of multivariate analysis is to be used however. Child (1966) and Adcock (1973) specifically warn us for example against what they have termed 'oddballs' in the sample if factor analytic techniques are to be employed in data analysis. Should cluster analyses be used, moreover, it is not difficult to see that a certain structure might evolve in one sample which would be difficult to replicate in another.

One possible method was that of requesting the return of completed 16PF answer sheets from British test users. After a predetermined duration, samples could then have been stratified and weighted by current census data. However, although this procedure has proved practicable in the States and was the principal method employed in the American 16PF standardisation, a considerably lower answer sheet usage rendered this approach unsuitable in Britain. Added to this was the unknown nature and degree of bias introduced into questionnaire data by the test-taking attitudinal and motivational state of the subject. One serious source of this distortion is direct sabotage. Another is where the subject assumes, whether consciously or not, a role congruent with the particular testing circumstances, as, for example, where an inventory such as the 16PF is used in the first instance for purposes of vocational guidance and then for industrial job selection on the same person or population.

Clearly the best recourse would be some form of random sampling such as that used by the Scottish Council for Educational Research (1965) when standardising the Wechsler Intelligence Scale for Children. Such a procedure would in fact prove very difficult in practice in that even lists such as the electoral register are inevitably out of date,whilst the costs of tracking down each respondent would be prohibitive.

An alternative strategy would be to draw up some random or stratified sample of names and undertake a postal survey. However, postal surveys have the problem that response rates (that is the number of returns as a percentage of those contacted) for completion of relatively large questionnaires can be as low as 25%. In addition there are the added problems of the quality of the data: how much can the subject be relied upon to complete age and social class data or indeed the questionnaire itself accurately,and can we really be sure that the individual contacted actually was the one completing the questionnaire? Another drawback to the method is that using well known personality inventories in a postal survey might have contravened the professional and ethical controls on test standards of the British Psychological Society.

Alternatively, it may have been practicable to test groups of previously selected individuals in centres (schools, church halls, etc) throughout the British Isles. The major objection to this method is that difficulty is often encountered in gaining a representative sample in that females and the lower socio-economic classes tend to predominate in an obtained response which is frequently below 10%.

The only solution then was to use some form of quota sampling of people in their own homes. Ideally there would be a good representation of regions, age and social class in the sample. Two forms of Cattell's questionnaire 16PF Forms A and B were to be administered under controlled conditions and every effort would have to be made to keep the response rate as high as possible. If any investigation of item structure and of particular sub-groups within the sample was to be carried out (two categories for the sex of the subject and five for social class would give ten possible data cells for example), then it was decided that the sample size would need to be approximately 2000 cases.

Cattell's Sixteen Personality Factor Questionnaire Forms A and B each consist of 187 items which on average take 45 minutes each to complete. Collection of socio-economic demographic and other information would add about 30 minutes to each interview giving approximately two hours on average for each subject. A simple calculation gives an estimate of 4000 interviewing hours for the survey. With the addition of travelling and preparation time, it is evident that it would take one experimenter three years of full-time work to complete the fieldwork.

The alternative was to employ more fieldworkers; hopefully people who had experience in administering questionnaires and interviewing techniques. With training, it was thought that such individuals should be capable of administering the 16PF on an individual basis, recording the background information and completed forms for data processing and analysis.

Suitable bodies which could provide such fieldworkers were considered to be specialist teams of certain research councils, the Office of Population Census and Surveys and certain market research organisations.

Contacts were first made with the Office of Population Statistics and Surveys but it soon became clear that a project of this kind would be outside their remit. Similarly, the SSRC Social Survey Unit was not principally involved in conducting its own research surveys. For these reasons, it was decided to employ the British Market Research Bureau (BMRB) for the fieldwork. This organisation had the advantage of having a large fieldforce which was experienced in social surveys of this kind.

The next problem was one of funding the research. The National Foundation for Educational Research agreed to finance part of the survey, providing materials, card punching and initial computer resources. In addition BMRB itself agreed to fund a portion of the fieldwork costs on the condition that a self-completion questionnaire on consumer habits could be left with the respondents after the main survey. The remaining costs were covered by a number of small donations from commercial organisations which were willing to make a contribution to work of this kind.

SAMPLING

The sampling frame finally adopted was based on a method developed by the British Market Research Bureau over a number of years and known as Random Location Sampling.

This technique involves the drawing up of a representative sample of 200 Parliamentary constituencies in England and Wales and those parts of Scotland south of the Caledonian Canal, selected with probability proportional to their population size. These constituencies were selected at random using the cumulative sum and fixed sampling interval technique, after stratification by the distribution of votes cast at the 1970 General Election (as an indicator of economic status) within conurbation or urban or rural area, within standard region. For each of the 200 constituencies, the polling districts in it were placed in random order within ward, the wards in random order within administrative areas and the administrative areas in random order within constituency. Groups of streets were then selected with probability proportionate to the electorate in a way which was consistent with polling district. Interviews were then spread uniformly over these streets.

In random location sampling one is adopting probability techniques down to and inclusive of the selection of street. This has an important advantage over traditional quota sampling in that the freedom of the interviewer to choose her subject is minimised. In quota sampling, certain controls (sex,age,social class etc) are to be satisfied, allowing the interviewer freedom to select subjects in accordance with these constraints. Clearly this was to be avoided and was one of the principal considerations when adopting the described sampling technique.

In summary, the methodology was to ensure the collection of data on approximately 2000 adults in the general population. Ideally the respondents would be tested in their own homes on the Cattell inventories, Forms A and B, and the sample would be representative in terms of geographic region, marital and educational status, age and socio-economic class.

4. PROCEDURE

THE PILOT STUDIES

Two pilot investigations were undertaken in the lower socio-economic areas of Ealing and Acton in London, for it was from such areas that most difficulties were anticipated. Seven subjects were chosen in each of those districts and the author observed as a female fieldworker went through the interviewing procedure. (It should be pointed out at this stage that female fieldworkers were to be preferred in work of this kind because many housewives are understandably reluctant to admit a lone male into their homes.)

The materials were prepared as follows:-

1. A contact sheet containing the initial introduction to the purpose of the study. (Figure 4.1.)

2. A number of ball point pens.

3. One 16PF Form A and Form B questionnaire printed so that their order was reversed in alternate booklets.

4. A number of 16PF answer sheets.

5. One serial-numbered background questionnaire (Figure 4.2.).

A number of problems came to light as a result of these pilot surveys. The most serious was one of using answer sheets with older subjects or those with poor eyesight. Accordingly, it was decided to employ the

FIGURE: 4.1.
CONTACT SHEET

I am from the British Market Research Bureau and we are carrying out a National Research Study of people's interests and attitudes for a Research Body. We would appreciate it if you would help us in our study.

The research is on people's interests and views and includes a couple of questionnaires. Amongst other things this study will be used to find out the views of various groups of people. Over 2000 men and women all over the country are helping us in this work.

Although research with this questionnaire has been done in other parts of the world - this is the first time it has been carried out in England/Scotland/Wales (use appropriate country). It is hoped amongst other things that the results will be of great value in building up a picture of the attitudes of people in various countries.

CONTACT NO.	ESTIMATED AGE	SEX	SOCIAL GRADE	Result (put down Questionnaire number if contact successful)	Full reasons for any refusal

FIGURE: 4.2.

BACKGROUND QUESTIONNAIRE

Job No. ______________

QUESTIONNAIRE NO. ______
(Cols.2/3/4/5)

BLOCK CAPITALS, PLEASE:-

Name ________________________________ Constituency ______________________
(Please state Mr., Mrs. or Miss and give initials)

Full postal address

____

______________________________________ AREA CODE [ ] (7.) [ ] (8.) TV [ ] (9.)

____

Interviewer ______________ Code no. ______________

Supervisor ______________ Time of interview:

Date of interview ______________ 1970 From ______________ To ______________

HOUSEHOLD COMPOSITION

i FAMILY UNIT (related by blood, marriage or adoption)

Line no.	Relationship to respondent	SEX M	SEX F	Age last birth-day	NORMAL occupational status: Has paid job: Full time 30 +	Part-time 8-29	Part-time Under 8	No paid job: Ret. from F/T job	No paid job: Others	Marital Status: S	M	Wid/ Div/ sep.
1.	RESPONDENT											
2.												
3.												
4.												
5.												
6.												
7.												
8.												

ii OTHER MEMBERS OF HOUSEHOLD (not related to respondent)

9.												
10.												
11.												
12.												
13.												
14.												
15.												
16.												

iii RESPONDENT IS:

Man	11.	12
Housewife		11
Other woman		0
Working 30+ hrs	12.	12
Working 8-29 hrs		11
Not working		0

iv RESPONDENT'S AGE:

15 - 19	(12.)	1
20 - 24		2
25 - 34		3
35 - 44		4
45 - 54		5
55 - 64		6
65 or over		7

v RESPONDENT'S MARITAL STATUS:

Single	13.	12
Married		11
Widowed/divorced/ separated		0

IF 'Single'
Are you engaged or planning to get married?

Yes	1
No	A

IF 'Married'
How long is it since you were first married?

Less than 1 year	(13.)	2
1 - 4 years		3
5 - 9 years		4
10 - 19 years		5
20 years or more		6
Refused		7

(13.)

OFFICE USE

S.G.	A	14.	12
	B		11
	C1		0
	C2		1
	D		2
	E		3
CHILDREN BY AGE	Under 1 year	(14.)	4
	1 - 4 years		5
	5 - 9 years		6
	10 - 15 years		7
	None		8
RESPONDENT HEAD OF HOUSEHOLD	Yes	(14.)	9
	No		A
HOUSEHOLD SIZE	One	15.	12
	Two		11
	Three		0
	Four		1
	Five or more		2
WEEK OF INTERVIEW	One	(15.)	3
	Two		4
	Three		5
	Four		6
	Five		7

vi At what age did you finish your full time education?

14 or under	16.	12
15		11
16		0
17		1
18		2
19		3
20		4
21 - 23		5
24 or more		6
Still studying		7
Refused		9

vii Do you (or some other member of your household whom you have mentioned) own this house/flat, or rent it, or do you live here rent-free?

Owned	17.	12
Rented		11
Rent free		0

IF 'Owned'
Is it owned outright or is it being bought with a mortgage or loan?

Owned outright	1
Mortgage/loan	2
Don't know	A

IF 'Rented'
Is it rented from the council or from someone else?

Council	3
Someone else	4
Don't know	A

viii How long have you (or your family) been living in this house/flat?

Less than 1 year	(17.)	5
1 - 4 years		6
5 - 9 years		7
10 - 19 years		8
20 years or more		9

FIGURE: 4.2. (Cont'd)

ixa Which member of your household living here:

Actually owns it?	☐	STATE LINE NUMBER (FROM HOUSEHOLD COMPOSITION BOXES) OF THE PERSON CONCERNED
Is responsible for the rent? (i.e. has his/her name on the rent book)	☐	
Is responsible for this household having it rent free?	☐	

IF LINE NUMBER ENTERED IN ixa IS ANY NUMBER FROM 9-16 ASK:

ixb Which member of your family (i.e. respondent and relatives) living here is actually responsible for you having this accommodation? ☐ STATE LINE NUMBER FROM i

x

If member of family unit referred to in ixa or ixb is:	and if:-	TICK WHICH APPLIES	get details of:-
Man or single woman	he/she is now occupied (even if temporarily out of work)		his/her present or usual occupation
	he/she is not now occupied but has means other than only state pension, etc.		his/her former occupation
	he/she is not now occupied and has no means other than state pension, etc.		occupation of senior breadwinner*
Married woman	her husband is now occupied (even if temporarily out of work)		his present or usual occupation even if he is not a member of the family unit
	her husband is not now occupied but he has means other than only state pension, etc.		his former occupation
	her husband is not now occupied but he has only state pension, etc.		occupation of senior breadwinner*
Widowed, divorced, separated, etc., woman	she has no means other than state pension, etc.		occupation of senior breadwinner*
	she has means other than (or in addition to) state pension, etc., and part is obtained from her former husband (if he is alive) or as a pension from her former husband's previous employers (if he is dead)		her husband's present occupation if he is alive or his previous occupation if he is dead
	she has means other than (or in addition to) state pension, etc. but no part of this is obtained from former husband		her present or previous occupation

* The "senior breadwinner" is the oldest full-time occupied male member of the family unit or, if there is no such man, the oldest full-time occupied female member of the family unit. If there are no full-time workers, take the oldest part-time occupied male member of the family unit, or if there is no such man, the oldest female part-time worker.

IF "NONE", WRITE "Dependent on state pension" BELOW

xi

OCCUPATIONAL DETAILS REQUIRED:	Enter in this column occupational details of the person indicated above in X
What type of firm or organisation does/did (..........) work for? (STATE TYPE OF FIRM, WHAT FIRM MAKES/DOES, etc.)	
What job does/did (..........) actually do?	
IF IN CIVIL SERVICE, FORCES, POLICE, etc. What is his/her rank or grade? IF "OTHER" Does/did he/she hold any particular position in the organisation? (e.g. foreman, typing supervisor, office manager, company secretary, etc.)	
IF PROPRIETOR OF BUSINESS OR A MANAGER Roughly how many people work at the place where (..........) works? (INCLUDE THIS PERSON)	25 or more _____ 10 - 24 _____ Less than 10 (STATE NUMBER) _____
ASK FOR ALL Has (..........) any qualifications? (Such as apprenticeships, professional qualifications, university degrees, diplomas, etc.) (STATE WHAT QUALIFICATIONS HELD)	

xii NOW ASSESS S.G.:

A B C1 C2 D E

xiii Have you a TV set in your home?

Yes	18.	12
No		A

IF 'Yes'

Can your set (any of your sets) receive:

		Yes	No
(i) BBC 1		A	A
(ii) BBC 2	(18.)	11	A
(iii) ITV		0	A

IF 'ITV'

On average how many hours do you watch independent TV programmes each night? 19.
1 or less
2
3
4
5
6 or more

Does your set (any of your sets) receive colour?

Yes	(19.)	9
No		A

16PF booklets only in the main study, subjects recording their preferred answers by ringing the appropriate choice to each item directly in the booklet. Although this had the disadvantage of increasing the material costs considerably, the important benefits resulted of shortening response time by about thirty minutes and removing one clerical stage from the operation in which transcription errors might occur.

As further outcomes of these preliminary inquiries, it was also established that the following controls would operate in the main standardisation sample: (1) All testees would be in the 16 to 70 year age range. (2) All testees were to be literate and capable of reading the booklet for themselves. If required, help was to be given with occasional words and sentences. In the case of the subject being unable to read either through illiteracy or severe physical or mental infirmity, the interview was to be diplomatically terminated. (3) All testees were to hold a six-month residence qualification in the British Isles prior to November 1971. This was imposed in order to exclude overseas visitors and temporary immigrants.

THE TRAINING OF THE MAIN FIELDFORCE

Armed with the information from the pilot studies, certain questions were made more clear and materials printed and collated for the main fieldwork.

From editors' ratings of the total B.M.R.B. fieldforce, 200 experienced fieldworkers were chosen and briefing sessions set up during October and November 1971 in five main centres:

London:	South East England
Bristol:	South West and Wales
Birmingham:	Midlands and East Anglia
Manchester:	Northern England
Glasgow:	Scotland

The author took the necessary materials which were arranged in packs to each of the interviewer briefing sessions by road. The written instructions prepared for each interviewer are given below. At each centre the interviewers were carefully taken through these instructions step by step.

INTERVIEWERS' INSTRUCTIONS PREPARED FOR THE BRIEFINGS

Written instructions were prepared at the briefing sessions and a copy provided for each of the fieldworkers. These are reproduced on the following pages and can be distinguished by a vertical line drawn down the side of the page.

INTERVIEWERS' INSTRUCTIONS

Together with these instructions you should receive:

Three contact sheets
Ten pens
One red biro
One questionnaire booklet containing Form A and Form B (serial numbered)
Twelve answer sheets Form A and twelve Form B
Twelve questionnaires (serial numbered)

Purpose of the Study

Basically, the aim of this study is to explore the interests and attitudes of various types of people. You will probably find that, unlike most surveys, this study may well arouse people's curiosity so it will be as well if you yourself have as full an understanding as possible into what this is all about. You will find a long Introduction for you to use when speaking to the respondents at the top of your Contact Sheets. This explains that:

1. This is a National Research Study and not a Market Research Survey.

2. The Research Body is interested in people's opinions, attitudes and interests. The questionnaire is a standard inventory used in the social sciences and the main purpose of the project is to get British data on it.

3. Similar studies have already been done in other parts of the world (e.g. America, Europe) but have never been done here before.

4. The results of this Study will help the Research Body amongst other things to build up a picture of what people are like in different countries.

By explaining this to your respondents, you will probably find that they are interested and willing to help. It is important that the response rate is kept as high as possible.

Contacting Respondents

You are to contact ten adults above the age of 15 within the streets with which you have been issued, namely:

5 men

5 women of whom 3 should be housewives, 1 should be a working houswife and 1 an other woman

A six months' residence qualification in the UK is to apply to the sample.

We would like to know about every contact you make who is eligible: so please use your contact sheet every time. For those contacts who refuse to take part put down their estimated age and social class, and their reasons for refusal. For your successful contacts write down their questionnaire number in the space provided.

When introducing and discussing this interview do remember always to use the word study and never survey - this is very important. Each interview will take about an hour and a half, so in order to be able to complete the interview, it is important that you do not mislead respondents as to how long it will take. Remind him/her that all the information collected is strictly confidential.

Before starting the interview, do check that the booklet and the verbal questionnaire have the same serial number on them. If this is not the case then always alter the numbers to the number on the verbal questionnaire.

The Form of the Interview

The interviewing procedure is really quite straightforward:

1. The interview starts with you giving the respondent the booklet, instructing him/her to read the first page, then turn over and start answering the questions using the pen to ring the answers. It may be as well to remind the respondent that all their answers

are kept absolutely confidential.

2. When the respondent reaches the half-way point in the booklet, to give him/her a short break, you will ask him/her the questions in section I (only) on the verbal questionnaire.

3. Then ask the respondent to return to the booklet, first reading the instructions and then answering the questions as before.

4. Administer section 2 and 3 of the verbal questionnaire, remembering to use the Introduction at the top of section 2. Then collect classification details.

N.B. 5. Please write the serial number that is on the verbal questionnaire onto the front cover of the self-completion booklet before handing it to the respondent.

The Questionnaire

The questionnaire is very straightforward and only a few points need to be made:-

1. Remember to check whether the respondent is married before asking Q.1, 2, 3.

2. Q.2. We want to know about all children under 21. If the respondent has no children under 21, then do not ask Q.2 (b) or (c).

3. Only ask Q.3. of married women under about 40. If you find the wording of this question rather abrupt in some cases, then you may alter it to something like 'Are you likely to be having a baby in the near future?'.

4. Q.6. If the respondent wears contact lenses <u>and</u> spectacles, then only ring the code 32.11 for contact lenses, because this is mainly what we are interested in.

5. Q.7. Here we are interested in <u>birth order</u> i.e. whether the respondent is the first, second child etc. If the respondent's brothers or sisters are deceased, <u>we are still interested in the answer to the question</u>.

6. Remember to check respondent's age if he is male before asking Q.9.

7. Section I ends after Q.9. At this point instruct respondent to return to the booklet and at the end of the second half of the booklet, continue with Q.10.

<u>The Booklets and Answer Sheets</u>

1. Some of you will have the booklets stapled in the order A, B, and the others in the order B, A. This order must not be changed in any way.

2. As mentioned earlier, the respondents will be asked to answer these questions in the booklet itself by ringing the most appropriate letter, 'a', 'b' or 'c'.

3. Whilst the respondent is answering the questions:

(a) Give help with instructions if necessary, but do not look over the respondent's shoulder as they answer - guess!

(b) Stress that they are to work quickly, giving the first natural answer as it comes to them, and tell them not to spend time pondering over questions.

(c) If the respondent wishes to change an answer, get him or her to clearly cross out their incorrect answer with the red biro.

(d) If the respondent asks for advice, merely say 'it is up to you' or make some other equally noncommittal remark.

4. After the respondent has answered the first questionnaire, and whilst he or she is completing the second one, check that the respondent has given ONE and ONLY ONE answer to each question. On completion of the second questionnaire check this one also. If there are any instances where more than one answer has been given, refer the question back to the respondent and ask them which answer they finally wish to decide on, and remember to cross out the incorrect replies with red biro.

5. Recoding of respondent's completed questionnaires

(a) For every Form A and Form B questionnaire there is a corresponding answer sheet. You are to recode the information from each questionnaire onto the PINK answer sheet for Form A and the BLUE answer sheet for Form B.

(b) Follow this procedure

First of all write the serial number that is on the front of the booklet onto both answer sheets, A and B.

Then at the bottom of Form B write whether the respondent is male or female. The appropriate word should go at the bottom right-hand corner beneath the large column of empty boxes.

Now recode page by page. One page of the questionnaire corresponds to one complete column on the answer sheet. Transfer the answers from the questionnaire to the answer sheet carefully, ensuring that you are transferring the respondent's answer into the correct little answer box 'a', 'b' or 'c' and that at all times the number of the question corresponds to the number on the answer sheet.

N.B. A constant check on this is that whenever you turn a page in the questionnaire the answer to that first question should always go in the first set of answer boxes at the top of a new column.

When all answers have been transferred and you are quite satisfied that there are no errors due to putting an answer in the wrong set of boxes for that question, please GO BACK AGAIN AND RECHECK THE ENTIRE RECODING.

When completed, questionnaires and answer sheets will be inspected for accuracy before analysis.

(c) It is suggested that the recoding of answers be carried out, whilst the questionnaires are being completed by the <u>next</u> respondent at the following interview.

(d) If you make a mistake cross out in red biro - if the answer sheet is a total mess (eg missing out one question, leaving all questions out), get a duplicate.

6. <u>General Points</u>

(a) If the respondent is unable to read, diplomatically terminate the interview. Give assistance on odd words. Tolerate slow readers.

(b) In the questionnaire, the first question refers to 'test'. If this is questioned, please explain that there are no right or wrong answers and that the questionnaire is not a test in any sense. It is unfortunate wording.

(c) If the respondent completes the first questionnaire, but refuses the second, please explain the importance of this study. If necessary, ask if you could come back at a more convenient time. (Under no circumstances should you agreed to leave the booklet and return for it when completed later - you must always be present when the questionnaires are being answered.) If the respondent still refuses to complete the second booklet, the first booklet and answer sheet should still be submitted, with a bold note across the unused answer sheet stating 'Refused to Complete'. But collect classification information if you can.

(d) There is a chance although a very unlikely one, that the respondent may recognise the questions. If he is obviously familiar with the materials, then merely say that you are of course involved with the standardisation of the questionnaire in the United Kingdom.

At this stage the interviewers were actually put through the 16PF questionnaire themselves. This was to ensure that they would be familiar with the item content of the inventories.

INSTRUCTIONS ON COMPLETING THE QUESTIONNAIRES

In order that you can become fully familiar with the materials you are going to use, I am going to ask you to complete the questionnaires yourselves.

HAND OUT THE QUESTIONNAIRES

Please don't get the materials confused.

Now, some of you will have a white page uppermost and others a blue or pink page uppermost. If you have a white page uppermost, will you please sit on the right hand side of the room; if you have a blue or pink page uppermost, please sit on the left hand side.

ALL MOVE

Thankyou, now I will deal with this side of the room and Miss Bodger with the other side.

You all have a white page uppermost, will you please answer the questions in the first booklet by ringing the best answer for you in the booklet itself.

O.K. ?

Will you now please read the white instructions whilst I read it aloud.

READ

What to do:

Inside this booklet are some questions to see what attitudes and interests you have. There are no 'right' and 'wrong' answers because everyone has the right to his own views.

There are three possible answers to each question. Please ring the letter 'a' or 'b' or 'c' to indicate your answer choice. Remember that you should have one answer for each question.

When you answer please keep these four points in mind:

1. You are asked not to spend time pondering. Give the first, natural answer as it comes to you. Of course, the questions are too short to give you all the particulars you would sometimes like to have. For instance, one of the questions asks you about 'team games' and you might prefer football to cricket. But you are to reply 'for the average game', or to strike an average in

situations of the kind stated. Give the best answer you can at a rate not slower than five or six a minute.

2. Try <u>not</u> to fall back on the middle, 'uncertain' answers except when the answer at either end is really <u>impossible</u> for you - perhaps once every four or five questions.

3. Be sure not to miss anything out <u>but answer every question, somehow</u>. Some may not apply to you very well, but give your best guess. Some may seem personal; but remember that the booklets are kept confidential.

4. Answer as honestly as possible what is true of you. Do not merely mark what seems 'the right thing to say'.

Please ask the interviewer - in this case that's me - if anything is not clear.

O.K. ? Any questions?

Will you please write at the bottom of the white page the time you are starting this first questionnaire.

<u>PAUSE</u>

When you have finished you should also put the time on the white instruction page.

If you have any questions, please ask them now. Once you have started, please don't confer with your neighbours.

PAUSE

Fine - Would you like to begin now, remember to work quickly giving your first natural answer.

Check that all is going well. After twelve minutes say 'Work' as quickly as possible. When the interviewers have finished, remind them to put the time they finished if they have not already done so and check.

Fine - Now we will do the second form. This one however, you will be answering on the answer sheet provided. Would you like to now read the instructions on the next page and I'll read them aloud.

READ

(From outside cover of 16PF booklet)

Well, thank you all for your help. Now I am going to ask you to recode the answers which you put in the booklet, which you completed first, onto an answer sheet. We will now hand out the relevant answer sheets.

PAUSE WHILST ANSWER SHEETS HANDED OUT

Follow the recommendations in your briefing instructions - this will stop errors creeping in.

Recode page by page. One page of the questionnaire corresponds to one complete column on the answer sheet. Transfer the answers from the questionnaire to the answer sheet carefully, <u>ensuring that you are transferring the respondent's answer into the correct little answer box 'a', 'b' or 'c' and that at all times the number of the question corresponds to the number on the answer sheet</u>.

A constant check on this is that whenever you turn a page in the questionnaire the answer to that first question should always go in the first set of answer boxes at the top of a new column.

When all answers have been transferred and you are quite satisfied that there are no errors due to putting an answer in the wrong set of boxes for that question, please GO BACK AGAIN AND RECHECK THE ENTIRE RECODING.

<u>TIME</u>

Go round check on the Interviewers' method of recoding.

<u>TIME WHEN RECODING COMPLETED</u>

Fine, now you have each done one Form of the questionnaire by marking your answers in the booklet and one Form by marking your answers on an answer sheet. In the pilot study which we carried out we found that too many respondents were finding difficulty in using the answer sheet. For this reason all respondents will be answering by using the booklets for ringing their answers 'a', 'b' or 'c'. Now you will recode these answers onto an answer sheet for each respondent. We want you to do this so it will be done accurately, the respondents might make mistakes if using an answer sheet.

Remember to recode as laid down in the instructions. I will go over them.

READ

CONCLUDING REMARKS

Are there any outstanding points? As was stated in the introduction, this is a very important study and this the first time that it has been carried out in Britain. The usefulness of the results cannot be emphasised enough and, of course, good results now depend on you and your colleagues.

THE BACKGROUND QUESTIONNAIRE

In addition to the personality questionnaire completed by the subject, the interviewer was required to complete a background questionnaire for each respondent (Figure 4.2.). Information on the major questions in this part of the survey are as follows:-

(a) Standard Region

Apart from the East Midlands and East Anglia which were treated as one unit, the ten geographic regions employed in the study were those of the Census General. The total adult group was made up of testings conducted in the following forty-eight British counties:-

Northern England: County Durham, the North Riding of Yorkshire and Northumberland.

Yorkshire and Humberside: The East and West Ridings of Yorkshire and Lincolnshire.

East Midlands and East Anglia: Derbyshire, Leicestershire, Northamptonshire, Nottinghamshire and Cambridgeshire, Norfolk and Suffolk.

West Midlands: Shropshire, Staffordshire and Warwickshire.

Greater London: Testings were conducted in a total of 30 Parliamentary constituencies within the administrative boundaries of the Greater London Council.

South East England: Bedfordshire, Berkshire, Buckinghamshire, Essex, Hampshire, Hertfordshire, Kent, Oxfordshire, Surrey and Sussex.

North West England: Cheshire and Lancashire.

South West England: Cornwall, Devon, Dorset, Gloucestershire, Somerset and Wiltshire.

Scotland: Aberdeenshire, Angus, Dumfriesshire, Dunbartonshire, East Lothian, Fifeshire, Lanarkshire, Midlothian, Perthshire and Renfrewshire.

Wales: Brecknockshire, Denbighshire, Glamorgan, Monmouthshire and Radnorshire.

(b) Social Grade

Rather than rely on information such as economic standing or educational level, which undoubtedly affect social class in varying degrees but which are often difficult to assess objectively, social grading has been based upon the occupation of the head of the family unit as the single factor most responsible for the social status of the family. For this reason detailed information was collected on the job, position, type and size of organisation, and any professional qualifications of the senior breadwinner. Social class was then carefully assessed by way of a detailed guide of which the following serves as an illustration.

Social Grade A: The Upper Middle Class

Professional and Semi-Professional: Doctor, Solicitor, Senior Civil Servant (Principal and above), University Professor, Chartered Accountant, Airline Pilot.
Commerce and Industry: Proprietor, Senior Executive, Company Director and Manager of large business (25 or more in establishment), Senior Industrial Scientist.
Police and Armed Forces: Superintendent, Chief Constable, Lieutenant Colonel, Wing Commander, Commander (R.N.) and above.

Social Grade B: The Middle Class

Professional and Semi-Professional: School Teacher, University Lecturer, Executive Grade Civil Servant, Journalist.
Commerce and Industry: Owner of medium size business or shop, Managerof small branch office of bank or insurance company

(10-24 in establishment). Manager of a department in a large factory or business.

Police and Armed Forces: Inspector and Commissioned Officers in the Armed Forces.

Social Grade C1: The Lower Middle Class

Professional and Semi-Professional: Junior Civil Servant, Bank or Local Government Clerk, Pharmacist, all Students other than Apprentices.

Commerce and Industry: Lower Managerial and Supervisory Grades, Clerk, Typist, Laboratory Technician.

Social Grade C2: The Skilled Working Class

All skilled manual workers: Foreman (manual), Deputy (mining), Chargehand, Overlooker, Overseer (manual), Superintendent (manual), Supervisor (manual).

Social Grade D: The Semi-Skilled and Unskilled Working Class

Most semi-skilled and unskilled workers. Most adult female manual workers. Unskilled assistants, labourers and mates of the occupations in grade C2, all apprentices to skilled trades.

Social Grade E: Those at the Lowest Level of Subsistence

Social grade E is assigned only to those households which are dependent on state pensions etc. and where no member of the household is working.

(c) Marital Status

Marital status was classified by one of four categories: (a) Married, (b) Widowed, divorced or separated, (c) Single and engaged, (d) Single but not engaged.

(d) Working Hours

Information was gained on whether the respondent was working full-time, part-time or not working at the time of the study.

(e) Terminal Education Age

The age at which the subject completed full-time education was established. If a respondent had worked for a period between uninterrupted education, the most recent age was coded.

(f) Head of Household

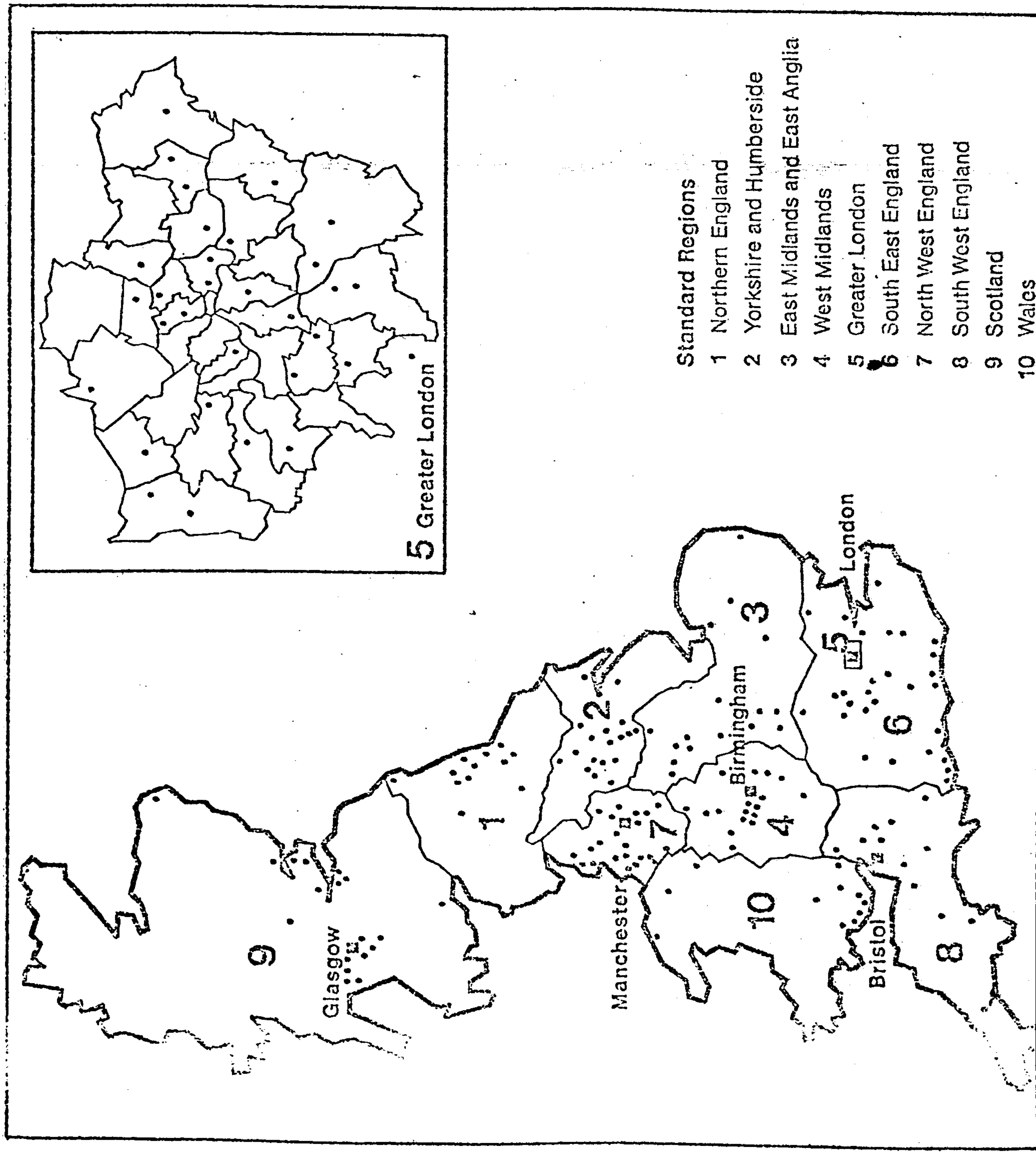
The head of household was defined as the member who owns or is responsible for the accommodation occupied by members of the household. Suitable criteria were laid down to ensure correct evaluation in the event of unusual household composition.

(g) Age

Subjects were required to give their age in years at their last birthday; if this was refused, as was the case in approximately 20 instances, age was estimated and then coded by one of seven intervals.

FIGURE: 4.3.

THE SAMPLING UNITS AND STANDARD REGIONS OF THE 16PF BRITISH STANDARDISATION SAMPLE (N= 2227)



Once all the forms had been received, edited, scored and card punched, the data were initially set up on the NFER IBM 1130 computer system which was to undertake the first stage analyses. The more sophisticated analyses at the second stage were to be undertaken by a much larger computer installation at the Edinburgh Regional Computer Centre on an IBM computer.

DATA PROCESSING

As subjects were tested the completed questionnaires were returned for editing and coding of the social class data. Checks were also made on the coding of responses from booklets to answer sheets and those with complete and correct data were passed for handscoring, cardpunching and further editing by computer.

When training the interviewers, the importance of control over the quality of data had been stressed and in fact the vast majority of scripts received for editing were complete and accurately coded. In twenty-one cases either only Form A or Form B of the 16PF had been answered by the respondent but after editing, results for the complete sections were sent for card punching.

As is always the case in fieldwork of this size, odd questions had been omitted by subjects but rather than reject the entire record, information was filled in where possible or simply left blank. (Computer programs had been adapted to deal with this and the associated problem of variable sample sizes in the data analysis.)

5. DESCRIPTION OF THE SAMPLE

TABLE: 5.1.

THE 1971 BRITISH STANDARDISATION SAMPLE

		% Total Adult Population	% Sample	% Male Adult Population	% Sample	% Female Adult Population	% Sample
Registrar General's 1971 Estimates and the National Readership Survey: Derived Statistics	Region						
	Northern England	6.2	6.4	6.3	6.4	6.2	6.4
	Yorkshire and Humberside	9.0	8.6	9.0	8.9	8.9	8.2
	East Midlands and E. Anglia	9.4	9.3	9.4	9.6	9.2	9.2
	West Midlands	9.5	8.9	9.8	8.8	9.3	9.0
	Greater London	14.9	15.4	14.7	14.8	15.2	15.0
	South East England	17.8	16.7	17.6	16.5	18.0	17.0
	North West England	12.5	13.1	12.3	13.2	12.7	13.0
	South West England	6.8	7.2	7.0	6.9	6.6	7.6
	Scotland	8.7	9.3	8.7	9.3	8.7	9.2
	Wales	5.1	5.5	5.1	5.7	5.1	5.3
Target Group Index 1971	Social Group						
	AB	12.6	15.9	12.5	15.7	12.7	16.3
	C1	19.6	21.8	19.3	21.9	19.9	21.7
	C2	40.4	36.6	42.1	37.8	38.7	35.2
	DE	27.4	25.2	26.1	24.1	28.7	26.2
Target Group Index 1971	Marital Status						
	Married	73.4	72.5	77.8	75.5	69.4	69.6
	Widowed/Divorced/Separated	9.2	7.5	3.7	4.4	14.2	10.6
	Single—Engaged	2.5	2.3	2.4	1.6	2.6	3.0
	Single—Not Engaged	15.0	17.5	16.2	18.5	13.8	16.6
Target Group Index 1971	Working Hours						
	Working 30 Hours or More	52	56	79	81	26	31
	Working 8–29 Hours	6	7	1	1	11	14
	Not Working	42	36	20	18	63	55

TABLE: 5.1. (Continued)

THE 1971 BRITISH STANDARDISATION SAMPLE

		% Total Adult Population	% Sample	% Male Adult Population	% Sample	% Female Adult Population	% Sample
Target Group Index 1971	Terminal Education Age						
	15 Years or Under	70	63	69	64	70	62
	16 Years	12	15	12	15	12	15
	17 Years	5	6	5	4	5	8
	18 Years	3	3	3	3	3	3
	19 Years	1	1	1	1	1	1
	20 Years	1	1	1	1	1	1
	21–23 Years	3	4	3	4	2	3
	24 or More	1	2	1	3	1	1
	Still Studying	4	5	4	5	4	7
Target Group Index 1971	Head of Household						
	Yes	47.2	46.4	82.0	81.4	15.4	11.6
	No	52.8	52.9	18.0	17.9	84.6	87.7
Registrar General's 1971 Estimates and the National Readership Survey: Derived Statistics	Age						
	15–24 Years	21.5	23.0	21.9	22.1	21.1	24.0
	25–34 Years	18.1	24.3	18.6	22.2	17.7	26.3
	35–44 Years	17.6	17.6	18.2	17.4	16.9	17.9
	45–54 Years	18.4	15.0	18.3	16.5	18.5	13.5
	55–69 Years	24.5	20.0	23.0	21.8	25.8	17.1

Missing data due to subjects refusing to provide some information, cause given columns not to total exactly 100%.

DESCRIPTION OF THE SAMPLE CHARACTERISTICS

A total of 2,227 subjects cooperated in the study. From an analysis of the contact sheets it was found that the response rate was approximately 78% and it was evident from interviewers' estimates that those refusing tended to be female, older and of lower socio-economic status than participants in the research.

The first computer run involved counts and percentages on the main demographic and socio-economic variables contained in the background questionnaire. These are represented in Table 5.1..The population estimates in the table come either from the Registrar General's Annual Estimates and the National Readership Survey or from the Target Group Index - a national survey of some 25,000 adults.

Before proceeding to consider the results in more detail, it is important to remember that this sample specifically excluded the illiterate, more seriously infirm and older subjects (70 years and more). This is not the case with the population estimates which can only be regarded as the best available statistics and not the most relevant. The sample and population estimates do not share identical parameters and direct comparison on certain variables could be misleading. Whilst bias due to non-response is also involved here, the greater proportion in the sample of those of higher social grade for example, reflects to some extent the controls used in the procedure.

It can be seen from Table 5.1. that in terms of region the sample seems relatively representative nationally with the maximum discrepancy between sample and population estimates of 1.1%. With regard to social group, the sample has a somewhat higher proportion of social class A, B and C1 subjects but this is to be expected where older subjects were excluded from the sampling frame.

There is also a relatively good representation of marital status although the Widowed/Divorced/Separated category is a little low. Similarly, by reference to the table, it is apparent that working hours, terminal education age and age statistics show effects which are probably due to the controls adopted in sampling mentioned above.

THE PROBLEM OF NON-RESPONSE

A dilemma which besets all researches of this kind and which must surely make the exact measurement of the modal national adult personality an unattainable goal, is the unknown degree and nature of bias introduced into results by those who refuse to cooperate. From the very outset the important practical consideration was recognised that adults have to be willing to take part in research of this nature and that without full cooperation it is impossible to apply true random sampling. It was for this reason that great care was exercised not only in the phrasing of the introductory remarks to the study, but also in the method of recording responses, the provision of suitable incentives in the form of a premium bond prize, the stressing of the confidentiality of results, and freedom for the subject to be interviewed by appointment. Moreover, the experience and known proficiency of the selected interviewers for gaining cooperation and their patience and persuasiveness in ensuring that a session which was anything between 30 minutes and 3½ hours long was not prematurely terminated, were also of crucial importance.

Although the refusal rate of 28% is somewhat higher than might have been expected with particular subsets of the population, which are usually more readily available and concurring (householders or recent school leavers, for example), it is highly probable that this figure is to some small extent spuriously high as a result of contacts, ineligible for the reasons of illiteracy or age, declining assistance before their ineligibility could be established by the interviewer.

As occurred in 21 of 2,227 cases in the present study, even on having entered the home of the subject there remains the further danger that the session will be terminated before completion. This issue of non-response is of course enduring in studies of this type. Short of providing fieldworkers with revolvers, an action which would secure entirety but not necessarily accuracy of response, the researcher's recourse can only be to efficient incentives whether they be social, monetary or idealistic.

In all it is thought that despite certain limitations on response rate, the sample will serve as a good data base to test the hypotheses outlined in a previous section. Indeed knowing the problems of collecting data from adult groups with an ab initio research design, Cattell (1972) wrote " ... not even in America itself, where research support is apt to be more lavish, has any one of these standardisations quite reached the closeness to the ideal model that has now been achieved for Britain in this undertaking".

SECTION 3:

GROUP DIFFERENCES AND THE PRIMARY SOURCE TRAITS

6. CROSS-NATIONAL AND SEX DIFFERENCES

INTRODUCTION

Once data have been punched and verified, computer analysis proceeded with the calculation of descriptive statistics for the primary and secondary source traits on each 16PF form combination (A, B, A+B) according to the particular classifying variable under consideration. With sixteen first order, eight second order factors and four derived criteria measures, three questionnaire form combinations, three groups for sex (males, females and both sexes combined), six age groups and seven socio-economic classes, it is clear that an enormous volume of data was generated even at this early stage of the study.

The first step was to produce counts, frequency distributions, means and standard deviations for each of the primary source traits (16) by form combination (3) and by sex (3) giving a total of 144 tables. These data were then converted by hand to the standard score system used by Cattell, ie. the n-sten. This system relates raw scores to a mean of 5.5 and a standard deviation of 2. Hence, standard scores range from 1 to 10, from which arises the name 'sten' (standard ten). Specifically, the n-sten is determined by using a normalised area transformation: that is to say, by imposing a normal distribution with the required mean and standard deviation in the reference population. This procedure is discussed by Tatsuoka (1969) in 'Selected Topics in Advanced Statistics'.

Following the hand calculation of n-stens (these data are held separately from the main thesis), a computer program was written to automate the calculations and further tables were computed for separate age and social class groups. These tables are contained in Appendix 6.

In the case of cross-national and sex differences, 't' tests were then calculated for each factor and these data will be incorporated into the main body of the text. It is important to note that these results deal with statistical significance as hypothesised in Cattell's model; they do not of course necessarily imply practical significance for questionnaire users.

There is the further problem that Cattell's primary source traits are oblique factors, that is to say, there are non-zero correlations between the scales. For instance, we may find that the difference between the sexes on Factor C in our sample is of about the same order as the difference on Factor Q4. Yet it may be that the difference found is simply reflected in both sets of scores because of their inter-correlation. It is important to note, therefore, that when scales are to some extent inter-dependent, the use of multiple 't' test tends to exaggerate underlying differences. But our main concern is as much with the characteristics of individual scales as with the characteristics of the sample. Whilst it would be misleading to suggest that multiple 't' test results give an accurate picture of the extent of the differences between various groups, it is certainly the case that they give a good account of the characteristics of the individual scale.

The 't' tests which follow in the various sections are two-tailed and adopt the conventional .05 probability level or beyond as the standard of statistical significance. It should also be pointed out that about 5% of the differences between means can be expected to be statistically significant purely by chance, although this is unlikely in any way to seriously distort our findings.

CROSS-NATIONAL DIFFERENCES ON THE PRIMARY SOURCE TRAITS

Because the British groups are of somewhat older mean age than the American data provided by Cattell (1971)(mean 30 years), it was not possible to test for cross-national differences without first having taken account of age discrepancies. Accordingly, to bring all mean factor scores to a common age, the British group means were corrected on the quadratic model provided by Cattell (1971)(see below).

(a) Female Cross-National Differences: Results

After the application of the age correction weights, it is evident from Table 6.1.that the British females were significantly higher than American females on Factors L ($p < .01$), N ($p < .05$), Q2 ($p < .001$) and Q4 ($p < .01$) and significantly lower on Factors G ($p < .001$), H ($p < .001$), I ($p < .05$) and M ($p < .001$). Differences were not significant on the remaining eight factors. Then the British female group are described as more suspicious (L+), shrewd (N+), self-sufficient (Q2+) and tense (Q4+) and less conscientious (G-), venturesome (H), tender-minded (I-) and imaginative (M-) than the American female group.

(b) Male Cross-National Differences: Results

In Table 6.2.the respective American and British male groups are compared. Eleven of the sixteen source traits are in fact significantly different at the 5% level or above: British males being higher on Factors B ($p < .001$), E ($p < .05$), L ($p < .001$), Q1 ($p < .001$), Q2 ($p < .001$) and Q3 ($p < .01$) and lower on

A ($p < .001$), G ($p < .001$), I ($p < .001$), M ($p < .001$) and O ($p < .001$).

These results give a picture of group differences of the British male being more intelligent (B–), assertive (E+), suspicious (L+), experimenting (A1+), self-sufficient (Q2+) and controlled (Q3+) than the average for American males. The British male group had significantly lower scores in terms of outgoingness (A–), conscientiousness (G–), tough-mindedness (I–), imagination (M–) and apprehension (O–).

SEX DIFFERENCES ON THE PRIMARY SOURCE TRAITS

The means and standard deviations for the male and female samples on Forms A+B of the 16PF are to be found in Table 6.3. Fourteen of these differences are significant at the .01 level or beyond, only Factors F and G do not show statistically significant differences between the sexes. Males had significantly higher means on Factors B,C,E,H,L,M,Q1,Q2 and Q3 and females were significantly higher on A,I,N,O and Q4.

These personality differences give a picture of the female group being more tender-minded (I+), emotionally labile (C–, O+ and Q4+), conservative (Q1–) and less dominant (E–) than the male group.

DISCUSSION OF THE CROSS-NATIONAL AND SEX DIFFERENCES IN THE PRIMARY SOURCE TRAITS

Results for the cross-national comparisons on the primary source traits support the hypothesis of no difference between British and American groups on Factors B (intelligence), C (emotional stability), O (apprehension) and Q1 (experimenting) in females and Factors C (emotional stability), N (shrewdness) and Q4 (tense) in males. In addition British females scoring lower than the comparable American group on Factor M (imagination) and British males being lower on Factors A (outgoing), M (imagination) and higher on Q3 (self-concept control) are all differences in the hypothesised direction.

Departures from hypothesis usually involved statistically significant differences in results where none had been envisaged; only Factor E (dominance) in males with the British rather than the American group scoring more highly showed the opposite tendency to that expected.

Thus the hypothesis that the British group would show a more introverted personality pattern is only partially supported by the data. Whilst differences on Factors A (British less outgoing) and Q3 (British more controlled) were in the predicted direction, no significant differences were found on Factors F (happy-go-lucky) and H (social boldness). As we have noted above, one major extroversion component in males, Factor E (assertiveness), even showed the opposite trend, with the British group scoring higher.

Factors which show consistent differences between the American and British groups are G (Americans higher on superego strength), I (Americans more tender-minded), M (Americans more imaginative) and Q2 (British more self-sufficient). These source traits do not group together in any major second order factor such as extraversion or anxiety nor are they factors like E,C,O and Q4 which are particularly susceptible to the social desirability response sets (Cattell 1973) and so it would seem less likely that these personality differences merely reflect dissimilar research methodologies.

Although these and other primary source traits reach statistical significance, we must not lose sight of the fact that the groups in terms of mean differences are reasonably close. The largest difference in Z-score units is .37 for males on Factor Q2 which still represents considerable overlap between the two curves. Certainly most of these differences would have little effect on the standard score tables (n-stens) used in profiling results.

What is probably more important to the reliability analysis in the next section is the apparent greater dispersion of factor scores in the American female group. Fourteen of the sixteen primary factors show higher variance in the latter group (sign test, $p < .05$).

The mean scores being relatively close suggests a higher incidence of more extreme scores in the American female sample. This may well have its origin in Cattell's method of collecting data by pooling results from distinct and less typical sub-groups of the population. It could also be true that variations in the motivational set of his samples is at work here. For example, the large differences between variances on the emotional stability factor (C) may have its origin in a response set for those tested under client centred conditions (eg. therapy) to fake low and those involved in organisational decision making (eg. job applicants) to fake high. Combining such groups would tend to polarise the data, perhaps having little effect upon the central point but increasing dispersion about the mean.

As a concluding remark, it is important to remember that because of the nature of the American data, too much confidence should not be placed on these cross-national differences. As Jahoda (1970) has pointed out if it is not really possible to specify the exact modal personality of a nation, then it is not possible to talk definitively of personality differences between nations. Inferences regarding cross-national differences can only make sense within the context of sample characteristics, the research design and the conditions of testing. We may conclude, however, though differences are often statistically significant, their actual size is usually small and for our purposes, we do not appear to have particularly unusual data with respect to Cattell's.

Turning to the sex differences on the primary source traits, ten of the factors showed differences in line with those hypothesised. These were namely Factors A (females more outgoing), E (males more assertive), H (males more venturesome), I (females more tender-minded), L (males more suspicious), O (females more apprehensive), Q1 (males more experimenting), Q3 (males more socially controlled), Q4 (females more tense) and F (no statistically significant difference between the sexes). The hypothesis of no difference between the sexes, however, must be rejected in the case of Factors B (intelligence), C (emotional stability) and Q2 (self-sufficiency), where males achieved a significantly higher mean score than females. Moreover, although the mean of Factor G (conscientious) was higher for the female group, the difference failed to reach statistical significance. Finally, on Factor M (imagination), with British males higher and on Factor N, with British females higher, reversals of the expected sex differences in personality are evident.

The British male group scoring significantly higher on average than the female sample on Factor B (intelligence) is perhaps a little surprising, especially in view of the fact that the females were of somewhat lower mean age than the male respondents in the study. Reference to Cattell's (1973) norm supplements shows that in just about every case, the American male and female groups have identical means and standard deviations on this factor. This suggests that Cattell uses this same trait as a classifying variable when compiling his tables and, if this is so, these data call into question the validity of the method.

The sex differences on the primary source traits were in fact consistent across both Forms A and B, except for Factors G (males higher on Form A, females higher on Form B), N (females higher on Form A, no significant difference on Form A, males higher on Form B). Why these factors should fluctuate in such a manner is not immediately apparent. It may be significant, however, that as measured by coefficients of equivalence between Forms A and B, Factors G, N and Q2 are three of the least reliable source traits (Cattell et al, 1970).

It should be remembered that these sex differences are based upon groups of mean age approximately 38 years. The nature and extent of these differences can only be generalised to other ages with great caution. There is evidence that the 16PF personality factor age changes in the American culture at least, show dissimilar patterns for the sexes, (Cattell, Eber and Tatsuoka, 1970). For example, crystallized intelligence demonstrated a slight fall in women on Forms A+B in the 1961-62 edition of the 16PF which is not discernible for males. The question of personality differences between the sexes at various points in the age distribution will be taken up later in this chapter.

As concluding remarks, we can say that the British sex differences on the primary source traits are roughly in line with Cattell's model and results reported in the United States. The differences between males and females in personality were more predictable than the cross-national trends, although this could have been due in part to comparing data from studies which used very different methodologies. It is certainly true to say that from these results, the sex of subjects matters far more in understanding personality than their nationality.

TABLE: 6.1.

SIGNIFICANT PERSONALITY DIFFERENCES BETWEEN THE AMERICAN AND BRITISH ADULT GROUPS ADJUSTED TO AGE 30 YEARS: FEMALES

		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
British	Adjusted Mean	23.29	14.16	30.04	21.08	26.80	24.97	23.48	25.18	14.85	23.05	21.99	23.61	16.49	20.22	23.41	27.39
	S.D.	5.02	3.44	6.67	6.69	8.61	5.46	10.36	4.58	4.94	5.92	4.71	7.58	4.71	5.59	5.73	8.16
American	Mean	22.88	14.08	30.73	21.39	26.57	26.44	25.69	25.78	14.05	24.54	21.44	23.18	16.24	18.44	22.93	25.96
	S.D.	5.91	3.72	8.39	7.22	7.35	5.61	10.49	5.22	5.33	6.79	4.53	8.33	5.01	6.02	6.38	8.93
Difference in Means (Positive if British Higher)		0.41	0.08	−0.69	−0.31	0.23	−1.47	−2.21	−0.60	0.80	−1.49	0.55	0.43	0.25	1.78	0.48	1.43
T Value		1.30	0.39	1.56	0.79	0.53	4.72	3.78	2.13	2.74	4.08	2.14	0.95	0.91	5.40	1.39	2.94
Significance of Difference, P		N.S.	N.S.	N.S.	N.S.	N.S.	$p<.001$	$p<.001$	$p<.05$	$p<.01$	$p<.001$	$p<.05$	N.S.	N.S.	$p<.001$	N.S.	$p<.01$

TABLE: 6.2.

SIGNIFICANT PERSONALITY DIFFERENCES BETWEEN THE AMERICAN AND BRITISH ADULT GROUPS ADJUSTED TO AGE 30 YEARS: MALES

		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
British	Adjusted Mean	19.29	14.65	34.19	27.38	28.48	25.38	30.75	16.87	16.11	24.98	19.98	15.04	18.86	20.40	25.96	20.20
	S.D.	5.85	3.47	6.99	7.30	9.23	5.90	10.30	5.76	4.95	5.63	4.00	7.79	4.97	5.76	6.00	9.20
American	Mean	20.36	14.08	34.69	26.71	28.40	26.88	30.30	18.25	14.78	25.86	19.76	17.60	18.20	18.25	25.24	20.61
	S.D.	6.32	3.72	8.18	6.37	7.45	5.78	10.26	5.75	5.48	6.36	4.37	8.49	4.88	5.78	6.01	9.41
Difference in Means (Positive if British Higher)		–1.07	0.57	–0.50	0.67	0.08	–1.50	0.45	–1.38	1.33	–0.88	0.22	–2.56	0.66	2.15	0.72	–0.41
T Value		4.16	3.75	1.56	2.29	0.22	6.05	1.03	5.65	6.03	3.47	1.12	7.44	3.15	8.78	2.83	1.04
Significance of Difference, P		p<.001	p<.001	N.S.	p<.05	N.S.	p<.001	N.S.	p<.001	p<.001	p<.001	N.S.	p<.001	p<.001	p<.001	p<.01	N.S.

TABLE: 6.3.

SIGNIFICANT PERSONALITY DIFFERENCES BETWEEN BRITISH MEN AND WOMEN

		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Male	Mean	17.58	14.65	30.80	25.00	26.27	24.63	27.25	17.63	17.72	22.94	20.96	19.69	18.86	20.40	24.86	23.77
	S.D.	5.85	3.47	6.99	7.30	9.23	5.90	10.30	5.76	4.95	5.63	4.80	7.79	4.97	5.76	6.00	9.20
Female	Mean	21.72	14.16	28.07	19.09	26.42	24.79	23.48	25.01	15.89	21.75	22.34	25.35	16.49	19.68	23.13	28.78
	S.D.	5.02	3.44	6.67	6.69	8.61	5.46	10.36	4.50	4.94	5.92	4.71	7.58	4.71	5.59	5.73	8.16
Difference in Means (Positive if Male Higher)		-4.14	0.49	2.73	5.91	-0.15	-0.13	3.77	-7.38	1.83	1.19	-1.38	-5.66	2.37	0.72	1.73	-5.01
T Value		17.02	3.18	8.96	18.92	0.38	0.63	8.18	31.78	8.29	4.62	6.50	16.50	10.97	2.94	6.61	12.91
Significance of Difference, P		<.001	<.01	<.001	<.001	NS	NS	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.01	<.001	<.001

TABLE : 6.4.

SUMMARY OF CROSS-NATIONAL AND SEX DIFFERENCES ON CATTELL'S PRIMARY SOURCE TRAITS

		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Significantly Higher Scoring National Group	Hypothesis	A	NS	NS	A	A	NS	A	NS	NS	A	NS	NS	NS	NS	B	NS
	RESULTS FEMALE	NS	NS	NS	NS	NS	A	A	A	B	A	B	NS	NS	B	NS	B
	RESULTS MALE	A	B	NS	B	NS	A	NS	A	B	A	NS	A	B	B	B	NS
Significantly Higher Scoring Group	Hypothesis	F	NS	NS	M	NS	F	M	F	M	F	M	F	M	NS	M	F
	RESULTS	F	M	M	M	NS	NS	M	F	M	M	F	F	M	M	M	F

NS: Not statistically significant

A: American group significantly higher

B: British group significantly higher

M: Male group significantly higher

F: Female group significantly higher

7. SOCIAL CLASS DIFFERENCES

INTRODUCTION

In an earlier section hypotheses were developed from Cattell's model on personality differences between socio-economic classes. In this study subjects were assigned to social groups classified on a similar basis to that used by the Census General; these categories have been described above.

Linear relationships have been hypothesised for the majority of the primary source traits and such trends will be investigated by way of conventional product moment coefficients. However, to test the hypothesis that the regression of personality on social class is non-linear, eta coefficients will be calculated on the data.

The correlation ratio or eta (η) is a general index of association particularly useful when analysing data in which there is a curved regression. Eta allows us to predict on the basis of array means and can be defined as the proportion of variance in the first variable explained by and associated with the second. Eta assumes no particular type of functional relationship between two variables and it can be regarded as the maximum size of correlation between them. Like Linear correlation, two regression lines are found for eta. However, these may differ in shape and slope and so two eta coefficients can be calculated:

$$\eta = \frac{\sigma^1_y}{\sigma_y} \quad \text{Eta for the regression y on x}$$

TABLE: 7.1.

THE SIXTEEN PERSONALITY QUESTIONNAIRE

CORRELATIONS BETWEEN SOCIAL CLASS AND FIRST ORDER FACTORS

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
MALE (N=833) FORM A	-.041	-.283	-.086	-.042	.063	-.060	-.050	-.049	.074	-.266	.062	.167	.054	-.080	-.042	.030
FORM B	.015	-.339	-.114	-.107	.034	.035	-.106	-.050	-.057	-.207	-.052	.046	-.163	-.034	-.103	.060
FORMS A+B	-.013	-.368	-.115	-.084	.053	-.020	-.085	-.058	.020	-.299	.006	.119	-.064	-.068	-.083	.049
FEMALE (N=717) FORM A	-.016	-.314	-.165	.014	-.085	-.009	-.130	-.114	.106	-.215	.099	.211	.098	.052	-.096	.121
FORM B	.055	-.309	-.193	-.089	-.075	-.089	-.225	-.206	.136	-.193	.056	.094	-.177	.078	-.078	.106
FORM A+B	.026	-.368	-.209	-.041	-.089	-.054	-.193	-.199	.149	-.249	.033	.168	-.044	.076	-.101	.127
TOTAL (N=1550) FORM A	-.025	-.298	-.124	-.019	-.007	-.037	-.089	-.056	.087	-.240	.081	.183	.067	-.018	-.068	.072
FORM B	.035	-.325	-.150	-.097	-.016	-.022	-.164	-.099	.032	-.200	-.053	.069	-.170	.017	-.092	.081
FORM A+B	.009	-.367	-.158	-.064	-.013	-.035	-.137	-.087	.078	-.275	.020	.137	-.056	-.001	-.092	.084

$$\eta = \frac{\sigma_{x^1}}{\sigma_x}$$ Eta for the regression of x on y

where σ_{y^1} = standard deviation of the y^1 values predicted from x

σ_{x^1} = standard deviation of the x^1 values predicted from y

σ_y and σ_x = standard deviations of the total distributions

We shall be concerned with the first of these, testing the hypothesis that the regression of y (personality) on social class (x) is linear.

If we wish to test for the linearity of regression, Guilford (1973) has proposed an F test based on an analysis of variance approach where only a knowledge of eta and the product moment correlation coefficient (r) is required.

$$F = \frac{(\eta^2 - r^2)(N - K)}{(1 - \eta^2)(K - 2)}$$

where K = number of columns or rows

SOCIAL CLASS DIFFERENCES: RESULTS

The product moment correlation coefficients between Cattell's primary source traits and social class are contained in Table 7.1.. Because of computer restrictions, these data are based on slightly reduced group sizes in that only subjects with complete data records were included in the analysis. The social class variable was coded by assigning the

TABLE:7.2.

ETA VALUES (n) REGRESSING THE PRIMARY SOURCE TRAITS ON SOCIO-ECONOMIC GROUP

Females: Forms A + B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
eta (n)	.04	.37	.21	.06	.14	.15	.19	.24	.19	.27	.08	.17	.09	.09	.18	.14
Pearson Product Moment Coefficient (r)	.03	-0.37	-0.21	-0.04	-0.09	-0.05	-0.19	-0.20	.15	-0.25	.03	.17	-0.04	.08	-0.10	.13
F Value	.17	-2.08	0	.49	2.91	5.08	0	4.64	3.50	2.79	1.37	-0.84	1.63	0.42	5.75	.68
Significance $p \leq$	NS	NS	NS	NS	.05	.01	NS	.01	.01	.05	NS	NS	NS	NS	.01	NS

character 1 to the highest social group (A) and the character 6 to the lowest group (E). The number scale bears an inverse relationship, therefore, to the social class variable. Those coefficients significant at the 5% level or beyond are marked in the table. Appendix 7 also contains the means and standard deviations on the primary source traits for each social class, 16PF form combination and sex.

Turning to the product-moment correlations, which of course are appropriate only when investigating linear trends in data, it is evident that there are sizeable correlations between social class and the primary source traits of B (intelligence) and M (imagination). Two other factors which show consistent associations across form and sex are C (emotional stability) and O (worrying, troubled). In addition, there are relationships in the female group with Factors H (social boldness), I (tender-minded), L (suspicious) and Q4 (tense). These findings are relatively consistent across the two questionnaire forms although Q1 (experimenting) seems to be related on Form B but perhaps in the opposite direction in Form A.

As to the direction of these relationships, higher social class in general is related positively with Factors B, C, H, M, I and Q3 and negatively with Factors L, Q4 and O. This gives the picture of members of the 'higher' socio-economic groups as more intelligent, emotionally stable, imaginative and controlled and less apprehensive. Additionally, females in the higher socio-economic groups appear more socially bold, tender-minded and less tense and suspicious.

Eta coefficients, representing the regression of the primary source traits (Forms A + B) on socio-economic groups are contained in Table 7.2.

TABLE: 7.3.

ETA VALUES (n) REGRESSING THE PRIMARY SOURCE TRAITS ON SOCIO-ECONOMIC GROUP

Males: Forms A + B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
eta (n)	.09	.39	.15	.13	.14	.10	.10	.14	.09	.30	.10	.15	.11	.05	.14	.12
Pearson Product Moment Coefficient (r)	-.01	-.37	-.12	-.08	.05	-.02	-.09	-.06	.02	-.30	.01	.12	-.06	-.07	-.08	.05
F Value	2.00	4.46	2.06	2.66	4.34	2.41	.48	4.06	1.93	.00	2.49	2.06	2.14	.00	3.35	3.00
Significance $p <$	NS	.01	NS	.01	.01	.01	NS	.01	NS	NS	.01	NS	NS	NS	.01	.01

for females and Table 7.3 for males.

With regard to the data for females, the F values suggest that six of the 16 factors show significant departures from linearity. These are the primary source traits of F, G, I, L, M and Q3. The corresponding analysis on the male data (Table 7.3) shows significant F values for Factors B, E, F, G, I, N, Q3 and Q4.

SOCIAL CLASS DIFFERENCES: DISCUSSION

The largest coefficient is between social class and Factor B (intelligence). In so much as the categorisation of social group is based upon the occupation of the head of the family unit, this is perhaps not unexpected. As is evident from the correlation matrix reproduced in Table 7.4., social class is also positively related to the amount of full time education received by the subject, which clearly is likely to have some effect on a verbally orientated ability scale like Cattell's Factor B.

Another primary trait with a significant relationship with social class, is Cattell's Factor M (practical vs. imaginative). This variable shows a significant departure from linearity and reference to the group means and standard deviations (Appendix 7) suggests that the regression line tails off slightly at the extremes with the maximum acceleration taking place between social groups C1 (the lower middle class) and C2 (the skilled working class). It is interesting that it is precisely this point which represents the division between the professional or 'ideas' orientated jobs and the trade or 'thing' orientated occupations. These results are in line, therefore, with the initial hypothesis that those in the more practical occupations would score lower on this factor.

TABLE: 7.4.

CORRELATIONS BETWEEN AGE, EDUCATIONAL AGE AND SOCIAL CLASS IN THE 16PF FORMS A+B ADULT SAMPLE: BOTH SEXES (N = 2012)

	AGE	EDUCATIONAL AGE	SOCIAL CLASS
AGE	1	-.41**	-.01
EDUCATIONAL AGE		1	-.37**
SOCIAL CLASS			1

** correlation significant at .01 level or above

Three other trends in the data which support initial hypotheses all concern the major anxiety variables in the 16PF with the higher social groups being more emotionally stable (C+), less apprehensive (O-) and, in females, less tense (Q4-). Only Q4 for the male adults showed evidence of a non-linear relationship . In addition tender-mindedness (I) in females showed a significant correlation with social class, which again supported the hypothesis of a slight positive relationship.

In all, results supported or tentatively supported hypotheses on some ten of Cattell's primaries:-

FACTOR		SOCIAL CLASS DIFFERENCE
A	Outgoing	No differences
B	Intelligence	Positive relationship
C	Emotional Stability	Positive relationship
E	Assertive	No differences
H	Social Boldness	Positive relationship (females) No differences (males)
I	Tender-minded	No differences (males) Positive relationship (females)
L	Suspicious	Negative relationship (females) No differences (males)
M	Imagination	Positive relationship
O	Apprehension	Negative relationship
Q4	Tense	No differences (males) Negative relationship (females)

Of the six unsubstantiated hypotheses, probably the most serious concerned the Factor N (shrewdness) where no clear relationship with social class was found despite Cattell's contention that this trait is closely associated with social status.

8. AGE DIFFERENCES

INTRODUCTION

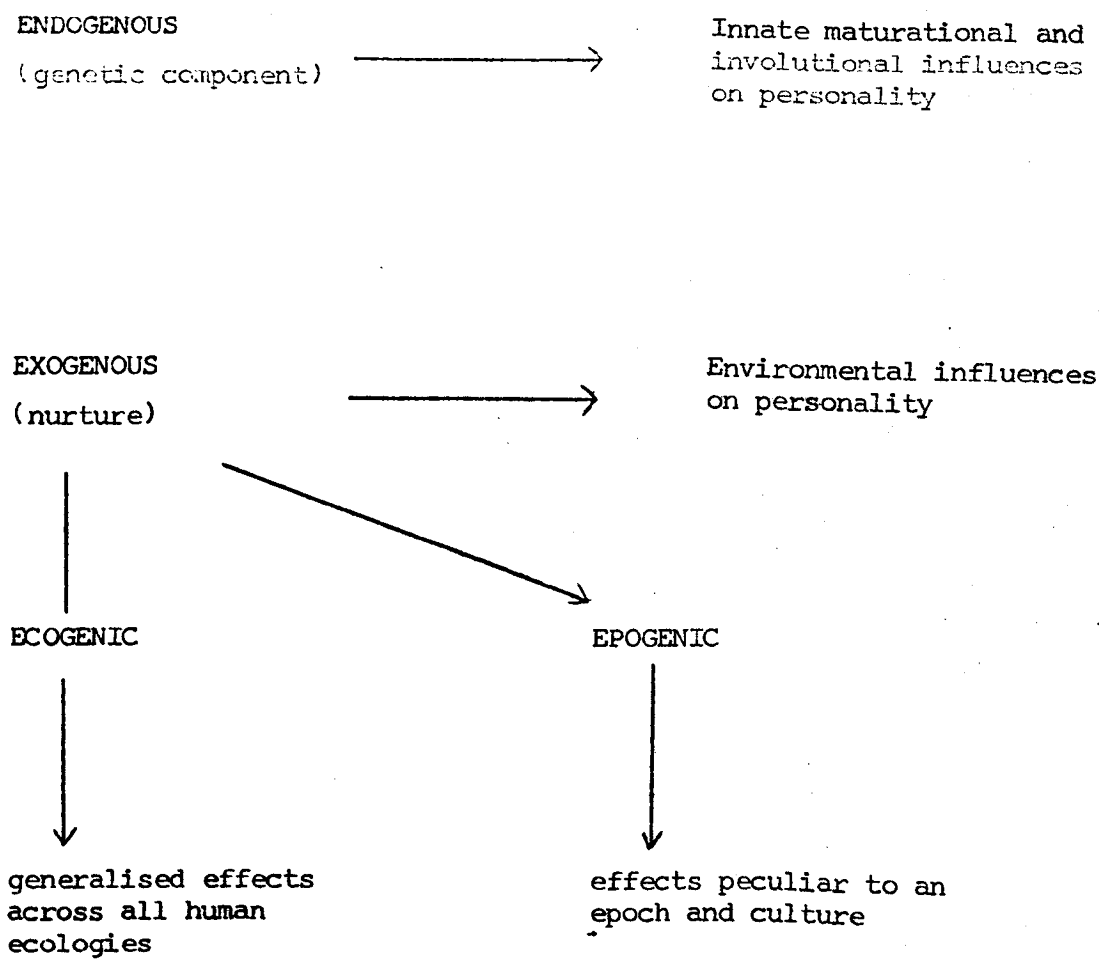
Cattell (1972) points out that the curves of age trends in personality need to be determined in order to make proper comparisons among individuals of different ages. Beyond this consideration, reliable information about the development of personality traits is also fundamental for personality for as Angleitner (1971) has shown, the age dependency of personality scores shows in every culture yet examined.

Cattell analyses age curves as the sum of endogeneous and exogeneous components. The former describes the effects of internally determined maturation and involution and is virtually synonymous with a pure genetic component as it manifests itself over time. The latter is made up of all the various averaged environmental influences on the individual and can be divided again into an ecogenic, representing what happens to all people as an average across all historical human ecologies and an epogenic component expressing the effect peculiar to an epoch and a given culture.

Methodologies for separating the ecogenic components have been discussed by Baltes (1968), Cattell (1970) and Schaie and Strother (1968) in terms of comparing longitudinal (the follow-up of age cohorts with re-testing) with cross-sectional data (the study of different age groups at one point in time). However, Cattell's conclusions on age trends in

FIGURE 8.1.

ANALYSIS OF PERSONALITY AGE CURVES



personality remain based on simple cross-sectional data where averages on the primary source traits are available for a particular decade and for groups of people at different age levels. These curves thus confound the ecogenic with the epogenic components but are, nevertheless, important as a first step in understanding age differences in the primary source traits. Moreover, in that both this study and Cattell's conclusions are based on a cross-sectional design, it becomes possible to test for the similarity of age trends in the primary source traits.

AGE DIFFERENCES: RESULTS FOR PRODUCT MOMENT AND ETA COEFFICIENTS

An indication of the hypothesised age trends in personality was given in an earlier section describing the primary source traits. Cattell (1972) has more recently provided a picture of the curves for the primaries across an age range from about 5 to 60 years. These curves are represented in n-sten units about the total group mean and standard deviation. Two associated problems arise in the comparison of Cattell's trend lines with those collected here. First, Cattell's curves are for a different age base. In order to ensure comparability, it will be necessary, therefore, to restrict our considerations to changes over the adult years, 16-60 years. Secondly, this change in age range will need a corresponding adjustment to the group means and standard deviations upon which Cattell's standard score system rests.

TABLE: 8.1.

N-STEN VALUES ON THE PRIMARY SOURCE TRAITS FOR SIX AGE GROUPS DERIVED FROM CATTELL'S AGE CURVES

	AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
MALES	17	4.50	5.00	4.00	5.00	6.00	4.40	4.40	5.00	6.50	4.25	5.25	6.50	5.50	5.75	4.25	6.25
	22	5.00	5.60	4.50	5.40	5.75	4.50	4.70	5.10	6.10	4.90	5.25	6.00	5.50	5.75	5.25	5.60
	30	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50	5.50
	40	5.50	5.00	5.50	5.10	5.00	5.60	5.25	5.75	5.40	5.50	5.60	5.25	5.50	5.75	6.00	5.30
	50	5.10	4.50	5.20	4.75	4.40	5.50	4.75	6.00	5.50	5.00	6.00	5.50	5.50	5.75	5.90	5.50
	60	4.60	4.00	4.50	4.20	3.50	5.25	3.50	6.10	6.40	4.00	8.25	6.50	5.50	5.75	5.80	5.80
FEMALES	17	5.00	5.00	3.60	3.80	6.00	4.50	4.00	7.60	6.45	4.25	6.00	7.50	5.50	5.00	4.25	6.80
	22	5.50	5.60	3.90	4.00	5.50	4.75	4.10	8.00	5.75	4.50	6.25	7.25	5.50	5.75	4.50	7.10
	30	6.00	5.50	4.40	3.80	4.75	5.00	4.40	8.10	5.10	5.00	6.40	7.00	5.50	6.00	5.00	6.80
	40	6.10	5.00	4.40	3.50	4.20	5.25	4.25	8.25	4.90	5.00	6.50	6.75	5.50	6.10	5.25	6.60
	50	5.90	4.50	4.00	3.10	3.90	5.20	4.00	8.00	5.00	4.75	7.00	6.90	5.50	5.75	5.25	6.50
	60	5.50	4.00	3.80	2.75	4.00	5.00	3.60	7.90	5.50	4.00	7.10	7.25	5.50	5.50	5.00	7.25
	Mean	5.35	4.92	4.43	4.24	4.88	5.02	4.35	6.78	5.68	4.72	6.25	6.47	5.50	5.72	5.20	6.23
	S.D.	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

TABLE: 8.2.

CONVERSION OF N-STEN AGE CURVE VALUES TO Z SCORES BASED ON TOTAL GROUP STATISTICS

	AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
MALES	17	$.\overline{43}$	.04	$.\overline{22}$	.38	.56	$.\overline{31}$	.03	$.\overline{89}$	.41	$.\overline{24}$	$.\overline{50}$	.02	0	.02	$.\overline{48}$	.01
	22	$.\overline{18}$	.34	.04	.58	.44	$.\overline{26}$	.18	$.\overline{84}$	.21	.09	$.\overline{50}$	$.\overline{24}$	0	.02	.03	$.\overline{32}$
	30	.08	.29	.54	.63	.31	.24	.58	$.\overline{64}$	$.\overline{09}$	.39	$.\overline{38}$	$.\overline{49}$	0	.02	.15	$.\overline{37}$
	40	.08	.04	.54	.43	.06	.29	.45	$.\overline{52}$	$.\overline{14}$	.39	$.\overline{33}$	$.\overline{61}$	0	.02	.40	$.\overline{47}$
	50	$.\overline{13}$	$.\overline{21}$	.39	.26	$.\overline{24}$	.24	.20	$.\overline{39}$	$.\overline{09}$	.14	$.\overline{13}$	$.\overline{49}$	0	.02	.35	$.\overline{37}$
	60	$.\overline{38}$	$.\overline{46}$	.04	$.\overline{02}$	$.\overline{69}$	.12	$.\overline{43}$	$.\overline{34}$	.36	$.\overline{36}$	1.00	.02	0	.02	.30	$.\overline{22}$
FEMALES	17	$.\overline{18}$	.04	$.\overline{42}$	$.\overline{22}$	.56	$.\overline{26}$	$.\overline{18}$	.41	.39	$.\overline{24}$	$.\overline{13}$	.52	0	$.\overline{36}$	$.\overline{48}$	.29
	22	.08	.34	$.\overline{27}$	$.\overline{12}$	.31	$.\overline{14}$	$.\overline{13}$	.61	.04	$.\overline{11}$	0	.39	0	.02	$.\overline{35}$	.44
	30	.33	.29	$.\overline{02}$	$.\overline{22}$	$.\overline{07}$	$.\overline{10}$	.03	.66	$.\overline{29}$	.14	.08	.27	0	.14	$.\overline{10}$	.29
	40	.38	.04	$.\overline{02}$	$.\overline{37}$	$.\overline{34}$	.03	$.\overline{05}$	.74	$.\overline{39}$	.14	.13	.14	0	.19	.03	.19
	50	.28	$.\overline{21}$	$.\overline{22}$	$.\overline{57}$	$.\overline{49}$	0	$.\overline{18}$	.61	$.\overline{34}$	.02	.38	.22	0	.02	.03	.14
	60	.08	$.\overline{46}$	$.\overline{32}$	$.\overline{75}$	$.\overline{44}$	$.\overline{10}$	$.\overline{38}$	.56	$.\overline{09}$	$.\overline{36}$	.43	.39	0	$.\overline{11}$	$.\overline{10}$	.51
	Mean	5.35	4.92	4.43	4.24	4.88	5.02	4.35	6.78	5.68	4.72	6.25	6.47	5.50	5.72	5.20	6.23
	S.D.	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Accordingly, a grid was prepared to facilitate the taking of readings in n-sten units from Cattell's (1972) figures at the age points of 17, 22, 30, 40, 50 and 60 years. These data were recorded for males and females separately, treated as raw scores and then converted to total group standard score units with a mean of 0 and a standard deviation of 1 (z scores). It was these values (Tables 8.1. and 8.2.) which were plotted on the graphs contained in Figures 8.2. to 8.17. (blue lines for males and red for females).

In a similar fashion the subjects of this study were grouped into one of seven age cohorts with mean ages of 17, 22, 30, 40, 50, 60 and 68 years. Raw score means and standard deviations were then computed for each factor and age group by sex by 16PF form (A, B and A+B). The 16PF Form A+B data for each sex were then converted to z score units based on the total group (male + female) means and standard deviation for each primary source trait (Appendix 8). Figures 8.2. to 8.17. contain the results of plotting out these statistics in graphical form.

This scaling procedure allows comparisons to be made between those personality differences predicted by Cattell and the results obtained for the samples of male ($N \simeq 1000$) and female ($N \simeq 1000$) subjects in this study. In addition, comparisons are now possible across the two questionnaire forms as well as the different primary source traits.

The product moment correlation coefficients representing the linear association between the primary source traits and the chronological age of the respondents in the study are represented in Table 8.3. Statistically significant linear negative trends are discernible on Factors B, E, F, L, Q1 and Q4, whilst Factors G, N, Q2 and Q3 show

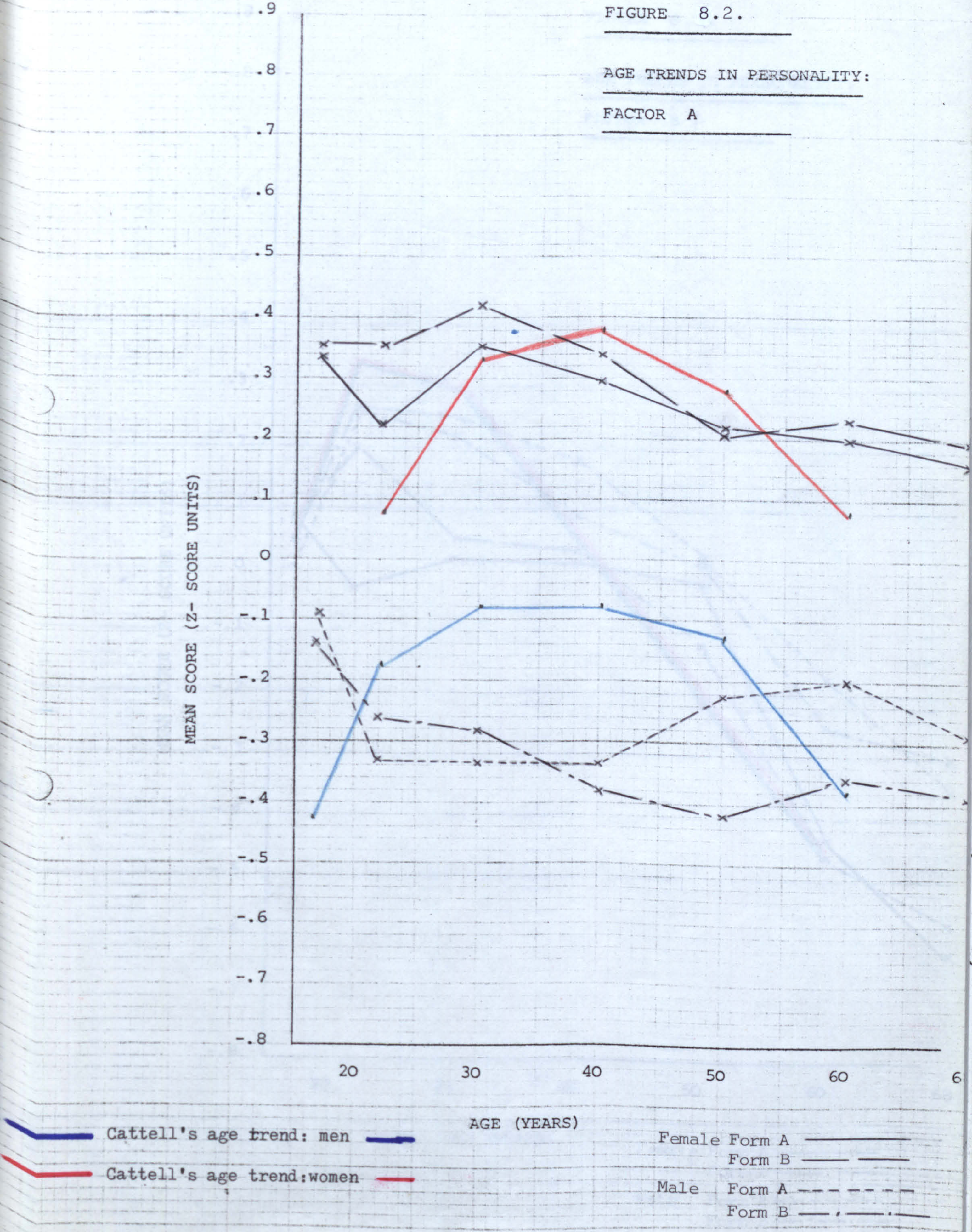


FIGURE 8.2.
AGE TRENDS IN PERSONALITY:
FACTOR A
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
MEAN SCORE (Z- SCORE UNITS)
20
30
40
50
60
AGE (YEARS)
Cattell's age trend: men
Cattell's age trend: women
Female Form A
Form B
Male Form A
Form B

FIGURE 8.3.

AGE TRENDS IN PERSONALITY:

FACTOR B

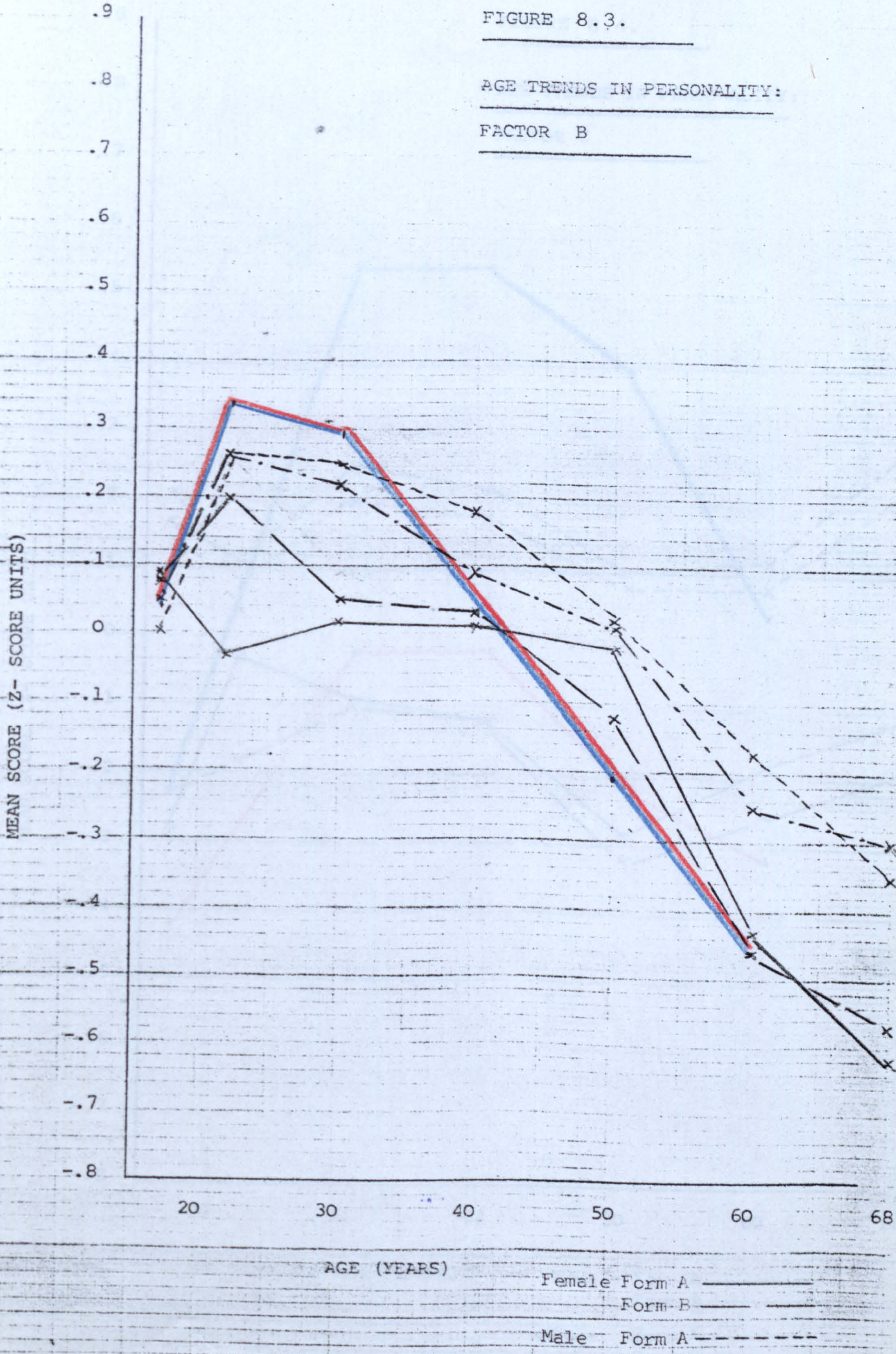
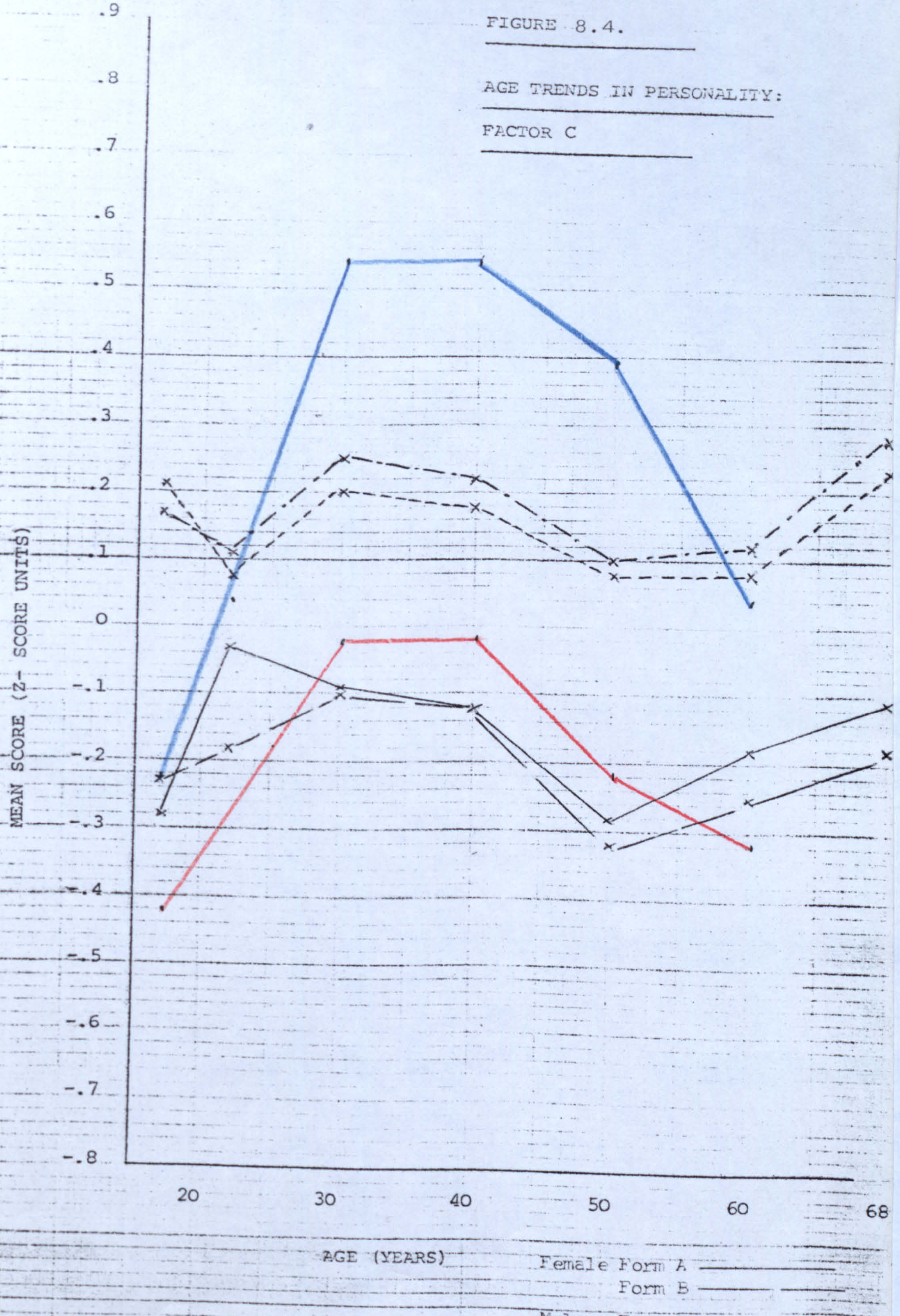


FIGURE 8.4.

AGE TRENDS IN PERSONALITY:

FACTOR C



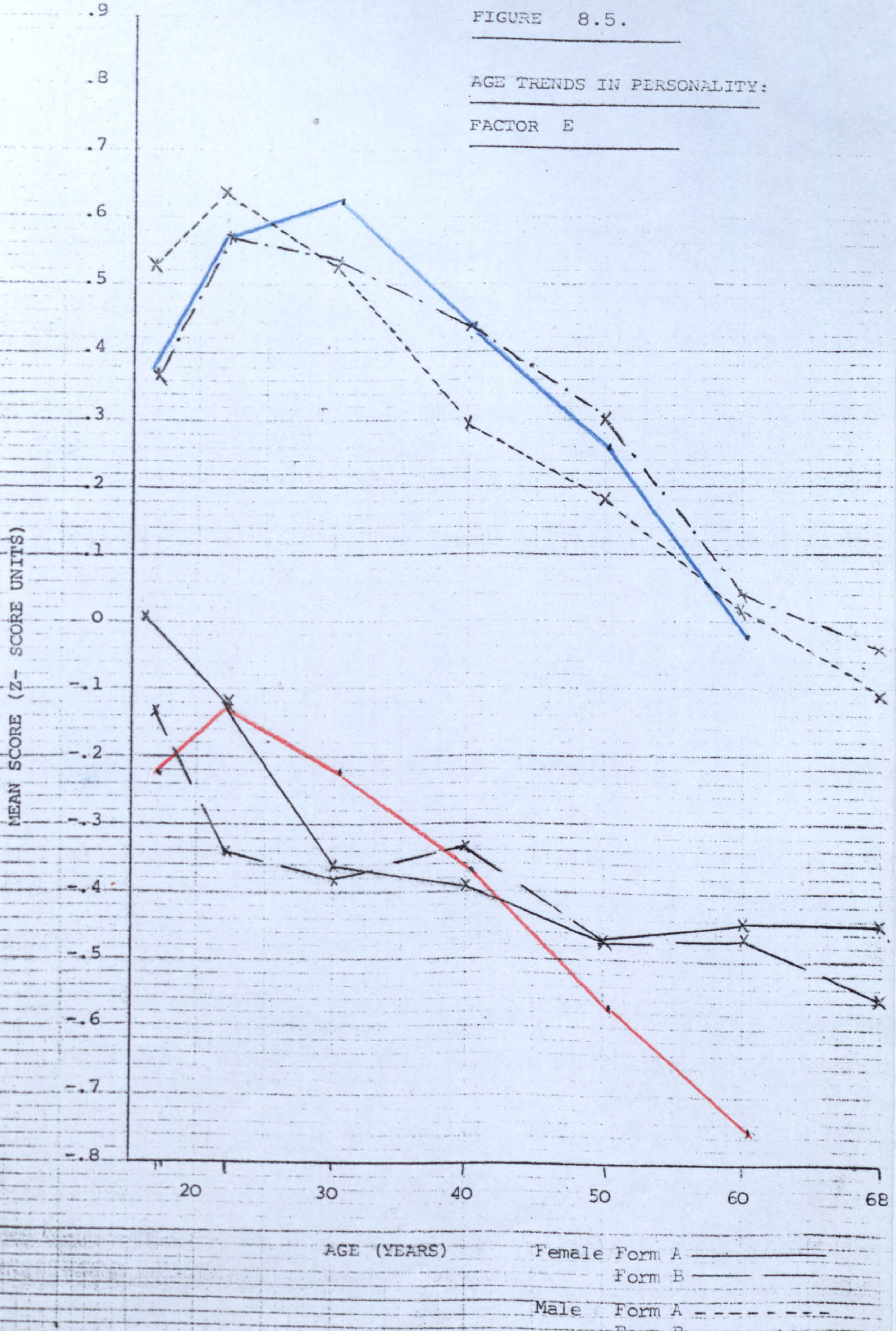


FIGURE 8.5.
AGE TRENDS IN PERSONALITY:
FACTOR E
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

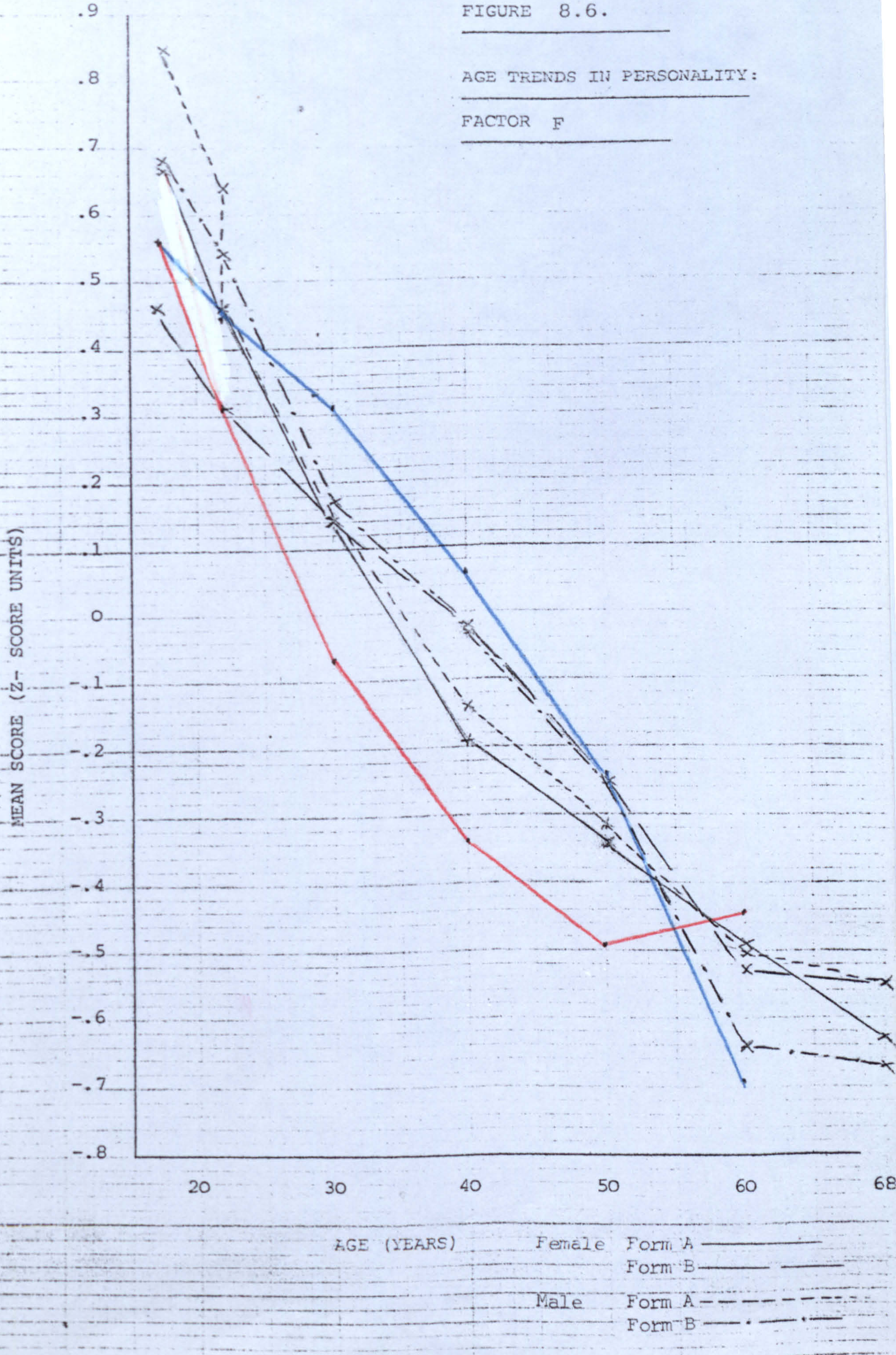


FIGURE 8.6.

AGE TRENDS IN PERSONALITY:

FACTOR F

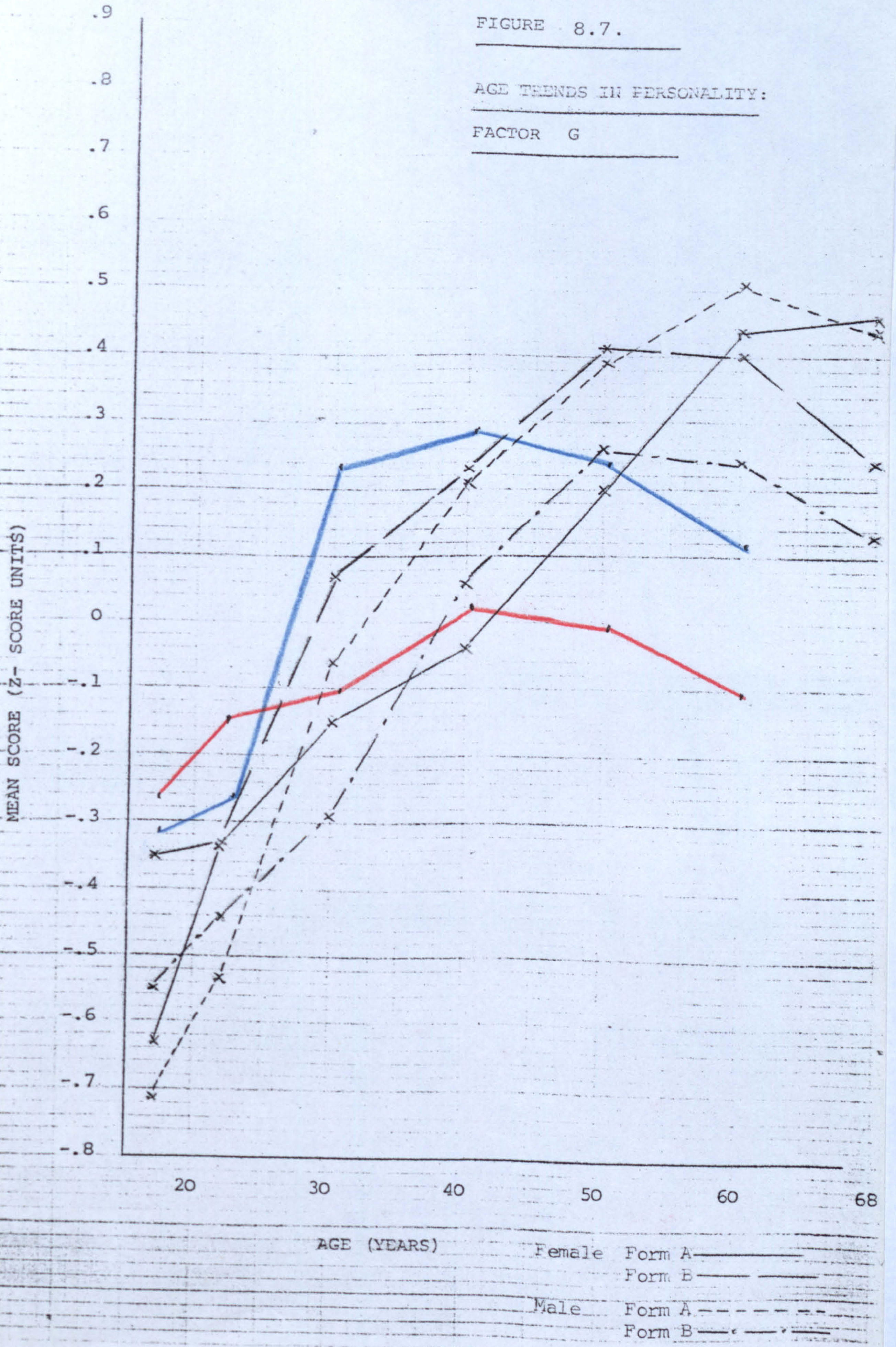
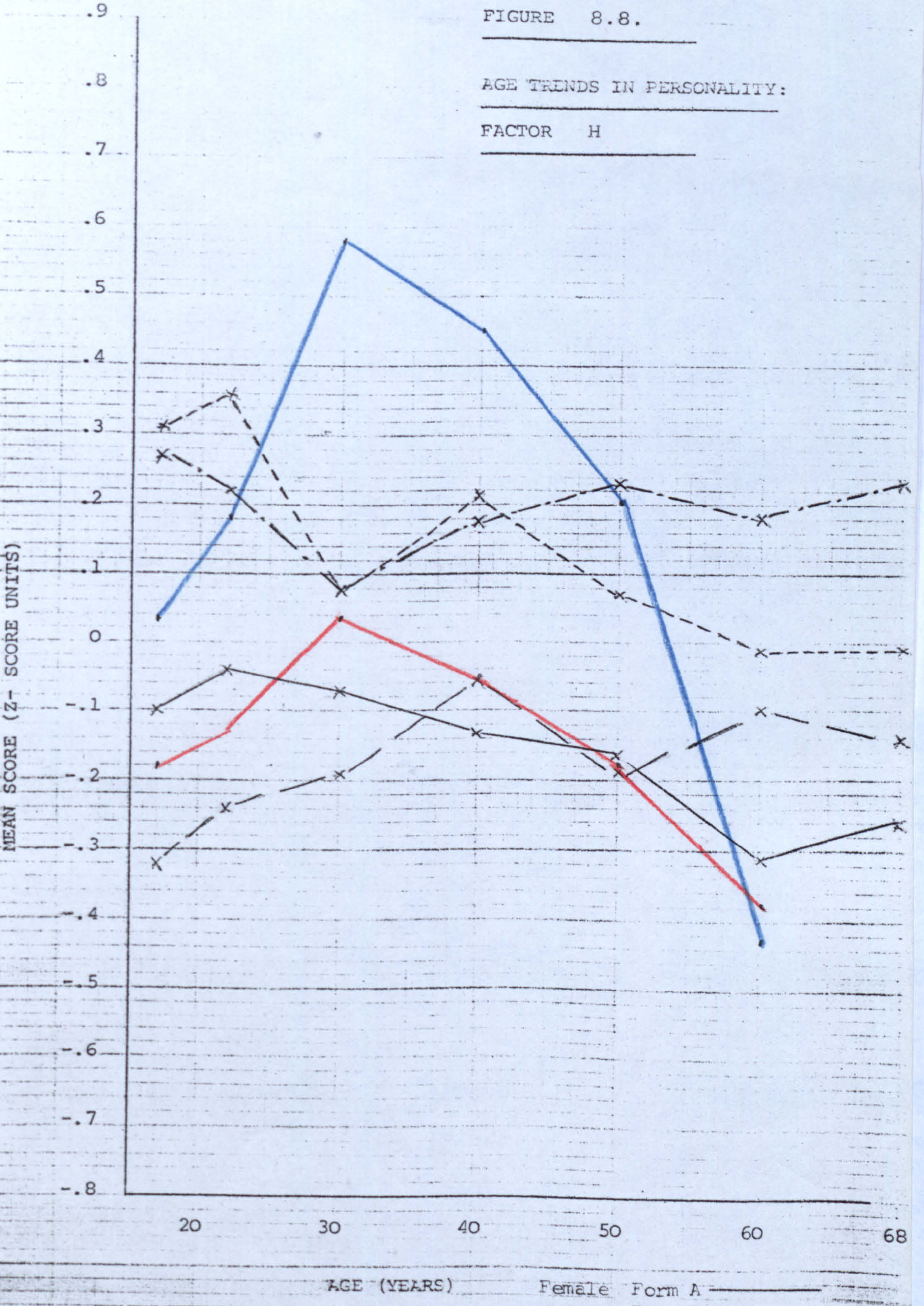


FIGURE 8.7.
AGE TRENDS IN PERSONALITY:
FACTOR G
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

FIGURE 8.8.

AGE TRENDS IN PERSONALITY:

FACTOR H



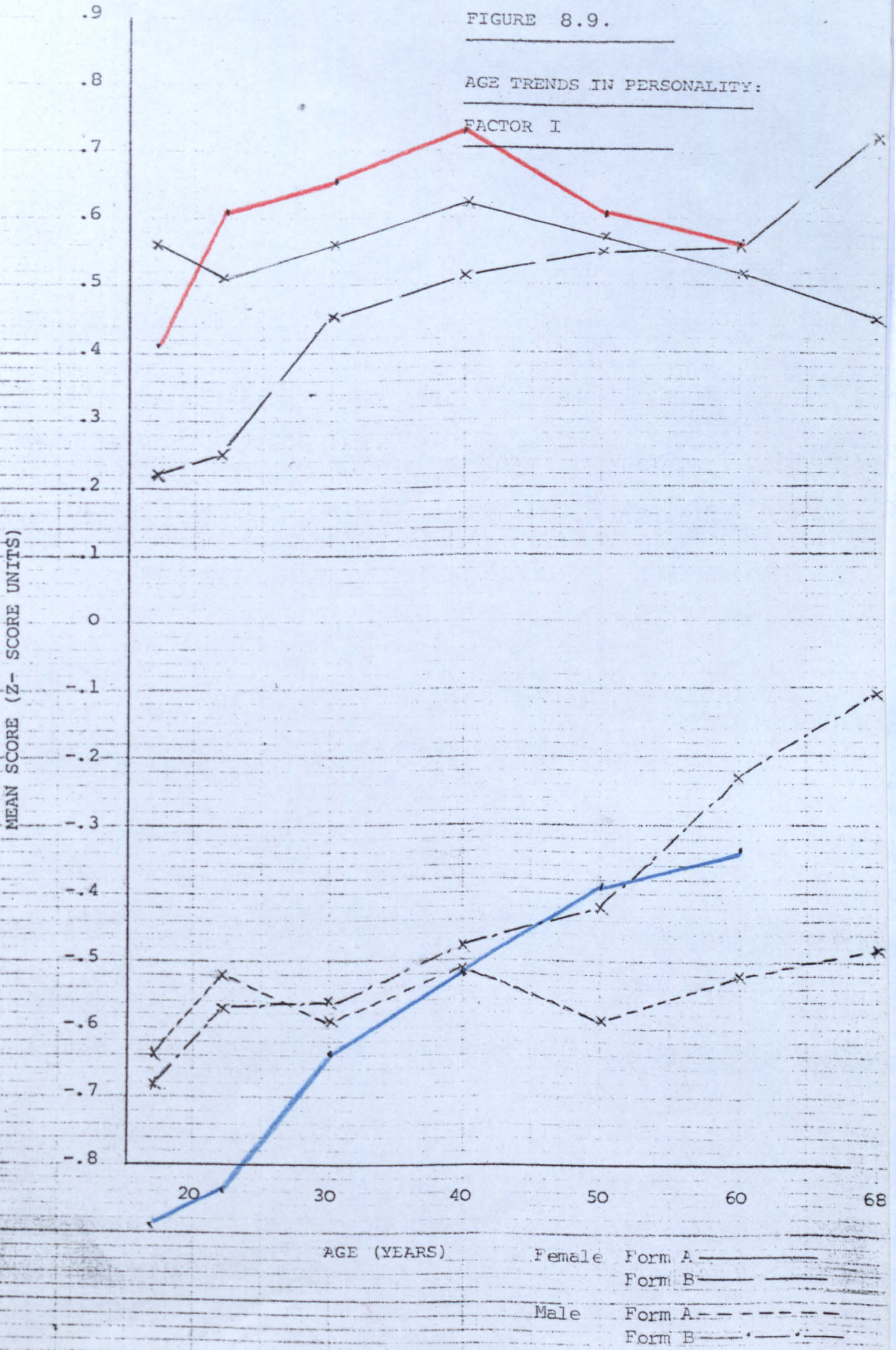


FIGURE 8.9.
AGE TRENDS IN PERSONALITY:
FACTOR I
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

FIGURE 8.10.

AGE TRENDS IN PERSONALITY:

FACTOR L

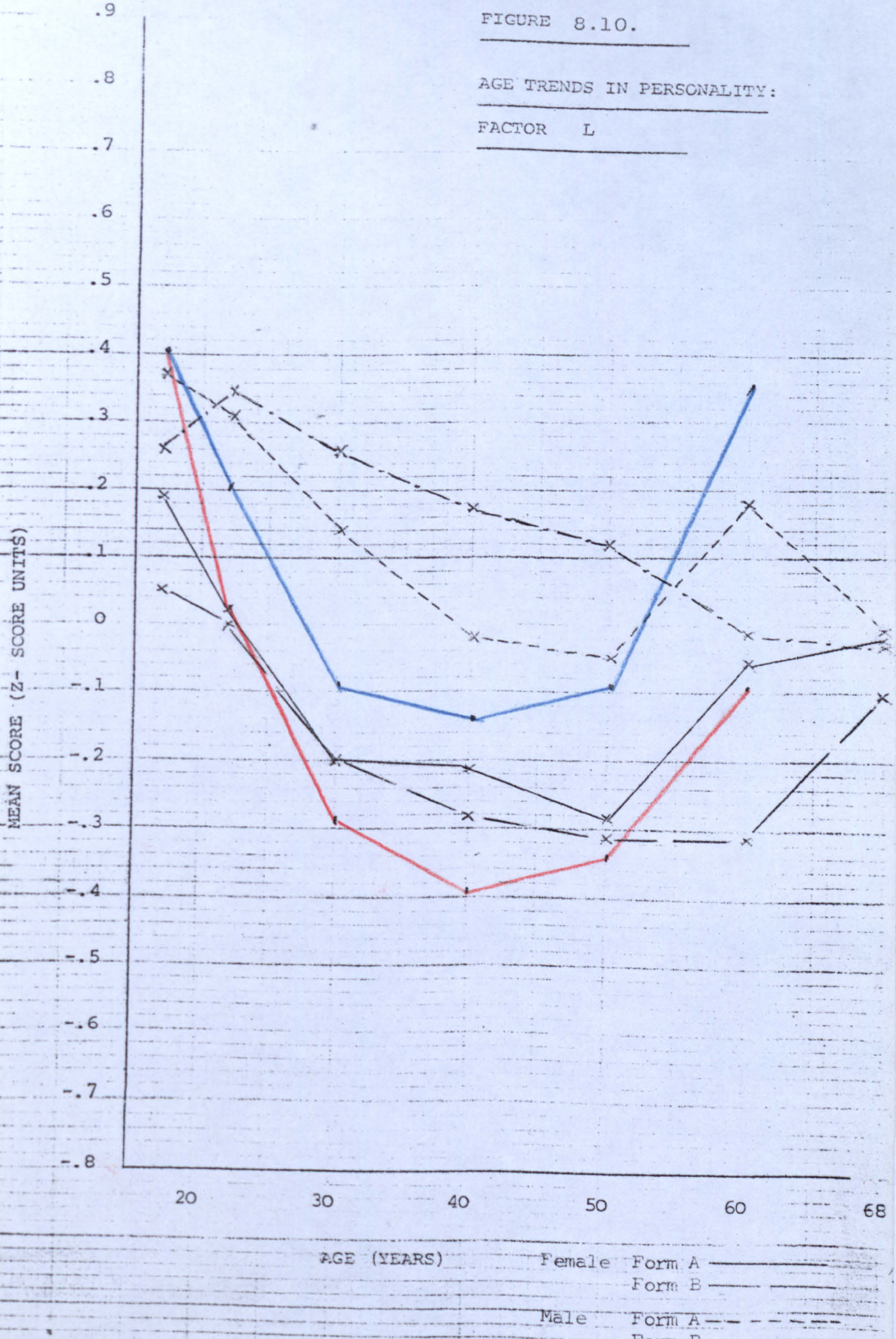
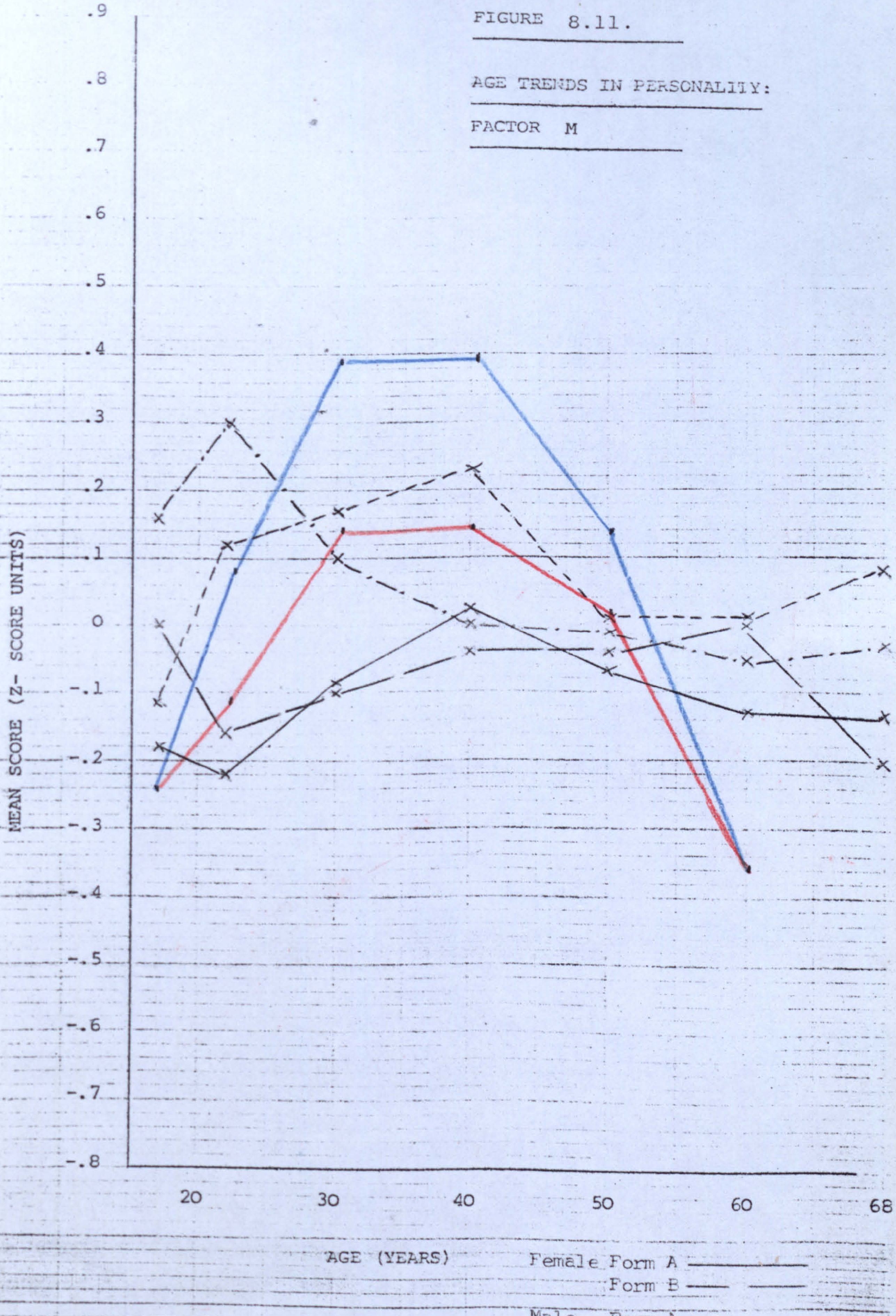


FIGURE 8.11.

AGE TRENDS IN PERSONALITY:

FACTOR M



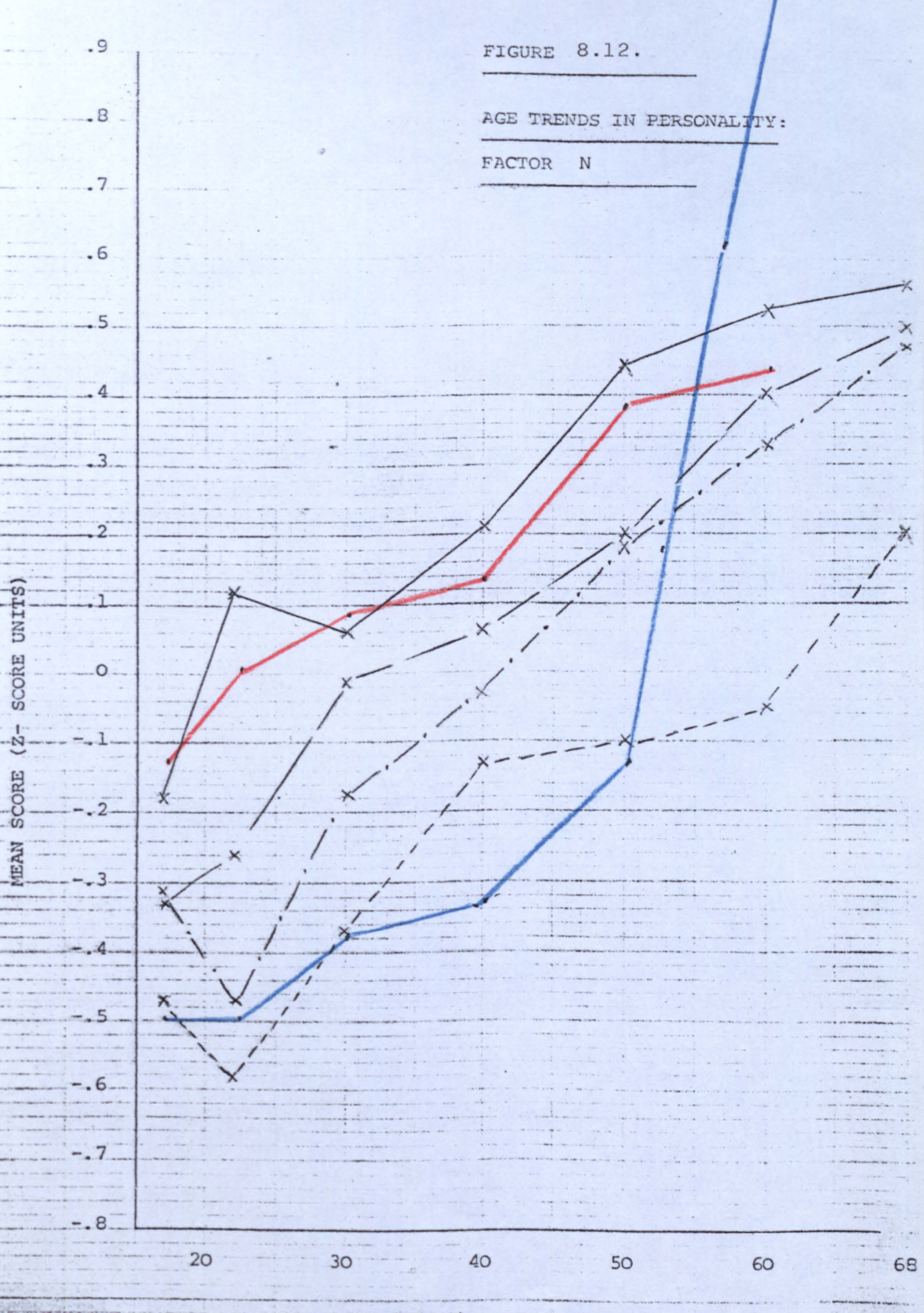


FIGURE 8.12.
AGE TRENDS IN PERSONALITY:
FACTOR N
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

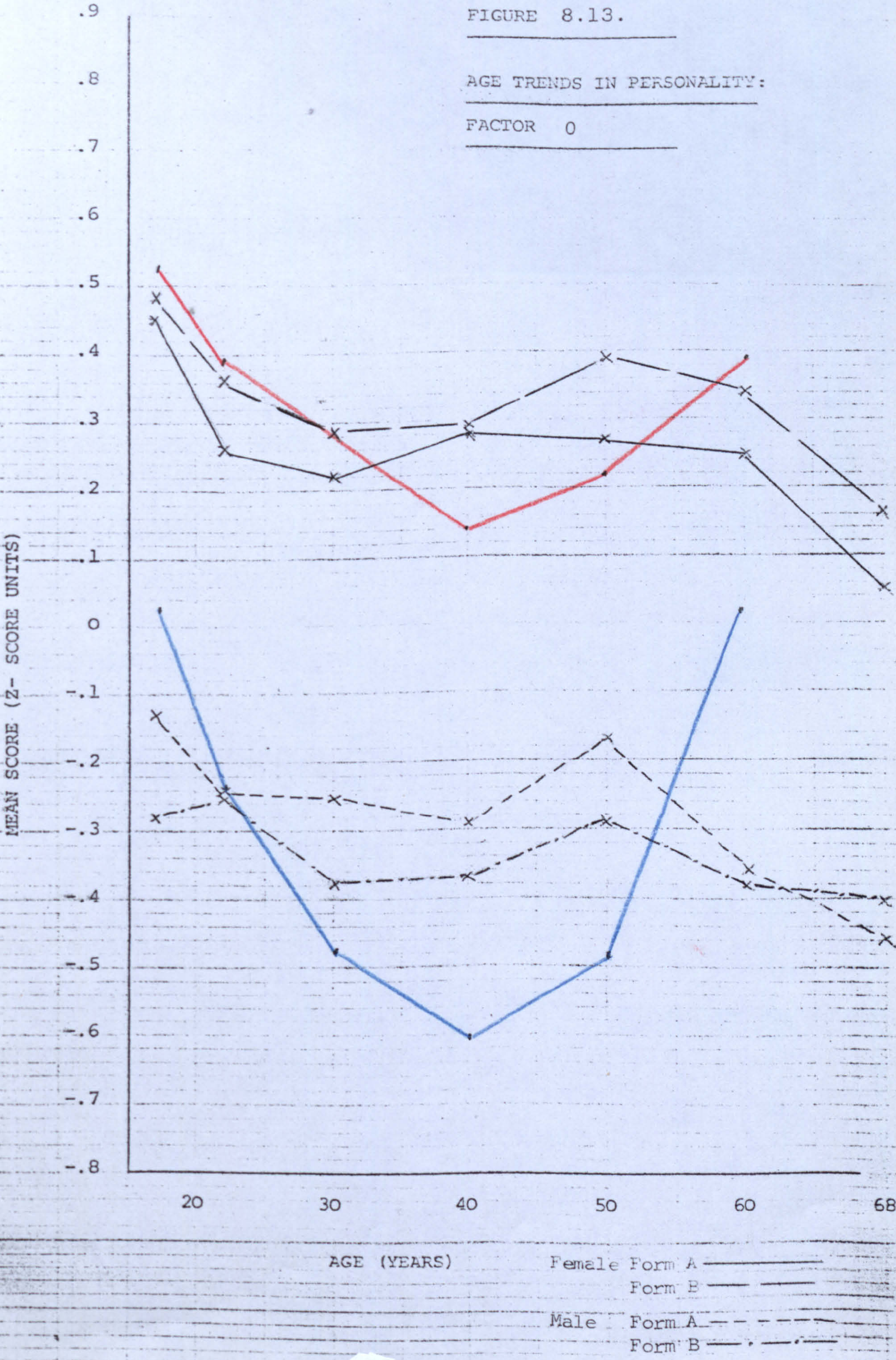
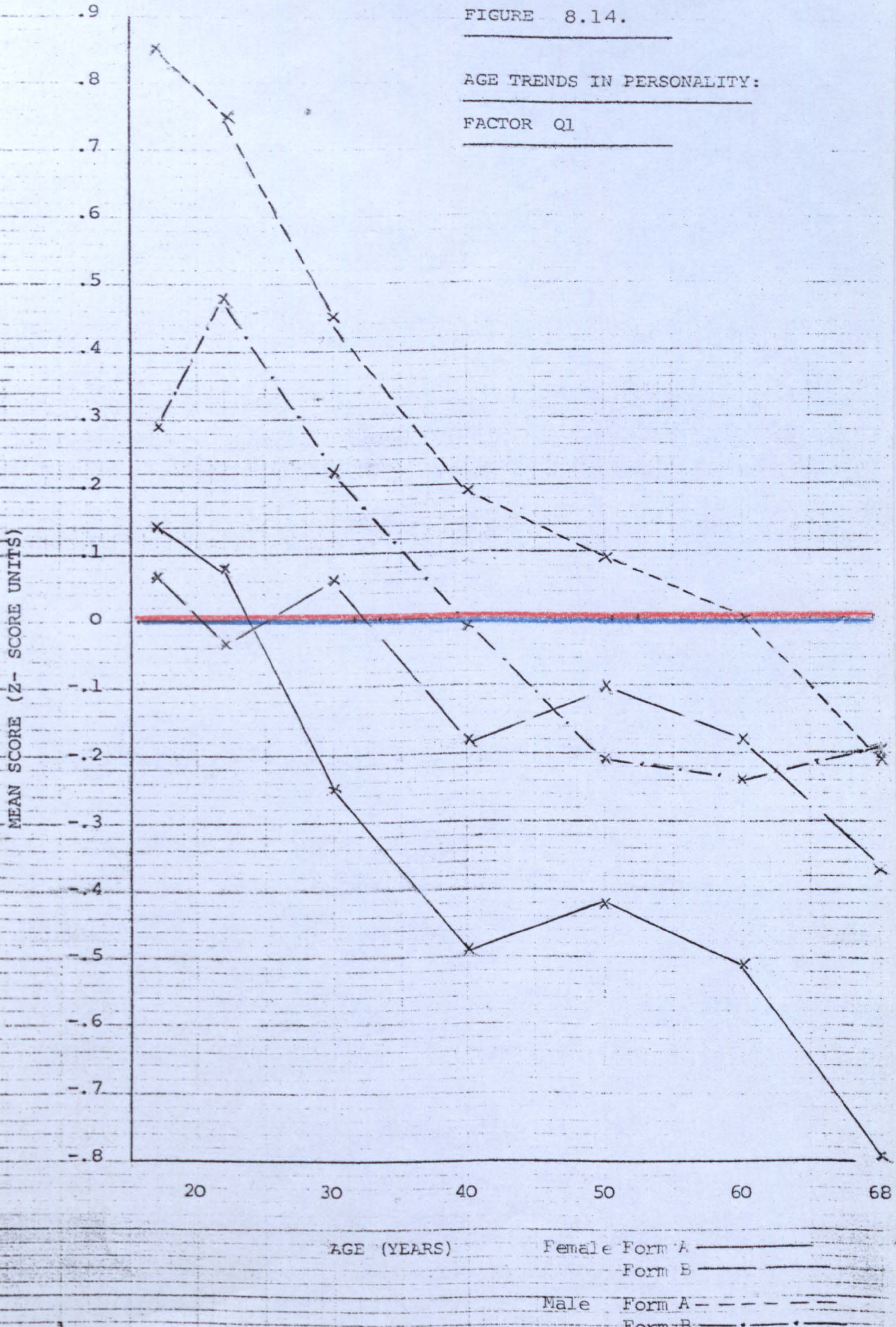


FIGURE 8.13.
AGE TRENDS IN PERSONALITY:
FACTOR O
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

FIGURE 8.14.

AGE TRENDS IN PERSONALITY:

FACTOR Q1



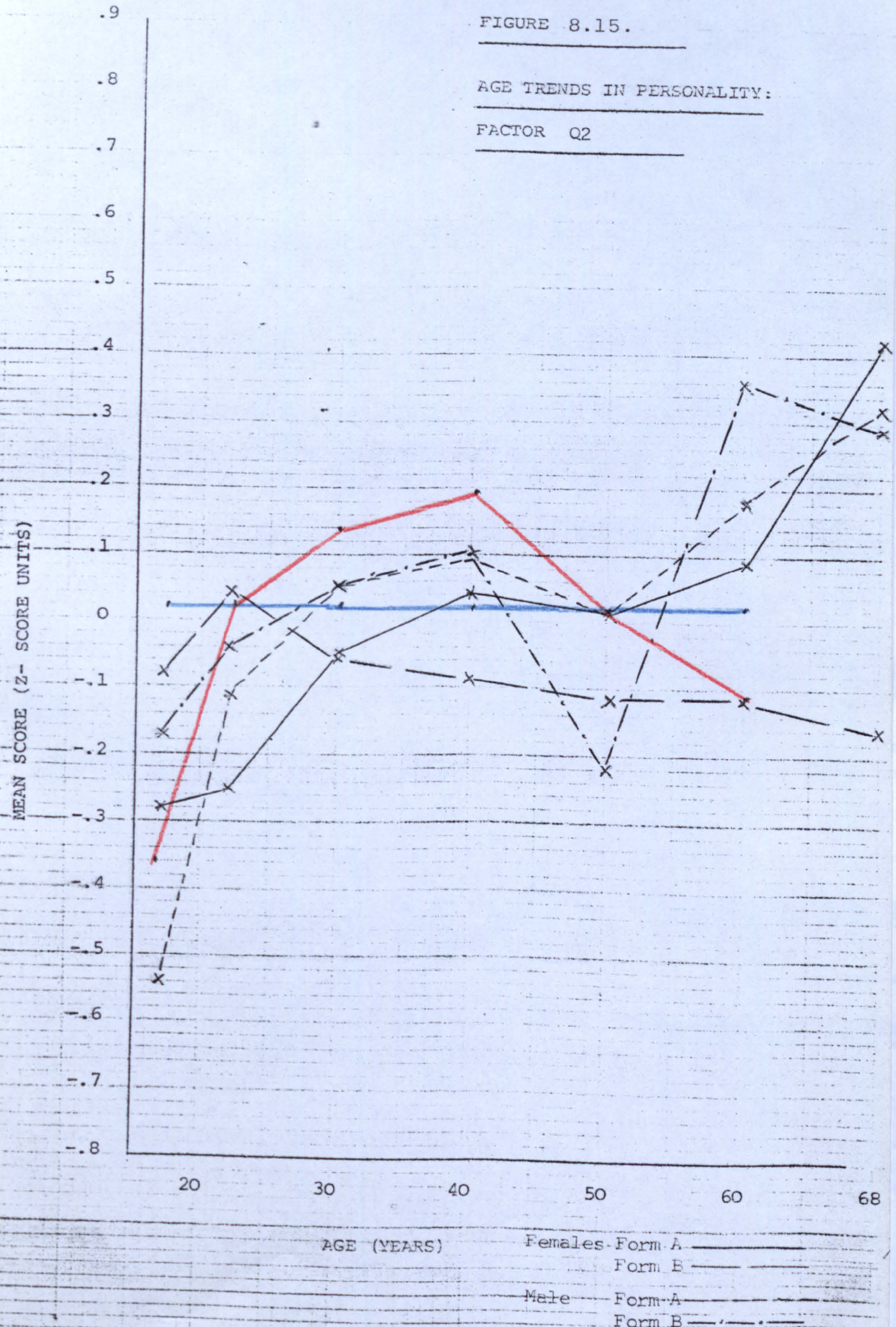
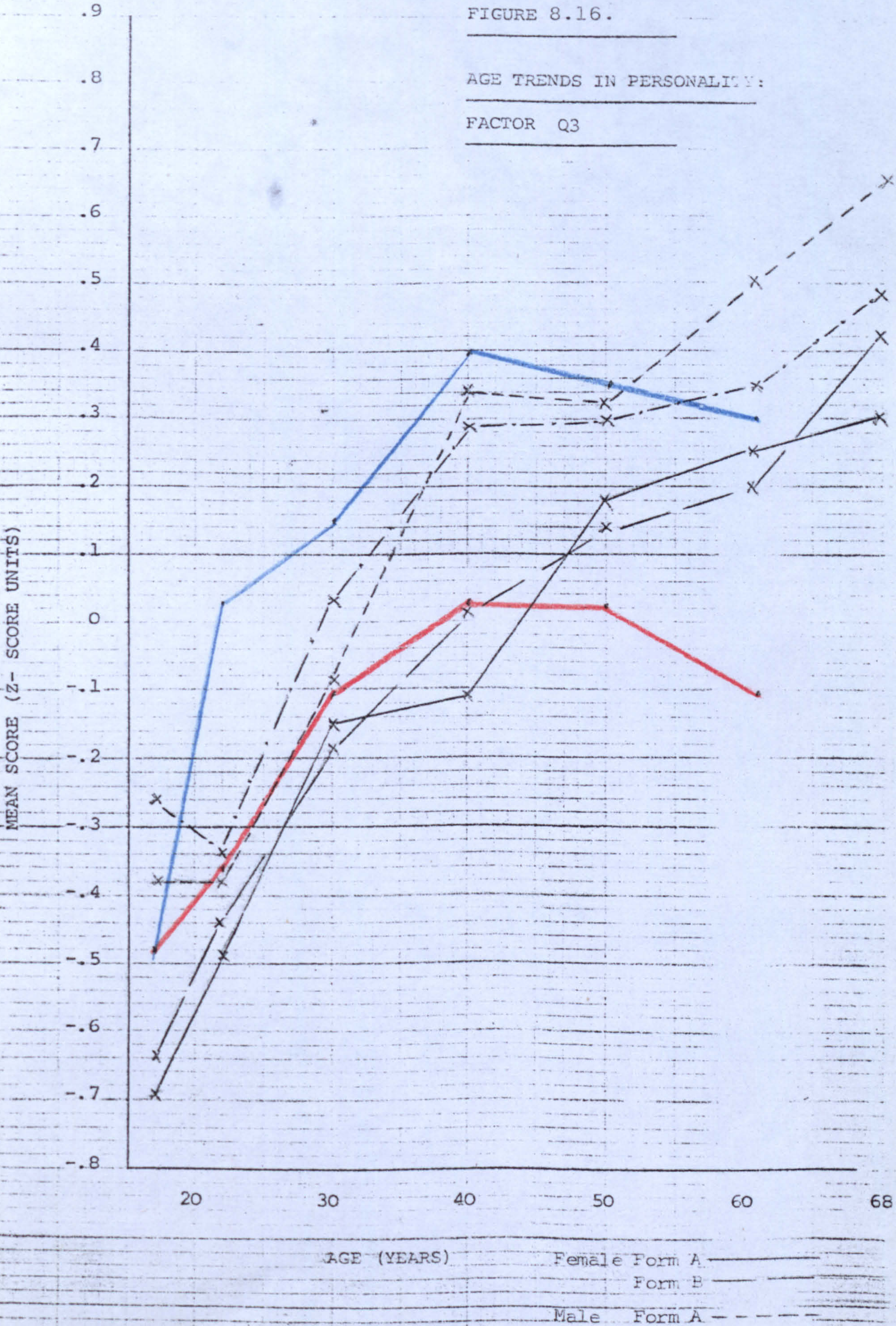


FIGURE 8.15.
AGE TRENDS IN PERSONALITY:
FACTOR Q2
MEAN SCORE (Z- SCORE UNITS)
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
20
30
40
50
60
68
AGE (YEARS)
Females Form A
Form B
Male Form A
Form B

FIGURE 8.16.

AGE TRENDS IN PERSONALITY:

FACTOR Q3



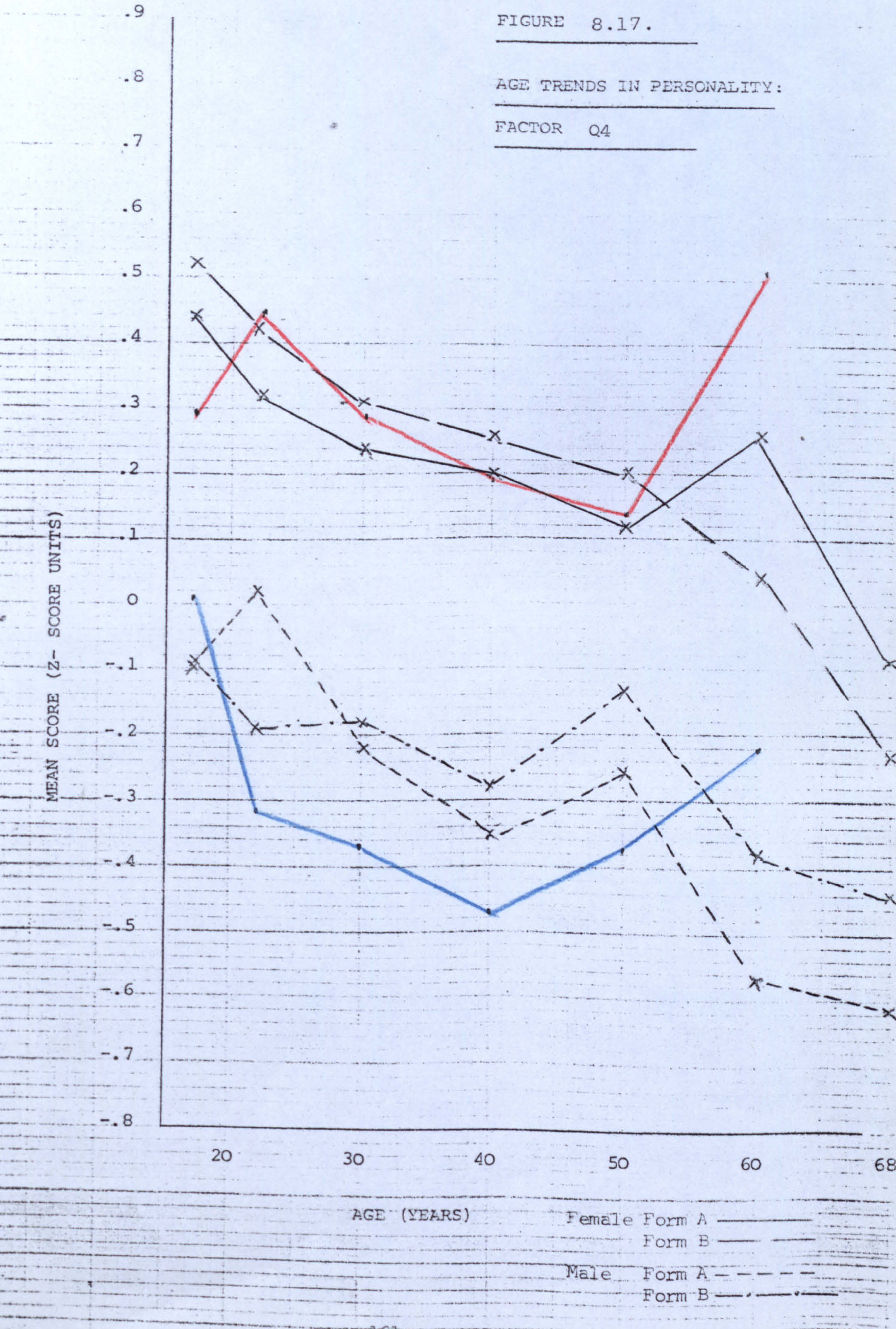


FIGURE 8.17.
AGE TRENDS IN PERSONALITY:
FACTOR Q4
.9
.8
.7
.6
.5
.4
.3
.2
.1
0
-.1
-.2
-.3
-.4
-.5
-.6
-.7
-.8
MEAN SCORE (Z- SCORE UNITS)
20
30
40
50
60
68
AGE (YEARS)
Female Form A
Form B
Male Form A
Form B

TABLE: 8.3.

THE SIXTEEN PERSONALITY QUESTIONNAIRE
CORRELATIONS BETWEEN AGE AND FIRST ORDER FACTORS

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
MALE (N=833)																
FORM A	-.012	-.136	-.015	-.261	-.418	.357	-.102	.045	-.096	-.001	.256	-.065	-.333	.197	.352	-.088
FORM B	-.053	-.164	-.007	-.178	-.419	.233	.007	.169	-.132	-.101	.264	-.034	-.228	.103	.243	-.179
FORMS A+B	-.040	-.177	-.012	-.251	-.460	.350	-.050	.124	-.139	-.069	.331	-.056	-.360	.179	.338	-.146
FEMALE (N= 717)																
FORM A	-.025	-.150	-.002	-.166	-.404	.372	-.069	-.039	-.083	.017	.229	-.070	-.296	.127	.319	-.140
FORM B	-.063	-.199	-.044	-.077	-.358	.256	.035	.150	-.080	-.039	.244	-.042	-.133	-.001	.311	-.156
FORMS A+B	-.053	-.205	-.027	-.143	.423	.373	-.016	.070	-.102	-.014	.295	-.062	-.277	.079	.369	-.166
TOTAL (N=1550)																
FORM A	-.045	-.132	.006	-.177	-.410	.365	-.073	-.046	-.078	.018	.220	-.092	-.272	.172	.345	-.129
FORM B	-.086	-.174	-.005	-.090	-.392	.232	.037	.097	-.092	-.068	.251	-.069	-.178	.063	.284	-.188
FORMS A+B	-.077	-.180	.000	-.152	-.443	.355	-.018	.026	-.104	-.033	.296	-.089	-.289	.141	.360	-.174

Coefficients over .07 are significant at the 5% level or beyond
.10 are significant at the 1% level or beyond

TABLE: 8.4.

ETA VALUES (n) REGRESSING THE PRIMARY SOURCE TRAITS ON AGE

Females: Forms A + B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
eta (n)	.10	.24	.09	.17	.41	.36	.04	.11	.17	.07	.29	.10	.26	.12	.37	.19
Pearson Product Moment Coefficient (r)	-0.05	-0.21	-0.03	-0.14	.42	.37	-0.02	.07	-0.10	-0.01	.30	-0.06	-0.28	.08	.37	-0.17
F value	1.51	-2.96	1.33	1.91	-1.99	-1.67	.23	1.45	3.87	.96	-1.28	1.29	-2.31	1.62	0	1.49
Significance p <	NS	.05	NS	NS	NS	NS	NS	NS	.01	NS	NS	NS	.05	NS	NS	NS

TABLE: 8.5.

ETA VALUES (n) REGRESSING THE PRIMARY SOURCE TRAITS ON AGE

Males: Forms A + B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
eta (n)	.07	.22	.07	.27	.47	.40	.08	.12	.15	.10	.34	.07	.37	.22	.36	.15
Pearson Product Moment Coefficient (r)	-0.04	-0.18	-0.01	-0.25	-0.46	.35	-0.05	.12	-0.14	-0.07	.33	-0.06	-0.36	.18	.34	-0.15
F Value	.66	3.35	.96	2.23	2.38	8.90	.78	0	.59	1.02	1.51	.26	1.68	3.35	3.20	0
Significance $p <$	NS	.01	NS	.05	.05	.01	NS	NS	NS	NS	NS	NS	NS	.01	.01	NS

significant positive relationships. The remaining six primary source traits (A, C, H, I, M and O) show no clear linear pattern.

In order to test the hypothesis that the regression of personality on age is linear, eta coefficients were calculated on the primary source trait means and standard deviations, classified by age and contained in the appendix.

The eta coefficients representing the regression of personality on age for Forms A+B of the 16PF are contained in Table8.4.for females and Table8.5.for males. F tests of the significance of departures from linearity were then undertaken between the etas and product moment coefficients and the results of this analysis are also presented in these tables.

In the female group Factors B (intelligence), L (suspicious) and Q1 (radicalism) show significant departures from linearity. In males, six traits have significant F values, these being B (intelligence), E (dominance), F (happy-go-lucky), G (superego strength), Q2 (self-sufficiency) and Q3 (social precision).

CATTELL'S QUADRATIC AGE CORRECTIONS

It was noted in an earlier section that in addition to graphical representations, Cattell (1972) has reported precise mathematical expressions of the relationship between age and the primary source traits. These are based on cross sectional data and are provided for the benefit of the researcher who wishes to compare the personality of individuals or groups which differ in age. These age 'corrections' which reflect both the endogeneous and exogeneous components are usually quadratic in form and of the type:-

$$Y_{adj} = Y - (Y' - Y'_s)$$

$$= Y - b_1(X - X_s) - b_2(X^2 - X_s^2)$$

where X = age

Y = observed score

If the primary source traits represent the skeleton, then these age expressions are part of the flesh of Cattell's theory. In his earlier work, 1940-1960, Cattell was primarily concerned with the identification or 'discovery' of the source traits. Although considerable effort has been spent in defending and extending the system, since those dates Cattell has been concerned to provide a meaningful contextual explanation of his traits. Indeed, it is only reasonable to expect that once a theorist has made claim to certain constructs, he will seek to define their nature vis a vis external realities.

But in Cattell's case this need was more acute because he was particularly vulnerable to the charge that his work lacked clinical impact or, in more extreme terms, that his theories were nothing more than matrix algebra in search of meaning.

Any mathematical expression representing the relationship between age and personality will contain some degree of error. Whilst we acknowledge the existence of such error, these expressions are constructed with the aim of reducing the common variance between a personality variable and age. One expects that such formulae produce results which at least show a lower correlation between age and personality than was the case before they were applied.

RESULTS ON CATTELL'S QUADRATIC AGE CORRECTIONS

The descriptive statistics (Forms A + B) for the male and female adult groups and for each age cohort were corrected by the formulae provided by Cattell (1972). These data are contained in Tables 8.6. and 8.7. respectively. Following these calculations, eta coefficients were computed (Tables 8.8. and 8.9.).

In the male group the two factors of F and N show significantly lower eta coefficients after application of Cattell's age correction weights. Factors B, E, G, I, Q1 and Q2 show little difference between the two sets of coefficients. The remaining eight factors show etas which are in fact higher for the age 'corrected' scores; these being Factors A, C, H, L, M, O, Q3 and Q4. Most of these discrepancies are not only statistically significant but very large; the most extreme example being Factor O (age uncorrected eta = .07, age corrected eta by Cattell's formula = .78).

Turning to the female analysis, Factors F and N again showed significantly lower eta coefficients after application of Cattell's weights. Differences in etas were small for Factors B, E, G, H, I, L, Q1 and Q3. The primary source traits of A, C, M, O, Q2 and Q4 all showed significantly higher eta coefficients on the age corrected data.

CATTELL'S AGE CORRECTIONS: DISCUSSION

The results of the comparison of eta coefficients between corrected and uncorrected primary source traits and age, show a fair degree of consistency between males and females. In both groups Factors F (happy-go-lucky) and N (shrewdness) showed a significant decrease in correlation after application of Cattell's weights, whilst B (intelligence), E (dominance), G (superego strength), I (tender-minded) and Q1 (radicalism) demonstrated no appreciable differences.

Those source traits with the most marked increase of correlation with age were Factors A (outgoing), C (emotional stability), M (imagination), O (guilt-proneness) and Q4 (tension). In fact eta coefficients on the corrected data were so high in certain cases, especially with males, as to make one wonder at the very origin of Cattell's age expressions. In the case of C, O and Q4 for males, the 'corrected' data seem to bear little or no relationship to Cattell's hypothesised trend lines reproduced in figures 1 to 16 and so we must conclude that errors of mathematics are at work here.

TABLE: 8.6.

16PF AGE TRENDS IN PERSONALITY FORM A + B MALES AGE CORRECTED SCORES

AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
15-24	20.25	15.02	34.07	26.82	31.12	23.38	31.65	18.09	20.92	25.64	19.20	16.64	21.57	18.85	23.94	22.37
25-34	17.72	15.32	31.51	26.69	27.79	23.64	26.47	17.15	17.90	23.54	20.00	19.33	19.86	20.55	23.94	24.05
35-44	16.78	15.03	30.70	26.37	27.07	24.97	27.47	16.79	17.76	22.88	20.45	19.29	18.20	20.92	25.49	23.25
45-54	18.28	14.51	32.22	27.27	27.65	26.37	29.97	15.84	16.40	23.39	20.66	16.73	17.17	19.43	25.97	21.81
55-64	21.20	13.52	37.61	28.26	26.99	28.21	34.21	15.98	14.19	26.50	20.11	8.38	16.78	22.05	28.99	13.49
65+	24.13	13.17	45.42	30.88	28.94	30.00	41.00	16.17	10.09	30.94	19.79	.23	16.40	22.27	32.53	6.73

TABLE: 8.7.

16PF AGE TRENDS IN PERSONALITY FORM A + B FEMALES AGE CORRECTED SCORES

AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
15-24	24.60	14.68	30.55	19.75	27.00	23.30	23.14	24.67	14.23	23.25	21.47	23.46	18.13	20.20	21.64	28.37
25-34	22.49	14.56	28.78	18.76	27.46	24.55	23.81	25.15	15.35	21.75	21.81	24.76	16.94	19.77	22.90	28.96
35-44	21.30	14.51	28.25	19.75	27.47	24.80	24.14	25.34	16.06	22.11	21.93	25.58	15.35	19.45	23.12	28.87
45-54	21.71	14.12	28.37	20.00	26.79	26.15	23.22	25.31	15.45	23.04	22.52	24.82	16.05	19.69	24.59	27.25
55-64	24.61	12.59	32.72	21.31	24.76	27.40	22.99	25.40	13.92	25.14	22.77	20.97	15.32	20.77	25.64	24.27
65+	28.07	12.06	37.31	21.81	23.84	27.69	23.10	26.32	11.92	26.94	22.84	15.78	14.08	24.28	27.36	18.30

TABLE 8.8.

ETA VALUES (η) FOR AGE CORRECTED SCORES

FORM A + B FEMALES

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Age Corrected eta (η)	.37	.25	.36	.24	.14	.28	.04	.09	.22	.25	.11	.33	.27	.42	.31	.36
Age Uncorrected eta	.10	.24	.09	.17	.41	.36	.04	.11	.17	.07	.29	.10	.26	.12	.37	.19
Difference	.27	.01	.27	.07	-.27	-.08	0	-.02	.05	.18	-.18	.23	.01	.30	-.06	.17

TABLE:8.9.

ETA VALUES (η) FOR AGE CORRECTED SCORES

FORM A + B MALES

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
Age Corrected eta (η)	.38	.21	.62	.18	.19	.40	.42	.14	.64	.42	.11	.78	.41	.21	.48	.60
Age Uncorrected eta	.07	.22	.07	.27	.47	.40	.08	.12	.15	.10	.34	.07	.37	.22	.36	.15
Difference	.31	-.01	.55	-.09	-.28	0	.34	.02	.49	.32	-.23	.71	.04	-.01	.12	.45

In summary, Cattell's age corrections had little appreciable effect on about half of his primary source traits. For the remaining factors they introduced biases which were far more extreme than those in the untreated data. It would seem that these corrections have indeed been poorly developed and should not be used until such time as new formulations can be researched.

In the interim, two possibilities are open to the researcher who wishes to take account of age differences between one or more groups of subjects. First, he may use the separate standard score norm tables prepared for each sex and age cohort contained in Appendix 6. Alternatively, it is possible to use the product moment coefficients in a conventional regression approach, which despite certain but usually small departures from linearity, is likely to be a more reliable method than Cattell's age correction formulae. In any event, there can be no doubt that the quadratic age expressions have produced anomalous results, even against Cattell's (1972) own graphical trend lines.

SUMMARY OF RESULTS

FACTOR A (OUTGOING)

Consistent very small negative correlations with age, although the majority are not statistically significant.

Eta was not significantly higher than the product moment coefficient - that is no evidence to suggest that a curvilinear relationship is a better fit to the data.

Only female Form B curve approximated the hypothesised increase to 30 with levelling off thereafter. Males on Form B showed a slight linear decline from 18 years as did females on Form A. Males Form A showed a decline up to 30 years and then slight but non-significant increase.

Generalised statement over form and sex seems to be a flat or perhaps very slight linear negative relationship.

Obviously sex differences are more important than age variation here - at every age significant differences remain with females seen as more outgoing than males.

FACTOR B (INTELLIGENCE)

There was a significant negative correlation between this primary source trait and age for both males and females. Tests of the departure of linearity of regression were also significant, the males showing a rise up to about 25 years of age, a levelling off until about 30 years and more rapid decline after 40 years. Females on the other hand showed a relatively shallow gradient up to about 50 years of age, when the decrease accelerates considerably.

In all the data are in rough agreement with Cattell's trend line, although the point of deflection appears somewhat later at 40-50 years and not at 30 years as postulated by Cattell.

FACTOR C (EMOTIONAL STABILITY)

This factor showed no significant linear trend in either males or females. There was some tendency for adults of both sexes of about 50 years of age to have lower scores on this factor, although the overall line demonstrated no significant curvilinear results. The data do not in fact show any real correspondence with Cattell's hypothesised differences in age; his curves being a marked exaggeration of the empirical results found here. From Figure 8.4. it can be observed that sex differences on this factor appear more important than age differences.

FACTOR E (ASSERTIVE)

This factor showed significant negative linear correlations with age in both groups. For the male sample there was a slight but statistically significant departure from linearity ($p < .05$).

Although Cattell's quadratic age correction formulae in fact had little effect in reducing the co-variation of age with this primary source trait, the visual impression from Figure 8.5.suggests that Cattell's graphical representation of age differences are relatively close to those discovered here. In males, there is an increase in means up to about 30 years of age, when there is a decline in assertiveness. Females show a similar pattern only the decline is somewhat earlier at 22 years.

FACTOR F (HAPPY-GO-LUCKY)

The trend in this trait is for a very pronounced negative correlation with age ($r \simeq .4$) for both sexes. We have already noted that this was one of only two factors where Cattell's age correction formulae significantly reduced the co-variance with age. The graphical plot of age cohort means shows a relatively close similarity with the trends postulated from Cattell's model and these data support the hypothesised direction of differences.

FACTOR G (SUPEREGO STRENGTH)

The strong positive correlation with age is clearly marked in the graphical plot of the 16PF means. This trend is strong in both males and females.

One explanation of this trend is of course a tendency for superego strength to increase as an individual ages. We more usually think of the process of socialisation and the development of superego strength as occupying the years from birth to adolescence. But here is evidence that perhaps the process continues considerably past these early years in fact throughout life up to some 70 years of age.

This fits in well with popular prejudice, ie. reckless expedient youth versus the conscientious moralism of the later years. In fact, this is probably one of the major discriminators of the younger versus the older personality. An alternative explanation of this phenomenon is that the younger individuals in this study have experienced a particular epoch where superego strength has in some way been eroded. They will certainly have lived their adolescence through the nineteen sixties' where there was a revolution in the attitudes and morals of society. And such changes in attitudes no doubt had more effect on the younger 15-45 than the older 50+ age groups.

The further possibility exists that the sampling method employed in this study was responsible for this trend, for example, that the young people in the sample were unusually low and the older people of particularly high superego strength. One sector of the community which was not tested for example, was prisoners who are no doubt low on this primary source trait. This explanation does not seem very likely however, there being no clear reason why such an unusual sample bias should have been introduced.

With regard to hypothesis, the evidence does support a pattern of a moderate but decelerating increase with age.

FACTOR H (SOCIALLY BOLD)

The results for this primary source trait, one of Cattell's major extraversion components, show a relatively flat pattern of differences across the six age cohorts. When Cattell's age differences are superimposed on these data, results for females are relatively close. However, the male curves are very dissimilar in shape, there being no evidence of the pronounced inverted U shape proposed by Cattell. This discrepancy was also noted in the section on quadratic corrections in that Cattell's formulae had little effect upon the female age differences whilst eta on the male group was considerably inflated after application of his weights. We must reject the hypothesis then of a positive relationship between the source trait and age.

FACTOR I (TENDER-MINDED)

The general trend of differences on this factor is slight,positive over age group, particularly in males. Cattell's postulated curves are in fact relatively closely related to our findings but he may tend to exaggerate sex differences somewhat. Nevertheless, the variance associated with the sex of the subject is very large. We have found some support, therefore, for the hypothesis of a low **positive** relationship between this primary source trait and age.

FACTOR L (SUSPICIOUS)

Cattell has postulated a U shape relationship between this factor and age in a study of cross-sectional design. More explicitly he suggests (1972) that L (suspicious) declines up to 40 years of age and then increases.

The data contained in Figure 9 show a slight decrease in scores for males over age with no significant departure from linearity. Females differences on the other hand did depart from the simple linear association, suggesting that scores decline until about 50 years of age where they begin to increase again. This was about the strongest non-linear trend in the personality data. The picture which emerges on this source trait is best described as a form of rotated "D", where differences between the sexes are relatively small at the age of 20 years, slowly decline in males and more rapidly fall in females thereafter, until approximately 60-68 years where the differences between the sexes are again relatively small.

The exact reasons for these findings are difficult to establish in a study like this. Perhaps marriage in females has a more marked effect on this personality variable than it does for males. It is possible, for example, that young single females tend to be more suspicious and hard to fool, that the level of this trait declines through and as a result of marriage and as the years of widowhood approach, begins to increase again as a natural defence mechanism.

Obviously explanations such as this remain speculative; this study was not principally designed to investigate such possibilities. However, we can say that Cattell's suggested U shaped relationship between this personality trait and age was supported in the case of females but not with the male group. Indeed, the overlap between age and the quadratic corrected scores in the case of males was very much higher than eta based on uncorrected scores.

FACTOR M (IMAGINATION)

Results on this source trait indicate relatively small differences across both age and sex groups. Product moment coefficients were generally non-significant as were statistical tests for the significance of departures from linearity.

Cattell's claim for an inverted U shape relationship was not supported by these data and his corrections merely increased the correlation between this variable and age.

As an additional observation, it is interesting that despite this trait's relatively high correlation with Factor B (intelligence), it does not demonstrate the characteristic sharp decline in performance at about 40 years, shown by many ability tests. It is not improbable, therefore, that this scale represents the overlap between the ability and personality domains; what some researchers have termed 'cognitive style' (Witkin 1970).

FACTOR N (SHREWDNESS)

This factor shows a moderately strong relationship with age with no significant departure from linearity. In all, Cattell's mathematical corrections were reasonably successful in reducing the common variance between this trait and age. We have evidence to support the hypothesis, therefore, of a positive association with age.

FACTOR O (APPREHENSION)

The overall trend is for no significant relationship between this primary source trait and age. Figure 8.13 is in fact similar to the data contained for Factor C above, ie. a relatively flat profile of age cohort mean scores with perhaps a slight rise at about 50 years in the direction of increased anxiety of which this trait is an important component. Again the effect of 'correcting' by the use of

Cattell's weights was to increase the correlation between age and this particular personality trait. In the case of males the weights for Factor O were so inappropriate as to produce a corrected eta value of .78; so high a result as to suggest some serious mathematical error in the equations.

In view of these results, we must reject our initial hypothesis of a fall in the personality trait of apprehension after adolescence followed by a slight increase after 40 years. It would seem that there is no clear linear or curvilinear association between age and this variable.

FACTOR Q1 (EXPERIMENTING)

This primary source trait intended to represent experimenting behaviour, appears to be very much like Eysenck's concept of radicalism-conservatism. (Eysenck 1969 , Wilson 1975.) It is rather curious in that it is the only factor where Cattell claims, and we have hypothesised, no significant relationship with age.

Our results suggest, however, that this factor is one of the most strongly negatively correlated traits with age, both in the male and female group. We must conclude, not unexpectedly perhaps, that older subjects in this study tended to be more conservative than younger subjects, especially if they were male. There was evidence of some curvilinearity in the relationship for females but not in the male group.

FACTOR Q2 (SELF-SUFFICIENT)

Cattell has postulated that this variable tends to be positively related to age for female subjects but to have no clear trend for males.

Thus the hypothesised differences give a contradiction of the data collected in this survey. Here we found that age was significantly, positively correlated with Q2 in males but only slightly, if at all, for female subjects. In males, tests of departure from linearity were in fact significant.

The general trend is for scores to increase on self-sufficiency after adolescence until about 20-25 years where they level off until about 55 years. From that age onwards up to 68 years, the group means tend to increase.

FACTOR Q3 (SOCIALLY PRECISE)

The Q3 source trait, representing controlled, socially precise behaviour, was hypothesised to have a strong, positive association with age, levelling off in the middle years of life.

The results represented in Figure 15, show a relatively strong linear relationship with age ($r \simeq .35$) but little evidence of any levelling off at 40 years. It is mainly this discrepancy in middle age which is responsible for the male age 'corrected' eta to be higher than eta calculated on the original data.

FACTOR Q4 (TENSION)

The hypothesised slight negative relationship of Factor Q4 with age was in fact found in these data. However, Cattell's quadratic age corrections again introduced more systematic bias into the data than need existed in the first instance.

In the case of females, it was Cattell's postulated increase after 50 years of age, not present in these data, which was mainly responsible for this distortion. Differences between the sexes are quite evident from Figure 16, as is some slight rise in tension level around 50 years of age. Overall, this source trait shows a somewhat higher correlation with age than the two other main anxiety factors of C and O.

In all, the correspondence between Cattell's graphical descriptions and the age differences investigated in this study is not impressive (See Table 2.1). Whilst it is true that five of the primary source traits (B, F, G, I, M and Q2) show reasonably similar age differences to those hypothesised, the remaining ten factors vary considerably, particularly Ql (radicalism) and M (imagination).

In part these discrepancies could be due to cross-cultural influences although it is improbable that the more extreme variations could be explained by such effects alone. Both this study and Cattell's research are based on a cross-sectional design with data being collected within a few years of each other, so it is unlikely that conflicting findings originate in these simple methodological differences.

A further possibility is that the British age cohort samples ($N \simeq 2100$) are in some way very unrepresentative of their respective age groups in the adult population. Because we know that the total sample is reasonably representative, we are forced to conclude that any such bias is compensatory in nature. Moreover, the very fact that the age difference analyses were conducted holding sex and age constant means that the most likely source of bias involves the social class composition of the age cohorts. Whilst bias in the social class make up of the age samples cannot be completely ruled out, there is no clear reason why this should have occurred.

If we turn to Cattell's data on the other hand, we have noticed that the description of age trends show considerable inconsistencies. His verbal description of the relationship of the primary source traits with age are at odds with his own graphical representations and in turn these are often inconsistent with his quadratic age expressions.

On the question of the quadratic relationship of certain of Cattell's primaries with age, there can be nothing to recommend his formulae. The amount of additional variance explained by such procedures is minimal and not sufficient to justify the considerable errors that they may introduce.

GROUP DIFFERENCES AND THE PRIMARY SOURCE TRAITS: CONCLUSIONS

Although there were some inconsistencies across forms of the 16PF, earlier sub-sections showed that the majority of the sex, cross-national and social class differences in the primary source traits were in line with those hypothesised from Cattell's model.

There is reason for much concern, however, on the question of age differences in personality. Only two of the primaries demonstrated a reduction of common variance with age after application of Cattell's age 'correction' weights. These age results support the general hypothesis, therefore, that the primary source traits have been derived from inadequate data sources and are untenable in terms of the verifiability of group differences postulated from Cattell's theory.

Having observed inconsistencies both with regard to questionnaire forms and the verifiability of group differences, the next section will consider the important and controversial issue of the reliability of measurement afforded by Cattell's primary source traits.

SECTION 4:

RELIABILITY AND THE PRIMARY SOURCE TRAITS

9. ALTERNATE FORM RELIABILITY OF THE PRIMARY SOURCE TRAITS

INTRODUCTION TO RELIABILITY THEORY

The reliability of a test or questionnaire concerns the accuracy, consistency or precision of measurement without prejudice to the dimension being measured. Every measuring device is subject to some degree of error whether it be a simple ruler or a complicated electronic instrument. Reliability of measurement is a principal aim in science because it is commonly assumed that reliability is a necessary, if not sufficient, pre-requisite of a valid set of observations.

In the classical test model the score of any given individual on a test or questionnaire is said to be made up of a true score and error component.

That is:-

$$O_s = T_s + E$$

where O_s = observed score

T_s = true score

E = error component

On the assumption that the action of error is completely random, it follows that:

(a) the mean of all error scores is zero.

(b) the variance of error scores on all tests of the same length is the same.

(c) the correlations of error scores with true, obtained and other error scores are zero.

Having made these assumptions, we can make the statement that observed score variance on a scale is made up of true score variance and error variance.

(i) $\sigma_o = \sigma_t^2 + \sigma_e^2$ (basic classical test model formula)

where σ_o^2 = observed (total score variance)

σ_t^2 = true score variance

σ_e^2 = error score variance

The reliability of a test is oftenexpressed therefore as the proportion of the observed or total score variance which is true score variance.

That is:-

(ii) $r_t = \dfrac{\sigma_t^2}{\sigma_o}$ (basic reliability formula, classical test model where r_t = reliability coefficient)

This, the fundamental reliability formula in the classical test model, has the limitation that we never directly know the true score variance.

But knowing that:

$r_t = \dfrac{\sigma_t^2}{\sigma_o^2}$ (basic reliability formula)

and $\sigma_t = \sigma_o^2 - \sigma_E$ derived from the (basic classical test model formula)

then $r_t = \dfrac{\sigma_o^2 - \sigma_e^2}{\sigma_o^2}$

and

$$\text{(iii) } r_t = 1 - \frac{\sigma_e^2}{\sigma_o^2}$$

Formula (iii) is a more convenient expression because it is possible in practice to estimate error variance by a number of different methods. This is achieved by correlating one or more sets of scale scores for a group of individuals with another set of scores for the same group on the same scale or variable. Correlation coefficients calculated in this way are known as reliability coefficients and express the extent to which a scale agrees with itself in producing consistent or reliable scores.

Three main methods have been distinguished for estimating the reliability of a test or questionnaire. Each of these techniques isolates different elements contributing to the scores and counts some as true score variance and others as contaminating error variance.

INTERNAL CONSISTENCY

This method more usually involves assigning the items contributing to one test score to one of two sub-scores, on some basis which will produce two equivalent half-tests. Commonly, odd and even numbered items are the two sub-tests. This method of calculating reliability has the advantage of requiring only one testing session: the Spearman-Brown formula is applied to correct for the effective reduction in test length entailed by the split-half procedure.

In its purest form, this type of reliability is based on item statistics and counts as true score variance only that part of item variance which is common to at least one other item. This is known as the homogeneity of a test and in a sense estimates reliability on all the possible halves into which the test could be divided. Statistics developed to facilitate this process are the Kuder-Richardson coefficients and the more generalised coefficient alpha (Cronbach 1951).

Cattell (1972, 1974), however, has pointed out that his measures possess internal consistency without homogeneity. They are deliberately heterogeneous in content in order that items have a high multiple correlation on the factor on which they load. Moreover, items of low homogeneity, he claims, avoid the problem of bloated specifics which are to be avoided when measuring broad personality traits. For these reasons, it would seem that conventional homogeneity estimates are not applicable when investigating Cattell's primary source traits.

TEST-RETEST RELIABILITY

Test-retest reliability is estimated by repeat administration of the same test. Irregular change in scores between the two administrations is treated as error. Cattell (1970) has distinguished between the 'dependability' coefficient where the retest session follows too soon for the subject themselves to change and the 'stability' coefficient, where two months or more may elapse between the two administrations of the test.

Stability is a very important concept in trait psychology: in the calculation of stability coefficients both relative shifts in score due to real changes in the individual and shifts attributable to random measurement error are treated as error variance. Clearly, the researcher will want to be able to distinguish between these two sources of 'error' so as to be able to evaluate real changes in the individual. Attempts have been made to separate traits which are relatively stable from shorter-term influences which are more bound to particular situations and change in strength over a short period. For example, the State-Trait Anxiety Inventory (Spielberger et al., 1970) seeks to isolate those aspects of anxiety which are situationally dependent (state) from those which are a more stable feature of the make-up of the individual (trait). From the point of view of reliability theory, it is important to recognise that the length of time which elapses between test and retest may be an important determinant of the size of the test-retest coefficient.

Score variation, due to changes in personality and mood between test and retest sessions, which will be treated as error variance, means that great care has to be taken in specifying the exact conditions or facets (Guilford 1970) of the reliability study. Further, the stability of measurement over time tells us little or nothing about the underlying structure of the item content and the very personality model upon which it is based.

ALTERNATE FORM RELIABILLTY

The third commonly used index of reliability is the alternate form coefficient, otherwise known as the equivalence or parallel forms coefficient. The different names all represent - from different theoretical standpoints - the correlation of scores on one form of a test with scores on another form designed to measure the same characteristics. That is to say, the alternate form coefficient is a measure of the extent to which two distinct forms which are designed to measure the same thing actually do so.

Whilst difficulties may arise in interpreting test-retest and conventional internal consistency reliability estimates, there can be no doubt of the importance of alternate form reliability to Cattell's theory of personality. Because of the difficulty of establishing really adequate external criteria of Cattell's primary source traits, the model very much rests on the extent to which it is internally consistent with regard to replicability across questionnaire forms.

As there was such a short time interval of about 10-15 minutes between administration of the two alternate forms, there are unlikely to be undue influences in the data collected in this study as a result of changes in personality over time and for these reasons the reliability analyses which follow are based on the alternate form approach.

THE STANDARD ERROR OF MEASUREMENT

The reliability coefficient is a useful statistic when a judgement has to be made on the consistency of scores afforded by a particular test or questionnaire. It is often the case, however, that we wish to set a band of tolerance around a given score and make estimates as to the likely error component.

From (iii) $r_t = 1 - \dfrac{\sigma_e^2}{\sigma_o^2}$

then $r_t + \dfrac{\sigma_e^2}{\sigma_o^2} = 1$

and $\dfrac{\sigma_e^2}{\sigma_o^2} = 1 - r_t$

Thus: $\sigma_e^2 = \sigma_o^2 (1 - r_t)$

The square root of this value is generally known as the Standard Error of Measurement (SEM)

$$\text{SEM} = SD\sqrt{1 - r_t}$$

This statistic is much used in educational and psychological measurement and can be said to represent the standard deviation of obtained scores around true scores. It is also conceptualised as the standard deviation of error scores.

In standard psychometric practice it is often assumed that the SEM is constant for all score levels and that the standard deviation of error scores is normal. It is then possible to set up confidence limits from the normal probability curve, where 68% of observed scores will lie ± 1 SEM units and 95% ± 2 SEM units about the true score.

ALTERNATE FORM RELIABILITY COEFFICIENTS: RESULTS

The alternate form reliability coefficients representing the product moment correlation coefficients between the primary source traits of Forms A and B of Cattell's 16PF are listed in Table 9.1. Results are given not only for the total sample but also for the sample classified by sex. The standard errors of measurement (SEM) in n-sten units for each factor have also been calculated and are entered in Table 9.2.. But it should be noted that the values are for the questionnaire forms used separately and have not been corrected for two form length by the Spearman-Brown formula.

The first observation is the general order of these coefficients which are low by standards of cognitive tests. Factors H (social boldness), F (happy-go-lucky) and Q4 (tense) are the most reliable primary source traits which is in accord with Cattell's findings (1972). Primaries with coefficients around .5 are A (outgoing), C (emotional stability), E (assertiveness), G (superego strength), I (tendermindedness), O (apprehensive) and Q3 (social precision). Next are two factors which show rather low coefficients, namely B (intelligence) and Q2 (self-sufficiency). Finally are source traits in the very low reliability range of 0.2 to 0.3; these are the factors of L (suspicious), M (imagination), N (shrewdness) and Q1 (radicalism).

It is of interest that most of the major introversion-extraversion (A,E,F and H) and the main anxiety factors (C,O and Q4) show tolerable reliability for variables in the personality domain. The same cannot be said, however, for a relatively well documented variable in other

TABLE: 9.1.

GROUP ALTERNATE FORM RELIABILITY COEFFICIENTS (FORMS A & B) FOR EACH PRIMARY SOURCE TRAIT

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
TOTAL SEXES N = 2007																
r	.512	.437	.513	.571	.649	.472	.730	.555	.313	.273	.252	.605	.252	.414	.505	.65
FORM A																
Mean	10.22	7.06	14.70	10.89	12.48	12.18	12.53	11.26	8.23	12.09	11.10	11.37	9.15	11.47	12.33	13.16
S.D.	3.06	2.11	3.93	4.41	5.04	3.59	5.48	3.78	3.48	3.55	3.17	4.33	3.33	3.52	3.29	4.92
FORM B																
Mean	9.43	7.34	14.75	11.16	13.86	12.52	12.84	10.06	8.57	10.25	10.55	11.14	8.52	8.57	11.66	13.11
S.D.	3.63	1.98	4.08	4.16	4.78	3.02	5.81	3.46	2.70	3.71	2.89	4.81	2.96	3.24	3.54	5.01
MALES N = 1004																
r	.495	.423	.513	.541	.657	.487	.710	.469	.278	.209	.239	.559	.245	.417	.543	.67
FORM A																
Mean	9.36	7.22	15.29	12.32	12.46	12.37	13.33	9.14	8.66	12.43	10.50	10.18	10.15	11.65	12.77	12.02
S.D.	3.07	2.12	3.90	4.31	5.14	3.77	5.50	3.44	3.48	3.45	3.09	4.29	3.28	3.49	3.49	4.99
FORM B																
Mean	8.22	7.44	15.51	12.68	13.80	12.26	13.92	8.48	9.05	10.52	10.47	9.51	8.72	8.75	12.10	11.75
S.D.	3.68	2.00	4.14	4.01	5.00	3.05	5.63	3.28	2.68	3.78	3.01	4.53	3.01	3.35	3.46	5.06
FEMALES N = 1003																
r	.422	.449	.485	.482	.640	.470	.736	.319	.318	.329	.264	.573	.243	.410	.451	.59
FORM A																
Mean	11.09	6.91	14.10	9.46	12.50	12.00	11.73	13.38	7.80	11.75	11.71	12.56	8.16	11.30	11.90	14.30
S.D.	2.80	2.09	3.88	4.03	4.93	3.39	5.34	2.78	3.43	3.62	3.14	4.03	3.07	3.54	3.16	4.58
FORM B																
Mean	10.64	7.25	13.98	9.64	13.92	12.78	11.76	11.63	8.09	9.99	10.63	12.78	8.32	8.38	11.22	14.47
S.D.	3.15	1.95	3.87	3.74	4.57	2.97	5.78	2.86	2.63	3.63	2.77	4.52	2.89	3.12	3.57	4.58

TABLE:9.2.

STANDARD ERRORS OF MEASUREMENT

PRIMARY SOURCE TRAITS (STENS) - FORMS A/B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
TOTAL SEXES (N=2007)	1.40	1.50	1.40	1.31	1.18	1.45	1.04	1.33	1.66	1.71	1.73	1.26	1.73	1.53	1.41	1.17
MALES (N=1004)	1.42	1.52	1.40	1.35	1.17	1.43	1.08	1.46	1.70	1.79	1.74	1.33	1.74	1.53	1.35	1.14
FEMALES (N=1003)	1.52	1.48	1.44	1.44	1.20	1.46	1.03	1.65	1.65	1.64	1.72	1.31	1.74	1.54	1.48	1.28

researches (Eysenck,1954, Wilson,1972), Cattell's primary source trait Q1 of radicalism.

In order to investigate differences in the reliability of the primary source traits for the male and female adult groups, the coefficients in Table 9.1., were converted to Fisher z-statistics (Table9.3) and the statistical significance of the differences calculated.

The results of this analysis show that the male group had significantly higher reliabilities on Factors A (outgoing), I (tender-minded), Q3 (social precision) and Q4 (tense) whilst the female group had a significantly higher coefficient on Factor M (imagination). When the means of Fisher z-statistics were calculated across all the primary source traits, there was no significant difference between the two groups at the 5% level ($\bar{z}$ for males = .523, $\bar{z}$ for females = .498). We must conclude, therefore, that although the sex of the subject was related to the reliability of five of the factors, there was no significant trend for either sex to demonstrate consistently higher reliability coefficients across all the primary source traits.

To test the hypothesis that the adult reliabilities would tend to be lower than those reliabilities collected for student groups on the primary source traits a comparison was made not with Cattell's American student groups but with data based on a more relevant sample of British second year undergraduates collectedby Saville and Blinkhorn (1976, pp 78).

For the total group of undergraduates (N = 1148) and adults (N = 2007) the student reliability coefficients were significantly higher on eight

TABLE: 9.3.

CONVERSION OF THE ALTERNATE FORM RELIABILITY COEFFICIENTS TO FISHER Z STATISTICS

ADULT MALES AND FEMALES

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
MALES Z	.543	.451	.568	.605	.786	.532	.887	.509	.285	.212	.244	.632	.250	.444	.609	.816
FEMALES Z	.450	.484	.530	.525	.758	.510	.941	.331	.330	.342	.270	.653	.248	.436	.486	.678
DIFFERENCE	.093	-.033	.038	.080	.028	.022	-.054	.178	-.045	-.130	-.026	-.021	.002	.008	.123	.138
SIGNIFICANCE $p <$	.05	NS	NS	NS	NS	NS	NS	.01	NS	.01	NS	NS	NS	NS	.01	.01

TABLE 9.4.

COMPARISON OF ADULT RELIABILITY COEFFICIENTS WITH THOSE OF UNDERGRADUATES

FORM A WITH B

		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
UNDERGRADUATES (N = 1148)	r	.64	.36	.54	.59	.70	.56	.80	.60	.36	.23	.26	.65	.47	.48	.58	.70
	z	.758	.377	.604	.678	.867	.633	1.099	.693	.377	.234	.266	.775	.510	.523	.662	.867
ADULTS (N = 2012)	r	.51	.44	.51	.57	.65	.47	.73	.56	.31	.27	.25	.61	.25	.41	.51	.66
	z	.563	.472	.563	.648	.775	.510	.929	.633	.321	.277	.255	.709	.255	.436	.563	.793
DIFFERENCE		.195	-.095	.041	.030	.092	.123	.170	.060	.056	-.043	.011	.066	.255	.087	.099	.074
SIGNIFICANCE p ≤		.01	.05	NS	NS	.05	.01	.01	NS	NS	NS	NS	NS	.01	.05	.05	.05

of the sixteen primary source traits. These were Factors A, F, G, H, Q1, Q2, Q3 and Q4. The adult group showed higher alternate form reliabilities on Factor B whilst the remaining seven factors showed no significant differences. When the Fisher z-statistics were averaged across all the primary source traits for the two groups, the difference was significant at the 5% level. Thus, with the exceptions noted above, we can conclude that the overall reliability of Cattell's model as represented by the 16PF is in fact more reliable on the undergraduate sample than on the general population adults. On inspection of the descriptive statistics for these adult and student data collected by Saville and Blinkhorn (1976), it is evident that these are differences not only between mean scores of the two groups but also between the scale score standard deviations, the students showing greater dispersion of scores for the majority of factors. The restriction in range phenomenon could be responsible therefore for these differences in reliability coefficients and indeed when restriction of range is taken into account by use of the SEM statistic , the differences between the groups are relatively small.

The finding that students showed greater variabilty on most of the primary source traits is perhaps a little surprising especially as undergraduates are very selected sub-group of the population. However it must be remembered that although restriction in range can arise through some influence extrinsic to the reliability of a test or scale (for example members of a sub-group being in some real sense more alike, or perhaps some artificial truncation of distribution), restriction of range can also as a result of an influence which is intrinsic to scale reliability (inappropriate or unreliable items tend in themselves to restrict the overall dispersion of test scores).

We should be cautious therefore in making the assumption that correction for differences in the variability of scores by way of the SEM statistic enables direct comparison of the reliabilty of a scale in different samples. It could well be that greater dispersion of scores in the undergraduate sample is a result of more appropriate, meaningful and reliable item content for student groups.

10. AGE AND SOCIAL CLASS AS MODERATORS ON RELIABILITY COEFFICIENTS

INTRODUCTION

It is not sufficient that the measurement of personality be reliable for the adult population as an entirety or for that matter for groups of students. It also needs to be shown that scale reliability is not adversely effected by variables such as the age and socio-economic class of the subject. Low reliability for sub-groups of the population might suggest that a trait lacks stability, that there is restricted range, that factor structure is not invariant across subjects or that item content is simply inappropriate to certain types of individuals. But whatever the origin of moderator effects upon scale reliability, they remain a crucial concern to the trait theorist, especially if his theories make claims of general applicability, yet had their genesis in small and perhaps atypical academic groups.

In an earlier section it was postulated that Cattell's primary source traits would be less reliable on older, lower socio-economic class subjects. In order to test this hypothesis, tables in Appendix 10 contain alternate form reliability coefficients broken down by the sex, age and social group of the respondent for each of the primary factors.

Tests yielding only one score are amenable to the investigation of changes in reliability with moderator variables without recourse to special techniques. The Cattell inventories, with as many as sixteen scales to be considered, present a more complex task. One approach to this problem, however, is to rank the equivalence coefficients within each factor over the classifying variable, and sum the ranks over all factors. The resultant sums of ranks would be an index of the relative magnitude of the equivalence coefficients for all factors with respect to each classification.

AGE AS A MODERATOR ON RELIABILITY: RESULTS

Accordingly, Table10.1contains the results of ranking the alternate form reliability coefficients from highest (rank 1) to lowest (rank 4) on each factor and producing a frequency count of these values across all 16 primary source traits for each of four age groups (16-24, 25-44, 45-64 and 65+).

TABLE: 10.1.

RANK FREQUENCIES OF THE ALTERNATE FORM RELIABILITY COEFFICIENTS CLASSIFIED BY AGE GROUP

Age \ Ranks	1 (Most Reliable)	2	3	4 (Least Reliable)	MEAN	SD
18-24	6	5	4	1	2.00	.98
25-44	4	7	2	2	2.09	.97
45-64	3	3	6	4	2.72	1.06
65+	2	2	3	9	3.19	1.11

It is evident from this table that there is a gradual decrease in the chances of a high reliability coefficient for a given factor as the age of the respondent increases. This trend is significant at the 5% level ($x^2 = 9.00$) when the data are represented in the 2 x 2 contingency table below.

TABLE: 10.2.

SUMMARY TABLE: RELIABILITY CLASSIFIED BY AGE

	"Higher" Reliability Ranks 1&2	"Lower" Reliability Ranks 3&4
16–44 years	22	10
45–70 years	10	22

$x^2 = 9.00$

We can conclude, therefore, that there is a significant trend for Cattell's primary source traits to show lower reliability coefficients for subjects of higher ages.

An alternate approach is the use of the parametric Fisher z-statistic, a logarithmic transformation which enables the inspection of product-moment coefficients for significant differences. In Table 10.3 the reliability coefficients for each age group have been converted to z-statistics and the number of significant differences calculated on the basis of two - tailed significance tests.

It is evident from this analysis that seven factors, with a total of fourteen significant differences between reliability coefficients, gave results consistent with the hypothesis that older subjects would show lower reliability on the primary source traits. These

TABLE: 10.3.

CONVERSION OF PRIMARY SOURCE TRAIT RELIABILITY COEFFICIENTS TO FISHER Z STATISTICS

BOTH SEXES BY AGE

AGE	TOTAL MEAN	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
15-24	.538	.550	.360	.582	.703	.783	.540	.924	.631	.367	.338	.228	.688	.273	.415	.506	.718
25-44	.541	.547	.461	.511	.640	.699	.446	.982	.673	.318	.329	.215	.719	.273	.499	.522	.822
45-64	.494	.567	.511	.649	.570	.578	.379	.952	.576	.289	.192	.234	.653	.082	.415	.439	.811
65+	.464	.694	.460	.539	.669	.571	.362	.771	.657	.202	.148	.078	.747	.169	.288	.385	.691
Number of Significant Differences in Hypothesised Direction		0	0	0	1	3	2	2	0	0	3	0	0	2	1	0	0
Number of Significant Differences Opposite to Those Hypothesised		2	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0

TABLE:10.4.

RANK FREQUENCIES OF THE ALTERNATE FORM RELIABILITY COEFFICIENTS CLASSIFIED BY SOCIO-ECONOMIC GROUP

Most Reliable ⟶ Least Reliable

Social Class \ Ranks	1	2	3	4	MEAN	SD
AB	9	6	0	1	1.56	.81
C1	6	6	3	1	1.94	.93
C2	1	3	8	4	2.94	.85
DE	0	1	5	10	3.56	.63

were namely the Factors of F, G, H, M, Q1 and Q2. The three primaries of A, B and C on the other hand demonstrate a total of four significant differences in reliability which were in the opposite direction to that hypothesised.

SOCIAL CLASS AS A MODERATOR ON RELIABILITY: RESULTS

Turning to socio-economic class as a moderator on reliability, the coefficients were first ranked from highest to lowest in the same manner as with the age data. The results of this analysis are contained in Table 10.4. and in the 2x2 contingency table reproduced below which is significant at the 1% level ($x^2 = 30.25$).

TABLE: 10.5: SOCIAL CLASS AS A MODERATOR ON THE RELIABILITY OF THE PRIMARY SOURCE TRAITS: SUMMARY TABLE.

	"Higher" Reliability Ranks 1&2	"Lower" Reliability Ranks 3&4
Social Group A, B, C1	27	5
Social Group C2, D, E	5	27

$x^2 = 30.25$

The corresponding Fisher z statistics are presented in Table 10.6. In this case, thirteen of the sixteen source traits show a total of 37 differences which are in line with those hypothesised (two tailed tests). Only Factors C, O and Q4 do not show significant differences between the reliability coefficients of the four socio-economic groups. In addition, the mean of the sixteen reliabilities for the AB group is significantly higher at the 1% level than that of the DE group.

TABLE: 10.6.

CONVERSION OF PRIMARY SOURCE TRAIT RELIABILITY COEFFICIENTS TO FISHER Z STATISTICS

BOTH SEXES BY SOCIAL CLASS

SOCIAL CLASS	TOTAL MEAN	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
AB	.604	.575	.507	.633	.693	.780	.620	1.010	.735	.415	.339	.194	.703	.325	.507	.773	.862
C1	.600	.656	.402	.506	.722	.897	.578	.999	.711	.367	.339	.421	.696	.412	.502	.631	.773
C2	.504	.538	.342	.558	.673	.699	.490	.908	.591	.283	.181	.227	.717	.202	.454	.423	.784
DE	.466	.510	.409	.536	.535	.738	.401	.822	.451	.267	.152	.199	.670	.208	.306	.509	.745
Number of Significant Differences in Hypothesised Direction		2	1	0	3	2	3	2	5	2	4	2	0	4	3	4	0
Number of Significant Differences Opposite to Those Hypothesised		0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0

AGE AND SOCIAL CLASS AS MODERATORS ON THE RELIABILITY OF THE PRIMARY SOURCE TRAITS: DISCUSSION

Results give tentative support to the hypothesis that the older age groups (45-70 as against 16-44 years) would show lower reliability coefficients on the primary source traits. This was by no means a particularly strong trend however, but was mainly as a result of the action of six of the sixteen primaries (F,G,H,M,Q1 and Q2).

It was interesting that the non-parametric approach of ranking and using a chi-square analysis on age as a moderator variable gave more positive results than the parametric Fisher z statistic. Although the mean z statistics for each age group across all 16PF factors were generally in the expected direction, they did not reach statistical significance as did the chi-square analysis. This may have been because of the large differences in the size of the alternate form reliability coefficients across the various factors which perhaps mask the more subtle influence of age. The conversion of these data back to correlation coefficients shows that the mean reliabilities across all 16PF factors were .490 for the 15-24 year age group, .495 for the 25-44, .460 for the 45-64 and .435 for the 65+ age group. In view of these relatively small differences, it is clear that whilst there may be some slight trend for lower reliability in older people, variations as a result of differences in factor reliabilities are likely to be a more important consideration than differences as a result of age.

We also saw that there was a tendency for the adult group to show lower reliability than data collected for university students

(Saville and Blinkhorn 1976). This is despite the fact that undergraduates are a restricted group both in terms of age and academic attainment. Thus, the evidence supports the original hypothesis and, to some extent, those who are critical of the applicability of questionnaires in general. It would seem that when scales are developed on specific sub-groups of the population such as students, that selected items are not such a good fit to the model in the adult population as had been the case with the original development samples. This is an important point to the personality theorist who should seek to avoid item content which may be more appropriate to student groups than adults in general. After all, a generalised model of personality should provide reliable measurement not just across specific accessible student groups but across the entire population range.

When the effects of social class were investigated as moderators upon scale reliability coefficients, the results were more positive than with the age analysis. There would seem to be good evidence that the 16PF scales showed less reliability with lower socio-economic groups. Both the parametric z statistic and the non-parametric chi-square analysis gave very significant results here. In fact, only Factors C, O and Q4 did not show significant difference between the reliability coefficients.

Apparently then, social class has more effect upon scale reliability than the age of the respondent. Perhaps this is not altogether surprising when one considers that social class is some, albeit indirect, measure of educational attainment and, therefore, academic ability and we may merely be saying here that those of lower scholastic ability tend to be more unreliable in their responses to questionnaire data. It is certainly true that the lower social classes will have had less experience with questionnaire techniques, with form completion and all the assorted clerical activities which are more usually the part of higher social economic jobs. Indirect evidence in support of this explanation is the positive correlation between social class and Cattell's primary source trait of intelligence (Factor B), which we observed at an earlier section.

The Fisher z comparisons between the reliabilities of the four social class groups employed here did in fact show significant differences and when these were converted back to correlation coefficients, it was found that social class AB had a mean reliability of .540 across all 16PF factors, C1 a mean reliability of .535, C2 a mean reliability of .465 and the DE social class a mean reliability of .435. Quite clearly these differences are large enough to be of importance in scale interpretation, even allowing for the large variations of reliability across the primary source traits.

Certain factors had particularly low reliabilities for most measurement purposes. It would appear that Factor L (suspicious) especially in the lower social classes, Factor M (imagination) in the lower social class and higher age groups, Factor N (shrewdness) in the lower social classes and higher age groups and Q1 (experimenting) mainly in the higher age groups, were particularly vulnerable to these moderator effects. For these source traits, the more extreme age and social class groups possessed such low reliability as to bring into question the very meaning of scores on the primary source traits obtained by such subjects.

As a final question we might ask what the effect of restriction upon range of scores within certain sub-groups had upon the reliability patterns reported in these various tables. Although there are formulae (Guilford, 1972) to estimate the reliability of a scale based on different group standard deviations, they make the assumption of the consistency of standard error of measurement across the two groups. Clearly, this is an assumption we cannot make because this is the very effect which we are investigating. What is more important is the fact that 'correcting' group statistics for restriction in range can often be missing the point. It is a perfectly legitimate aim for a test constructor to increase the discrimination of his scales to a maximum. All things being equal, this will tend to help the reliability of his scale. If, therefore, certain personality source traits show markedly reduced variances across a certain age group or social class, correcting for such inconsistencies would be fallacious. We would only gain statistics based on artificial assumptions, which will have no practical or theoretical value in understanding the effects of moderator variables. Nevertheless, it would be remiss not to investigate the extent to which restriction in range of scale scores affected the reliability coefficients calculated here.

11. VARIATIONS IN THE STANDARD ERROR OF MEASUREMENT

INTRODUCTION

Up to this point we have researched variations in the values of alternate form reliability coefficients. The problem of interpreting such data where restriction in range is suspected within specific groups of subjects has also been introduced. The statistic which is commonly supposed to be independent of variability within the sample is the standard error of measurement and perhaps we should consider this statistic in a little more detail.

It was stated in an earlier point in this section that the standard error of measurement (SEM) is commonly supposed to be constant at different score levels. We have previously defined the SEM as:

$$SEM = SD\sqrt{1 - r}$$

Guilford (1973) states that the SEM is a blanket index and that if the score distribution approaches normality and if obtained scores do not extend over the entire range, the standard error of measurement is probably uniform at all levels.

Surprisingly, few investigators have challenged this assumption, and the published studies which do exist seem to be restricted to the testing of educational attainment. Gulliksen (1950) concludes that the SEM should be constant for all score levels when the distribution is not skewed and when kurtosis is three. Mollenkopf (1949) investigated the effects of skewness and variations in kurtosis on the SEM and concluded that slight skewing could be tolerated but not departures in kurtosis from three. Lord (1952) points out that in most distributions the dispersion of errors will be smallest at the tails of the distribution. Thorndike (1951) concludes, on the other hand, that the precision of measurement will be smallest at that point in the score distribution where item difficulties are concentrated which for a general purpose instrument is likely to be the mid-point of the scale.

The lack of published work on the possible variability of the SEM in personality scaling is perhaps the more remarkable, when one considers that the question as to whether certain personality traits in reality constitute continua is open to more doubt than the more tangible variables met in educational test data.

A particular problem is one of the dimensionality of the middle response where, as with Cattell's inventories, the subject is required to choose the most appropriate of three possible responses to the item stem. In such an item format, the middle response could easily become the catch-all for otherwise unclassifiable responses including item inapplicability and uncertainty of meaning for the subject. In view of these points and Lord's work (1952), it would seem reasonable to suppose, therefore, that the extreme categories of the primary trait score scale will show the greatest reliability.

Turning to the mechanics of calculating the SEM at different parts of the score scale, Guilford (1973) has suggested that if there is reason to suspect that discrimination is actually unequal along the scale, this can be examined by preparing a scatter diagram showing the relationship between two forms of the test or questionnaire. The standard deviations of the columns and rows at different score levels will indicate where predictions have the greatest accuracy.

One problem with this approach is that it is more akin not with the standard error of measurement but the standard error of estimate which is defined as the standard deviation of errors of prediction from correlated measures and is given by the formula:

$$SEE = SD_x \sqrt{1 - r_{xy}^2}$$

Comparing this formula with that for the standard error of measurement:

$$SEM = SD_x \sqrt{1 - r_{xy}}$$

it is apparent that the SEE is $\sqrt{1 + r_{xy}}$ as large again as the SEM.

What is not generally realised is that the SEM is in essence the SEE corrected for unreliability (attenuation) in one of the variables. That is to say, that if we take the SEE formula and correct it for attenuation in one variable by the standard formula we can derive the SEM.

PROOF

(i) $SEE = SD \sqrt{1 - r_{xy}^2}$

(Standard formula for the standard error of estimate)

(ii) Correcting r_{xy} for attenuation in one variable then:-

$$r_{xy} = \frac{r_{xy}}{\sqrt{r_{yx}}} \quad \text{(correction for attenuation formula)}$$

(iii) Substituting:

$$SEE_C = SD\sqrt{1 - \left[\frac{r_{xy}}{\sqrt{r_{yx}}}\right]^2}$$

$$= \quad SD \sqrt{1 - \frac{r_{xy}^{2}}{r_{yx}}}$$

(iv) But in a reliability study the best estimate of $r_{yx} = r_{xy}$

thus substituting in the formula then:

$$SEE_c = SD \sqrt{1 - \frac{r_{xy}^{2}}{r_{xy}}}$$

$$= SD \sqrt{1 - r_{xy}}$$

which is the standard formula for the standard error of measurement.

Essentially the SEM is a hypothetical value which apportions error variance to the two forms in a reliability study and makes an estimate of the unreliability in the form assuming the other to be perfectly reliable. Calculating the standard deviations of columns and rows at different score levels of the scatter diagram as proposed by Guilford (1973), takes no account of this and if such data are to be interpreted against the overall standard error of measurement, then the suitable correction factor would need to be applied.

Lord (1952) has proposed a simple formula for calculating the standard error of measurement along different parts of the score scale.

$$SEM_p = \sqrt{\frac{ta\ (n - ta)}{(n-1)}}$$

where SEM_p = standard error of measurement at a particular point on the score scale

ta = total of items correctly answered

n = number of items in the test

For our purposes, however, rather restrictive conditions apply to this formula in that it assumes that items are scored 0 or 1 and have been assigned either randomly or in some stratified fashion to the alternate forms of the test. It is also assumed that one is dealing with homogeneous tests and not the deliberately heterogeneous item content of Cattell's inventories.

Fortunately, it is possible to take another approach to the problem by reconsidering a basic definition of the standard error of measurement as the standard deviation of observed scores around true scores. That is:-

$$SEM = \sqrt{\frac{\sum (x - x_t)^2}{N}}$$

where x = obtained score

x_t = true score

N = number of people in the group

Whilst we cannot ever be absolutely sure of an individual's true score, it can be estimated by calculating the mean universe score, which in this case will be the mean of the Form A and Form B factor scores. That is:-

$$\hat{x}_t = \frac{S_A + S_B}{2}$$

where $\hat{x}_t$ = estimated true score for an individual

S_A = sten on a given factor for Form A

S_B = sten on the same given factor for Form B

By substituting in the above formula then:-

$$SEM = \sqrt{\sum \left[\frac{S_A - \frac{(S_A - S_B)}{2}}{N} \right]^2}$$

which reduces to:

$$SEM = \sqrt{\frac{\sum (S_A - S_B)^2}{4N}}$$

By the use of this formula it is possible to make an estimate of an individual's true score, calculate its departure from the observed score (either Form A or Form B) and then compute the standard deviation of error scores around true scores for each point on the N-sten score scale. It will be noticed that this formula makes no assumptions about using binary data or that the test is homogeneous in item content. Moreover, the use of both forms in estimating the true score means that the values gained by way of the above formula are more analogous to standard errors of measurement than the simple standard deviations calculated from the rows and columns of a scattergram.

The foregoing demonstrates some of the problems which arise when investigating errors of measurement. The most obvious source of confusion is the definition of what really constitutes error. Guilford's (1972) method of obtaining column and row standard deviations on a scattergram is in fact based upon the logic of defining error as the error made in estimating (predicting) the score on one test from the score on a parallel test. We shall refer to this as the error in estimating an observed score where:

$$SEE = SD_x \sqrt{1 - r_{xy}^2}$$

An alternative but equally acceptable approach is to define errors of measurement as the error involved in substituting a score on one test for a score on a parallel test.

In this case we can write the formula:

$$SEM_d = \sqrt{\frac{\sum d^2}{N}} = \sqrt{\frac{\sum(X_A - X_B)^2}{N}}$$

where SEM_d = standard deviation of the error in substituting a score on one test for a score on a parallel form.

X_A = score on the first form of the test

X_B = score on the parallel form

d = difference between scores on the two forms.

Finally we have the more commonly used definition of error developed here and that is the error made in substituting the observed for the true score:

$$SEM = \sqrt{\frac{\sum (X - X_t)^2}{N}}$$

$$= SD_x \sqrt{1 - r_{xy}}$$

On the assumption that the best estimate of an individual's true score on a given trait is the average n-sten on the parallel forms of the 16PF, then we have established above that:-

$$SEM = \sqrt{\frac{\sum (S_A - S_B)^2}{4N}}$$

This statement bears a close resemblance to that derived for the SEM_d (the standard deviation of the error in substituting a score on one test for a score on a parallel form) and in fact is $\frac{1}{\sqrt{4}}$ as large. We can see, therefore, that the SEM will be half as large as the SEM_d on the same data base.

There are other possible definitions of error but we shall investigate how the conventional definition of the standard error of measurement as the standard deviation of observed scores about the true score ($SD = \sqrt{1 - r}$) affects our conclusions on the differential reliability of the primary source traits. This particular statistic has been adopted here because it has the distinct advantage of being based upon the most generally accepted definition of error according to the classical true score model.

AGE AND SOCIAL CLASS AS MODERATORS ON THE SEMs: RESULTS

SEMs were calculated in raw score units on the primary source traits for each age and social class group. The results of this analysis are presented for the total sample and for the questionnaire forms separately (Table 11.1. for Form A and Table 11.2. for Form B). Age and social class were divided into the four categories listed in the tables.

Because the data are represented in raw score units, no meaningful comparisons can be made between the SEMs on the different personality variables. To ensure comparable results, therefore, SEMs for each social class and age group were ranked on each factor independently from highest to lowest. Summary tables were then prepared and a chi-square analysis undertaken (Tables 11.3 to 11.7.).

AGE AND SOCIAL CLASS AS MODERATORS ON THE SEMs: DISCUSSION

By referring to Table 11.7 we can see that overall the Form A scales had lower SEMs in older than in younger subjects, whilst in the 16PF Form B there were no significant differences. This is in direct contrast with our previous analysis utilising reliability coefficients where older subjects tended to have lower reliabilities. Because the only other statistic appearing in the SEM formula is the standard deviation of scores, we are forced to conclude, therefore, that most of the difference in reliabilities amongst age groups is due to a restriction of scale score variability amongst older subjects;

this effect being particularly pronounced in Form A of Cattell's 16PF questionnaire.

Turning to social class, we find that whilst those classified as being in the lower social classes tended to show lower dispersion, they were still significantly less reliable in terms of SEMs on the trait scales of the 16PF than those in the A, B and C1 socio-economic groups. This trend was significant on Form A but again no differences were found on Form B of the 16PF.

It would seem, therefore, that a distinction can be drawn between differential reliability as a result of age and differential reliability as a result of social class. In the case of age, reliability coefficients were lower with older individuals as a direct result of restricted scale discrimination with such subjects. It is possible that older subjects have a central tendency response style (Guilford,1954) and choose the middle response to the various questionnaire items more frequently than their younger counterparts. However, if this is the case, they do not act with any less consistency and indeed they may act with more. The situation with social class seems very different on the other hand. Although both questionnaire forms showed restriction in range in lower social class individuals, when this lack of variability was taken into account by use of the SEM statistic, the C2, D and E groups still appeared on Form A as the more unreliable group in terms of their alternate form scale scores on the primary source traits. Again, there was no significant trend on Form B. In this case the smaller dispersion of scores in lower socio-economic classes and the

TABLE: 11.1

16PF FORM A SEMs ACCORDING TO AGE AND SOCIAL CLASS

BOTH SEXES

AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
15-24	2.11	1.62	2.66	2.64	2.77	2.61	2.89	2.58	2.92	2.91	2.78	2.76	2.87	2.86	2.42	3.04
25-44	2.20	1.55	2.89	3.00	3.01	2.53	2.70	2.45	2.84	2.98	2.78	2.66	2.84	2.53	2.24	2.80
45-64	2.10	1.58	2.64	2.91	2.92	2.52	2.74	2.56	2.92	3.11	2.71	2.83	2.83	2.56	2.24	2.80
65+	2.00	1.67	2.54	2.68	3.01	2.47	3.30	2.22	2.86	3.20	2.78	2.56	2.62	2.90	2.24	3.10
SOCIAL CLASS																
AB	2.19	1.49	2.59	3.03	3.09	2.59	2.72	2.52	2.77	2.94	2.89	2.67	2.78	2.76	2.14	2.83
C1	2.11	1.59	2.88	2.81	2.95	2.56	2.87	2.49	2.66	2.94	2.54	2.67	2.75	2.64	2.30	2.92
C2	2.16	1.63	2.74	2.78	2.95	2.54	2.83	2.53	3.04	3.08	2.82	2.69	2.98	2.59	2.39	2.87
DE	2.07	1.59	2.76	2.95	3.00	2.74	2.94	2.56	2.89	3.01	2.66	2.69	2.77	2.85	2.31	2.89

TABLE: 11.2

16PF FORM B SEMs ACCORDING TO AGE AND SOCIAL CLASS

BOTH SEXES

AGE	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
15-24	2.56	1.49	2.86	2.61	2.61	2.16	3.09	2.22	2.21	3.14	2.54	3.03	2.72	2.37	2.62	2.95
25-44	2.59	1.44	2.87	2.80	2.88	2.20	2.84	2.25	2.27	3.11	2.44	2.96	2.53	2.42	2.45	2.81
45-64	2.48	1.45	2.77	2.76	3.08	2.31	2.91	2.40	2.21	3.25	2.44	3.08	2.60	2.57	2.55	2.93
65+	2.31	1.69	2.86	2.53	2.71	2.23	3.61	2.13	2.26	3.10	2.64	3.02	2.36	2.77	2.40	3.05
SOCIAL CLASS																
AB	2.55	1.30	2.80	2.73	2.91	2.20	2.89	2.32	2.25	3.34	2.80	3.05	2.84	2.66	2.21	2.94
C1	2.46	1.42	2.85	2.66	2.80	2.15	2.86	2.26	2.17	3.23	2.44	3.02	2.36	2.45	2.46	2.96
C2	2.59	1.56	2.86	2.67	2.89	2.16	3.07	2.29	2.31	3.14	2.42	3.02	2.51	2.35	2.66	2.85
DE	2.53	1.56	2.82	2.77	2.71	2.34	3.07	2.34	2.17	3.06	2.42	3.02	2.31	2.55	2.46	2.99

TABLE: 11.3.

SEM RANK FREQUENCIES FOR SOCIAL CLASS

BOTH SEXES - FORM A

SOCIAL CLASS	RELIABILITY Low → High			
	1	2	3	4
AB	4	3	3	6
C1	2	1	7	6
C2	6	3	4	3
DE	4	9	2	1

TABLE: 11.4.

SEM RANK FREQUENCIES FOR SOCIAL CLASS

BOTH SEXES - FORM B

SOCIAL CLASS	RELIABILITY Low → High			
	1	2	3	4
AB	6	5	2	3
C1	-	5	4	7
C2	5	3	6	2
DE	5	3	4	4

TABLE: 11.5.

SUMMARY TABLES: SEMs AND SOCIAL CLASS AS A MODERATOR VARIABLE

FORM A

SOCIAL CLASS	RELIABILITY (SEM) Low	High
Higher Social Class	10	22
Lower Social Class	22	10

$x^2 = 9.00$ $p \leq .01$

FORM B

SOCIAL CLASS	RELIABILITY (SEM) Low	High
Higher Social Class	16	16
Lower Social Class	16	16

chi-square = Ø

TABLE: 11.6.

SEM RANK FREQUENCIES FOR AGE

BOTH SEXES - FORM A

AGE	RELIABILITY Low → High			
	1	2	3	4
15-24	6	7	-	3
25-44	3	5	4	4
45-64	1	4	8	3
65+	6	-	4	6

SEM RANK FREQUENCIES FOR AGE

BOTH SEXES - FORM B

AGE	RELIABILITY Low → High			
	1	2	3	4
15-24	2	8	2	4
25-44	4	2	6	4
45-64	5	4	5	2
65+	5	2	3	6

TABLE: 11.7.

SUMMARY TABLES: SEMs AND AGE AS A MODERATOR VARIABLE

FORM A

AGE	RELIABILITY (SEM) Low	High
15–44	21	11
45–65+	11	21

chi square = 6.25 $p < .02$

FORM B

AGE	RELIABILITY (SEM) Low	High
15–44	16	16
45–65+	16	16

chi-square = Ø

unreliability of their responses as gauged by the SEM, suggests that it is perhaps the irrelevant item content which is at the root of differential reliability here. Moreover, Form A of the 16PF seems to be the main propagater of this bias.

The foregoing seems to suggest that age per se is not as an important major moderator variable on the reliability of Cattell's primary source traits as social class. Any tendency for reliability coefficients to be lower in older people can be accounted for by lower dispersion of scores in such groups. Exactly why dispersion should be lower is difficult to establish. We have noted that for certain factors, e.g. L (suspicious), that males and females are relatively close in mean scores at about twenty years of age, increasingly depart from each other up to forty-five years of age and then begin to move closer together. If sex differences were less extreme at older ages, this would tend to decrease the dispersion of scores. On the other hand, it could be purely a matter of response style, older people prefering to take the safe middle response in preference to the extreme alternatives.

In contrast, social class is seen as an important moderator on the reliability of the source traits. Those classified in the C2, D and E categories not only showed restriction in range but considerable unreliability within that range. An important point is that the test constructor should be particularly concerned with the applicability of items with lower socio-economic classes.

In conclusion, we must state that there was conflicting evidence on the effects of age as a moderator on reliability. However, our hypothesis that the lower social classes show lower reliability is supported by the data collected here.

RELIABILITY AND THE PRIMARY SOURCE TRAITS: CONCLUSIONS

In this section on the reliability of Cattell's source traits, based on a sample of approximately 2000 British adults, we have seen that few significant differences were found between the sexes. Similarly, there were few differences between results reported here and those published by Cattell in the United States. The adult sample tended to show lower reliability coefficients,however, in relation to university undergraduates. This was mainly as a result of less variability in the primary source trait scale scores for the adult group.

The most reliable of Cattell's primaries, with reliabilities in excess of .5, were A (outgoing), C (emotional stability), E (assertive), F (happy-go-lucky), H (venturesome), I (tender-minded), O (apprehensive), Q3 (controlled) and Q4 (tense). Factors B (intelligence), G (superego strength) and Q2 (self-sufficient) were of moderate reliability in the range .4 to .5. The remaining source traits, L (suspicious), M (imaginative) and Q1 (experimenting) all demonstrated low reliabilities below a value of .4.

On the study of moderator effects in reliability, it was found that older and lower social class subjects had lower alternate form coefficients but when account was taken of restriction in range in the scale scores of older subjects by use of the SEM statistic, the older age groups were possibly more reliable than the rest of the sample. The conclusion that social class was an important moderator on scale reliability still held after correction for restricted variances however.

Of course, the problem of moderator effects on reliability is not peculiar to Cattell's questionnaires and it is useful to take a retrospective look at the data to see which particular source traits are most prone to social class influences on reliability. The factors most influenced were E (assertiveness), G (superego strength), I (tender-minded), M (imaginative), Q1 (experimenting) and Q3 (controlled). On the other hand, the reliabilities of the three major anxiety components of C (emotional stability), O (apprehensive) and Q4 (tense) were least affected by the social class variable , none of them showing any statistically significant differences.

That is not to say that other factors were unaffected by the social class variable. We should not lose sight of the fact that other traits with unusually low coefficients also showed a decrease in reliability in the lower socio-economic groups. For example, although the difference did not reach statistical significance at the 5% level, the coefficient for Factor L (suspicious) was .393 in the middle class and .261 for semi-skilled, unskilled and unemployed subjects. A decrease in reliability which, for many practical purposes, calls into question the meaningfulness of scores across the two 16PF forms.

Our final conclusion must be, therefore, that reliabilities calculated on student groups give a better impression of the consistency of scale scores across the 16PF than is the case with adult samples. That is to say, that the power of measurement afforded by Cattell's model as represented in his two major questionnaires is less impressive on general population adult groups than was realised hitherto. This conclusion makes a detailed investigation into the internal structure of the scales, which purport to measure the primary source traits, even more necessary and this topic will be taken up in the next section.

SECTION 5:

INTERNAL CONSISTENCY AND THE PRIMARY SOURCE TRAITS

12. INTRODUCTION

INTRODUCTION

Up to this stage our researches have involved the descriptive power and reliability of Cattell's source traits as represented by scale scores. We have noted that certain scales which purport to measure the primaries at times show inconsistent relationships with external variables and demonstrate poor reliability, especially in the lower socio-economic classes. Clearly it is now necessary to investigate the internal consistency and item characteristics of the model, an area of much controversy in the past.

There are two basic problems which face the test constructor at the outset of his enterprise. The first is to discover, choose or otherwise define the nature and names of the dimensions he sets out to measure. The second is to develop items which measure these dimensions efficiently. Of course, this logical separation is not necessarily mirrored in the actual practical business of scale construction. One might for instance start with a set of items, factor them and develop tentative scales and then by a process of distillation arrive eventually at a set of scales and items to measure them. Nonetheless, there is a logical distinction to be upheld between dimensions or traits in a theoretical model and the device used to measure them.

There is the paradox in scale construction that if one starts with a set of dimensions and sets out to find items which measure them successfully, one runs the risk of being accused of producing entirely arbitrary scales, whilst on the other hand, to start off with a totally unstructured approach creates difficulties in that no criteria are available for the selection of items for the initial item pool. Moreover, if scale development begins without any hypothetical structure, there is the risk that the emergent factors will be obscure, difficult to name and of no practical value to the clinician or other test user. As Nunally (1967) has suggested, the best approach is probably to start off with hypothesised dimensions, and refine these in the course of scale development by the use of factor analysis or some similar technique.

Where ability testing is concerned, in most applications at least, the acid test of value is predictive validity: does the test successfully predict performance on some criterion, and if so, how efficiently(Campbell and Fiske, 1959). It has been suggested (e.g. by Vernon 1963) that the same is true of personality tests. However, it is a fact that most of the controversy raging around the question of personality measurement in fact concerns construct validity. By this we may mean one of two things: either how valuable the construct (ie. proposed dimension) can be shown to be as an explanatory tool, or alternatively how well the scale developed to measure a dimension actually does so. Where factored personality questionnaires are concerned, notably those devised by Cattell, Eysenck, Comrey and Guilford, the question of construct validity in this first sense comes down by and large to the matter of techniques adopted in the course of conducting the factor analysis. Argument rages not so much over what sorts of items to include in the finished inventory, indeed whatever the author, items tend to be remarkably similar, as how to assemble them into meaningful scales. Persistent lack of agreement on the question of which techniques to employ has led some to the view that as yet factor analysis is insufficiently understood, and that it is premature to hope that it will provide any immediate answers to the problem of personality measurement.

THE PROBLEM OF REPLICATING CATTELL'S FACTOR SOLUTION

In Cattell's (1964) paper "The Importance of Factor Trueness and Orthogonality in Test Scales", direct validity is defined as the multiple correlation of the items in a scale with the pure factor which those items represent. If we accept this as a meaningful definition of validity, it follows that scale validity is maximised where:-

(1) each item has a high loading on the factor it purports to measure

and

(2) the intercorrelation of the items in a scale is kept to a minimum, ie. there is low homogeneity of item content.

This type of scale construction will also mean that suppressor items can play a part in suppressing unwanted variance in an item which loads on more than one factor. This is the concept of purifying measurement by means of what Cattell (1964) has termed 'buffered' scales.

A number of problems arise in testing out these claimed construction methods for Cattell's inventories. First, as Eysenck (1972) has pointed out, other researchers have repeatedly failed to replicate Cattell's factor structure. Thus, if our aim is to test how well questionnaire items measure Cattell's model, then utilising loadings from a factor analysis as a measure of 'direct' validity would not seem viable.

Moreover, it is known that no two factor solutions are identical - each is unique either in terms of the number of factors or their definition by factor loadings. The factor solution is in turn based on an intercorrelation matrix of 16 variables. Such a matrix is influenced by the sample, the mental state of the subjects and many other variables. The concept of the 'pure' factor is rather like that of 'true score' in the classical test model - it is a platonic ideal - not directly measurable but with reasonable assumptions, it can be estimated.

Similarly, the 'pure' factor can only be estimated. Even if one were to factor these data and 'find' 16 factors, they will not be identical to Cattell's solution. But because many investigators have failed to find such factors, we seem to have reached an impasse! One way round this problem might be to undertake an arbitrary factoring procedure (Saville and Blinkhorn, 1976) but even when this method was tried it was not possible to replicate Cattell's solution.

The only possible solution seems to be the acceptance of Cattell's scale scores as the delineation of the model; in other words to use the 16PF scales as our factor estimates. If the scales are inadequate as factor estimates, the only possible conclusion is that the utility of the model is suspect. It is true to say that response styles, attenuation and other effects may tend to alter the magnitude of intercorrelation of scale over factor scores but the fact remains that the scales are the vanguard of the model. If a theory exists only within matrix algebra and allows no conversion into useful measurement, then we have every right to question the very value of that theory.

It is also relevant to point out that Cattell's direct validities merely tell us how well the scale in the questionnaire represents the factor in the factor analysis. As such, this tells us nothing at all about the usefulness of the test in practical situations; the test user does not have access to the pure factor, only to scale scores. Any correlations between the pure factor and performance on outside criteria will usually be mediated by the scales as found in the questionnaire: hence for the test user, the scales represent the factors, they must be expected to represent them efficiently and consistently and ultimately he must judge whether the assumption that they do so is borne out by such facts as he has available.

Further justification for this approach, ie. using scale scores as our factor estimates, is Cattell's claimed direct validities of .8 to .9 between scale and factor scores. This means that for many scales the overlap with the 'pure' factor is so great as to suggest that scale and factor are virtually identical. For these reasons it is proposed, therefore, to ignore Cattell's strictures on the use of estimates of the pure factor, since in the published inventories there are provided means of estimating true-factor scores, namely the factor scales themselves. If these are themselves poor representations of the factor space, it is difficult to see what justification exists for their development as means of measuring personality.

THE PROBLEMS OF RESPONSE FORMAT AND CORRELATIONAL METHODS

Thus, the intention is to correlate item scores with Cattell's personality scales as the analogue of his direct validities within a factor analysis. We can view such correlations as item validities. To quote Guertin and Bailey (1970):-

"The rationale for obtaining factor scores is analogous to obtaining a total score for a person on a test that has been item analysed to yield biserial 'r' validity indices between total score and the items. An item-loading on a factor can be thought of as a validity coefficient correlating the item and that reference factor and analogous to the biserial 'r' between an item and total score in item analysis."

Empirical evidence for this view has been provided by Henrysson(1962) where he showed the close similarity between factor loadings and biserial correlations in item analysis. Unfortunately, this is not simply a matter of calculating a large number of correlation coefficients. Questions arise concerning the relationship of items to scales,which must be considered before proceeding with any item analysis.

The Cattell questionnaires under consideration have three response categories for each item, generally corresponding to two extreme choices with a middle 'unsure' or 'in between' category, with the single exception of Factor B scales which, since they represent an ability measure, have one right and two wrong alternatives provided. The question arises as to whether the middle, 'uncertain' response can be assumed to lie on the same underlying dimension as the two extreme responses. Circumstances in which a subject might mark the 'b' response include, besides genuinely wishing to appear as in between the two alternatives, finding the item altogether irrelevant or meaningless or possibly unclear and ambiguous. It may be that in many instances the 'b' response is an escape route - a means of avoiding a straight answer.

Thus, it might be argued that 'b' responses should be ignored as representing 'noise' rather than 'signal'. There is certainly a case to be made out for totally discarding items which have more than say 80% of subjects responding in the middle category. Having said all this, however, were we to take the course of ignoring the middle response altogether, we should not be investigating the 16PF as it is actually used. The item weights are given on a continuum by Cattell and are an integral part of the construction of the test. Furthermore, by discarding the 'b' responses, we should be not only discarding a good deal of useful information, but also reducing the comparability of the coefficients in the final matrix, since different item-scale correlations would be based on different samples. Whilst the individual interpretation of many middle responses in the 16PF may be difficult, Cattell has essentially decided the issue for us by including them in his scoring scheme and sonsequently it is not proposed to discard responses in the middle category.

It has been suggested that the Pearson product moment correlation coefficient is not the appropriate statistic for item scale correlations of the kind where three part data are involved. When data are entered into a product moment correlation grouped into as few as three classes, the resultant coefficient will be an underestimate. Peters and Van Voorhis (1940) have suggested a correction for the underestimate caused by grouping; however there are assumptions underlying the use of their correction factor which may well not be met by item data of this kind.

Levonian (1961) suggested that the problem could be circumvented by dichotomising the item data. Since the instructions on a test booklet encourage the subject to respond in either the 'a' or 'c' category, and to restrict his use of the 'b' category to one in five items at the most, the distribution of item scores will tend to be bi-modal, thus violating one of the assumptions underlying the product moment coefficient. Levonian achieved dichotomised scoring by placing the middle category in that extreme category with the fewer case. "This procedure tends to equalise the split, to maximise the correlations to be computed, to allow analytical, reproducible results and to introduce no systematic bias." (Levonian 1961) However, Levonian was computing inter-item correlations, using the phi coefficient, a procedure which is not appropriate at this stage. Furthermore, such dichotomisation does in effect revise the scoring procedure to an extent which may produce results whose importance is impossible to estimate. In the case of item-scale correlations, either the point-biserial or biserial coefficients can be applied to dichotomised data: since the biserial coefficient is simply an upward revision of the point-biserial, applicable in circumstances where stronger assumptions can be made about the underlying shapes of the distributions, it is unlikely that the rank order of coefficients would be significantly altered by the choice of one rather than the other. The actual decision as to whether or not to dichotomise was made on the basis of an empirical study with actual questionnaire data and will be discussed later.

When a scale score is correlated with the score on an item which forms part of it, whatever the nature of the scale, the correlation coefficient which results will be spuriously high, since the item variance is included in both the variables to be correlated. This effect increases rapidly as the length of the scale diminishes. In the construction of a mental ability test, this effect may reasonably be disregarded, since the number of items in the scale will generally be large and the effect will be more or less constant for all items. The Cattell inventories, however, characteristically consist of a number of short scales and we cannot allow this spurious inflation of correlation coefficients to contaminate our data. Furthermore, since the intention is to compare the correlation of each item with both its own and every other scale, it is important to avoid such confounding effects. Since in the factor loading matrix such inflation will not arise, as all the items in the questionnaire contribute to the factor, swamping the effect, we must introduce some correction, so that our results are the best possible estimates of the item true factor correlations.

The most obvious course is quite simply to correlate the scores on a given item with scores on the appropriate scale minus that item score **(the item remainder method)**. The objection to this procedure is that each item will be correlated with a slightly different scale score and one, furthermore, which is composed of one fewer items than the true scale. To overcome these objections, Henrysson (1963) proposed some new formulae to provide for the estimation of the correlation of an item with the same total composite of items, with the spurious overlap effect removed.

For the biserial correlation the formula is:

$$r_b(H) = \frac{r_b S_t - (pq/y)}{\sqrt{S_t^2 + pq - 2r_b S_t y}}$$

where: r_b = non adjusted biserial between item and scale

$r_b(H)$ = corrected biserial coefficient

S_t = standard deviation of scores on test t

p = proportion passing item

q = proportion failing item

y = ordinate in the unit normal distributions corresponding to p

Wolf (1967) attempted to evaluate empirically the effect of these and other formulae devised for this purpose. Under conditions of varying test length it was in fact found that the results obtained by the Henrysson formulae agreed perfectly in all cases with the item remainder method. It, therefore, seems that there is nothing to choose between the two methods, and consequently, for reasons of convenience, the item remainder method has been chosen here.

Cattell has written in scathing terms of the efforts of those adopting an itemetric approach to questionnaire structure. By taking each item in turn and examining its correlations with its own and every other scale, we may well overlook the fact that the scale may be viewed not only item by item but also as a structured whole.

As the source traits measured by Cattell's scales are in any case oblique, ie correlated, we should expect to find significant correlations between items and scales other than those on which they are keyed. In some cases, these correlations may become disturbingly large. It is, however, a feature of these scales that such complications are catered for at the time of construction. We have already noted Cattell's claims that 'suppressor' action has been built in to the scales, so that a substantial correlation between an item and a scale on which it is not keyed is compensated by the correcting effect of the relations between other items and that scale. That is to say, where as the individual items in the scale may show overlarge correlations with other scales, the scale as a whole is a balanced composite largely free of spurious correlations.

Interest in suppressor action began with the search for suppressor tests to partial out unwanted correlations and their effects. However, as Levine (1952) reports, these proved difficult to develop and more recently interest has tended to centre around suppressor items. Lord and Novick (1968) have commented on the fact that few suppressors have nonetheless been found, and Conger and Jackson (1972) conclude that new predictors will always prove easier to find than new suppressors. Lubin (1957) showed that suppressor weights are even more fickle than ordinary regression weights when cross validation is attempted.

Rather than plunge into the intricacies of whether a particular item has or does not have suppressor action, the simplest way to assess whether scales are working in the way they are intended to is to compute the multiple correlations of the items, constituting the scale with that scale and with every other scale. If all is well, the multiple correlation between a set of items and the scale they constitute will be higher than their correlation with any other scale.

This is the empirical analogue of Cattell's 'direct validity', viz. the correlation of a scale with the pure factor found in the factor analysis. Since without replicating in every detail the factor solution derived by Cattell, we cannot gain access to the pure factor, for purposes of calculating this correlation, we must accept the questionnaire scale as the best estimate of this factor.

At this point the importance of using item remainder rather than ordinary item-scale correlation coefficients emerges. Were the item scale coefficients not corrected for inflation due to overlap, the multiple correlation of the items in a scale with that scale would necessarily be 1.00, since all the variance in the scale score is to be found in the item scores. However, by using item remainder coefficients, we obtain the best unbiased estimate available of the item true factor correlations, which then serve as a basis for calculating the multiple correlation between the items and the scale. Of course, when it comes to calculating multiple correlations between sets of items and scales in which they are not included, the item scale overlap problem does not arise.

It is important to realise that comparatively little weight will be attached in the ensuing discussion to the absolute size of the item scale multiple correlations. Our arguments will rest largely on the relative size of the coefficients. Thus, the error inherent in the use of the factor scale as an estimate of the pure factor does not affect our argument, since this error will affect all the multiple correlations. Quite simply, we shall look for the highest multiple correlations between sets of items and scale scores. As in any case the multiple correlation coefficient tends to overestimate the true correlation, any depression of these values as a result of the procedures we have adopted is not likely to produce serious distortion of the relative size of coefficients, or indeed their absolute size. We shall not, therefore, concern ourselves with corrections for 'shrinkage' and the like.

Our requirement will be quite simply that for a scale to be acceptable, it should be seen to have a higher multiple correlation with its own items than with the items constituting any other scale. This requirement is lenient in the extreme. Because we will be calculating the scale score analogue of Cattell's factor direct validities, we are merely asking that items in a scale measure their own trait better than they measure another factor.

THE HSPQ STUDY

We have seen that items of the type where subject responses are expressed in terms of a choice from three possible preferences have been analysed by one of three methods:

(a) dichotomising item data in such a way that the middle responses (designated the 'b' response in Cattell's inventories) are included under the smallest of the two extreme responses, using the biserial correlation coefficient to represent the association between item and scale.

(b) dichotomising the item data as in (a) but using the point-biserial coefficient in order to correlate item and scale.

(c) analysing the item data directly as coded by the subject without dichotomising data, with use of the conventional product moment coefficient.

In order to investigate whether conclusions on item adequacy may in any way be affected by these different approaches, item data were collected from British standardisation of another of Cattell's inventories for 14-17 year old school pupils, the High School Personality Questionnaire (HSPQ). The background to this study has been described by Saville and Finlayson (1973) and involved the administration of the HSPQ to some 2000 secondary school pupils. These data provide a useful experimental base to investigate these different methodologies, especially as 12 of the 14 primary source traits in the HSPQ are common to adults and the questionnaire espouses identical construction principles to those of the 16PF

The second major aim of this study was to investigate the effects of overlap between personality scales and the various items loading on that scale. Thus, in addition to biserial, point-biserial and product moment coefficients being calculated between items and the total scale scores, the corresponding coefficients corrected for spurious overlap between scale and item were also computed. The corrected coefficients were based on an iterative procedure which involved calculating the correlation between item and scale with that item removed from the relevant scale score.

THE SAMPLE

A total of 366 female pupils was sampled by the fixed interval technique from the British standardisation group (Saville and Finlayson, 1973) by taking every third record.

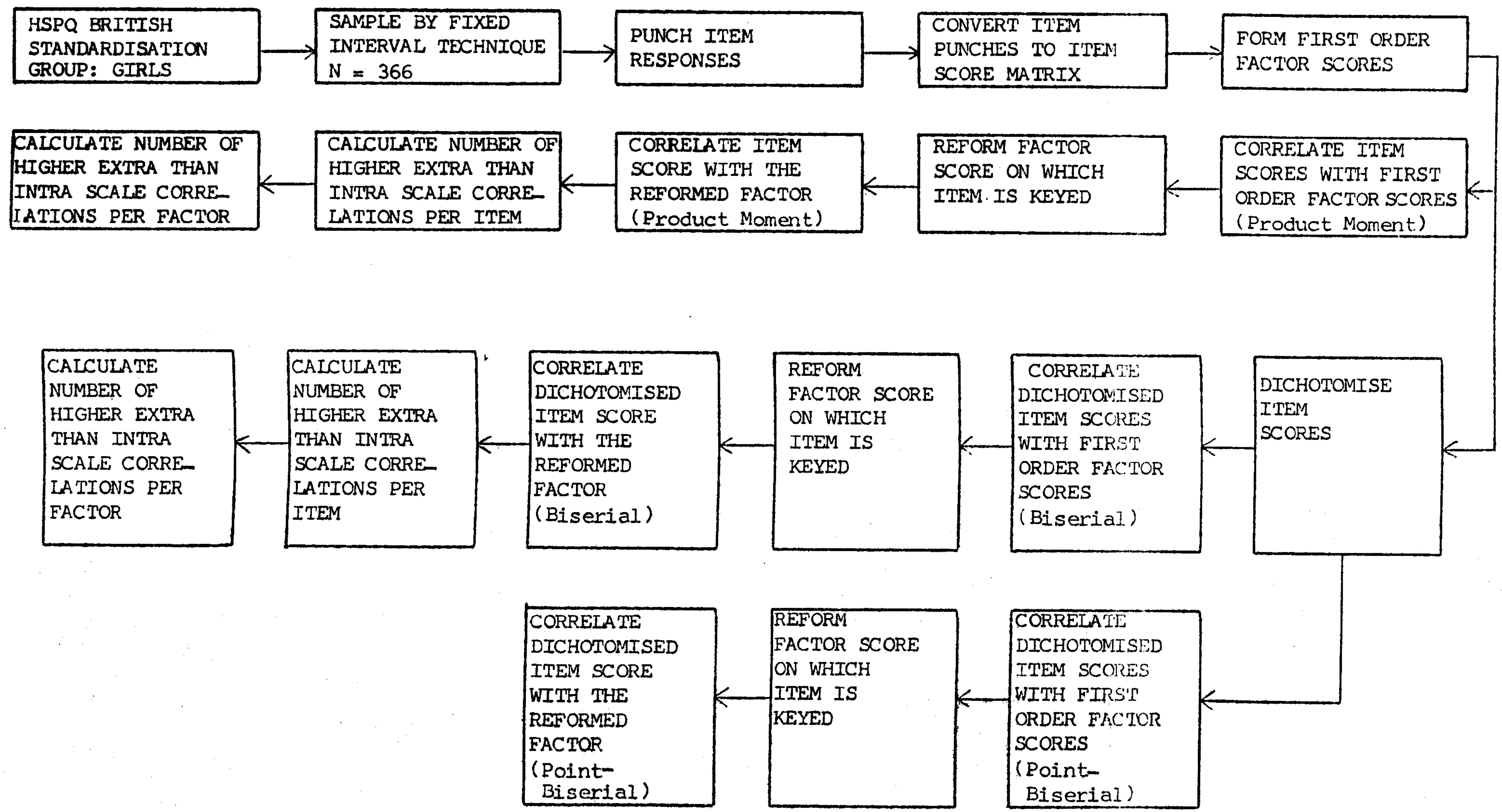
PROCEDURE

An outline of the item analysis procedure is contained in Figure 12.1.

RESULTS

Appendix 12contains the results based on dichotomising the HSPQ item data and includes the corrected for overlap point-biserial correlation of each of the 140 items with its own scale. In addition, FIGURE:12.1.

ITEM ANALYSIS PROCEDURE



the corrected biserial coefficients and the biserial coefficients between each item and the remaining thirteen HSPQ primary scales are included in the table.

The corresponding data based on product moment coefficients without dichotomising item data are contained in Appendix 12. For both sets of tables, coefficients under a solid line are negative in value.

A further analysis conducted on these data was to correlate the corrected dichotomised biserial with the point-biserial coefficients. The results of this analysis are contained in Table 12.1. below. As is to be expected from the mathematical relationship between the two coefficients, their intercorrelation is very high.

TABLE: 12.1.

CORRELATION BETWEEN THE POINT-BISERIAL AND BISERIAL APPROACHES TO HSPQ ITEM SCALE CORRELATIONS

	POINT-BISERIAL ITEM-SCALE CORRELATION	BISERIAL ITEM-SCALE CORRELATION	r
Mean	.167	.215	.99
S.D.	.092	.117	

Whilst the point-biserial correlations between an item and its own scale are lower than the corresponding biserial coefficients, the point-biserial of an item with an external scale are similarly lower. It is quite clear therefore that as long as we are not concerned with the absolute values of the correlation of an item with its own personality scale, the point-biserial and biserial statistics give us virtually identical results.

If we adopt the biserial coefficients in that the item data are not in any real sense a true dichotomy, it is possible to summarise the number of higher extra than intra scale correlations for each factor. For example, we can see from Table 12.2. that the first item on Factor A correlated more highly with its own scale than any other scale and the second item showed one correlation which was higher with an outside scale than its own corrected correlation. However, item 7 on Factor A showed twelve higher extra scale correlations; in fact, it was only with Factor B that this item had a lower coefficient than its own scale correlation. The correlation with all of the remaining twelve scales in the HSPQ were higher than the correlation upon which it is loaded.

Turning to the second set of tables in the Appendix, containing the item analysis results using the product moment coefficient on the item data in its original three point response format, we can see the very marked effect of correcting the coefficients for spurious overlap. This is no doubt due to the shortness of the HSPQ scales and their heterogeneity.

Table 12.3. provides summary statistics for the number of higher extra than intra scale correlations for each factor, based on the product moment approach. We can see that the overall relationship with the corresponding biserial table is high; Factors A (outgoing),

TABLE: 12.2.

HIGH SCHOOL PERSONALITY QUESTIONNAIRE: FORM A, GIRLS

NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS FOR EACH FACTOR (BISERIALS)

	A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4
ITEMS	0	2	3	5	2	1	1	5	5	4	5	2	0	4
	1	0	0	0	8	2	0	0	4	9	1	1	1	8
	1	0	1	3	4	2	1	1	0	10	3	1	4	1
	5	1	1	4	9	2	0	1	1	3	0	2	4	4
	3	0	4	0	12	0	0	2	5	4	9	1	4	2
	0	0	7	1	9	1	0	0	0	3	9	1	11	4
	12	0	1	0	8	0	2	4	2	5	2	13	13	4
	3	0	6	2	1	0	4	5	0	0	9	5	2	0
	1	0	0	1	1	4	0	2	0	7	2	1	7	4
	1	2	7	0	9	5	6	2	4	6	4	5	0	4
SUM	27	5	30	16	63	17	14	22	21	51	44	32	46	35
NUMBER OF ITEMS SHOWING NO HIGHER EXTRA THAN INTRA SCALE CORRELATIONS *	2	7	2	4	0	3	5	2	4	1	1	0	2	1

* to a maximum of 10

TABLE:12.3.

HIGH SCHOOL PERSONALITY QUESTIONNAIRE: FORM A, GIRLS

NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS FOR EACH FACTOR (PRODUCT MOMENT)

	A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4
ITEMS	1	2	2	5	2	1	0	6	2	4	5	4	0	6
	1	0	0	1	9	1	0	0	4	6	1	3	1	12
	1	0	1	1	10	1	0	4	0	10	3	2	3	2
	13	1	3	5	8	2	2	1	10	4	0	3	4	4
	3	0	7	0	12	0	0	0	0	4	8	1	4	2
	0	0	5	0	9	1	0	0	2	3	8	1	12	3
	6	0	2	0	10	0	4	4	0	5	2	13	8	2
	3	0	5	2	1	0	4	4	0	1	9	5	2	0
	3	0	0	1	1	0	0	3	0	7	3	1	6	3
	1	2	4	0	8	3	3	4	3	5	3	5	0	4
SUM	32	5	29	15	70	9	13	26	21	49	42	38	40	38
NUMBER OF ITEMS SHOWING NO HIGHER EXTRA THAN INTRA SCALE CORRELATIONS	1	7	2	4	0	4	6	3	5	0	1	0	2	1

C (emotional stability), E (assertive), H (venturesome), I (tender-minded), J (circumspect individualism), O (apprehensive), Q2 (self-sufficient), Q3 (controlled) and Q4 (tense), all showing a relatively large number of items with high extra over intra scale correlations.

When the biserial and product moment methods are compared over both items and factors, it can be seen from Tables 12.4. and 12.5. that the overall association is high and we may conclude with a fair degree of confidence that the two methods of item analysis give essentially comparable results.

TABLE: 12.4.

THE HIGH SCHOOL PERSONALITY QUESTIONNAIRE: FORM A, GIRLS

CORRELATION BETWEEN PRODUCT MOMENT AND BISERIAL APPROACHES (ALL ITEMS)

PRODUCT MOMENT NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS		N	BISERIAL NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS		CORRELATION
MEAN	S.D.		MEAN	S.D.	
3.03	3.21	140	3.02	3.16	.871

TABLE: 12.5.

THE HIGH SCHOOL PERSONALITY QUESTIONNAIRE: FORM A, GIRLS

CORRELATION BETWEEN PRODUCT MOMENT AND BISERIAL APPROACHES (FACTORS)

PRODUCT MOMENT NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS		N	BISERIAL NUMBER OF HIGHER EXTRA THAN INTRA SCALE CORRELATIONS		CORRELATION
MEAN	S.D.		MEAN	S.D.	
30.29	17.65	14	30.21	16.20	.970

13. ESTIMATING THE DIRECT VALIDITIES OF THE PRIMARY SOURCE TRAITS

INTRODUCTION

From the studies on the High School Personality Questionnaire, we have established that the biserial and point-biserial approaches after dichotomising the item data, give very comparable results to the use of the product moment coefficient on the trichotomised data.

Because of this finding and in that the trichotomised data after all represent Cattell's original response format, it was decided to use the product moment technique on the adult item data, correcting the statistic for spurious overlap between item and scale.

A further point has to be borne in mind however. Cattell (1972) advocates the use of multiple correlational techniques in calculating the composite correlations of his items with the factor estimate. It is the case, however, that such techniques are likely to give the upper bound to scale validities mainly as a result of their tendency to capitalise on chance effects in the data. What is needed is not the direct validities calculated on optimal weights but on the weights as they actually exist in the item data. Thus, the values '0', '1' and '2' were assigned to the item responses as laid out by Cattell in his 16PF scoring key and those used to calculate the multiple correlation of sums between items and scales.

That is:-

$$r_{cs} = \frac{\sum r_{ci}\,\sigma_i}{\sqrt{\sum \sigma_i^2 + 2\sum r_{ij}\sigma_i\sigma_i}}$$

Where:-

r_{ci} = correlation corrected for overlap between the item xi and the scale (i varies from 1 to n)

σ_i = standard deviation of the item

r_{ij} = correlation between one item xi and any other component xj, when j is a higher subscript number than i.

In summary, we are to calculate the multiple correlation of sums, between items corrected for spurious overlap and the relevant personality scale. These values we shall term composite item-scale correlations. The scales are taken as factor estimates in order to establish how well the items measure the underlying model. This approach,it has been argued, is the analogue in item analysis terms of Cattell's direct validities and is to all practical purposes, the only method by which the internal structure of Cattell's model can be investigated. With this in mind and in the light of Cattell's claims, a number of hypotheses can be tested.

HYPOTHESES

(1) The composite item-scale correlations, representing direct validities, will tend to be of the order of .7 to .9. (Cattell ,1972)

(2) Because of the method of scale construction used in the 16PF (Cattell, 1972), which deliberately sacrifices item homogeneity in favour of suppressor action, these composite item-scale correlations will tend to be higher than those derived from conventional homogeneity formulae such as coefficient alpha.

(3) After the principle of 'buffered' scales advocated by Cattell, the composite item-scale correlations (direct validities) for any given scale will be higher than the intercorrelation of that scale with another. (If this is not so, then it suggests that the items in one scale measure another factor rather better than they measure their own scale. In such a case, there can be no real justification that the scale in question exists as a measurable separate identity.)

DIRECT VALIDITIES OF THE SOURCE TRAITS: PROCEDURE

The responses to each item on Forms A and B of the 16PF for the adult group (N = 2008) were punched on to cards and scored by computer according to the keys provided by Cattell to produce an item score matrix. Scale scores were then created on each of the primary source traits for each of the two forms of the 16PF.

Item responses were then correlated by the product moment statistic with the relevant 16PF Form A+B scale, having corrected that scale for spurious overlap. (These data are held separately from the main thesis.) The multiple correlation of sums of these values was then calculated. This procedure was followed for the male and female groups separately (Table 13.1.).

DIRECT VALIDITIES OF THE SOURCE TRAITS: RESULTS AND DISCUSSION

The first observation we can make regarding the table of composite item-scale correlations concerns our hypothesis on their absolute size. In fact, the data are comparable to the multiple correlations of scale items with the pure factor as presented by Cattell (1972), (see Table 13.1).It should be remembered, however, that Cattell's values are based on Form A only whereas our item composite correlations are for two form length (Forms A and B). The only major difference between the two separately derived estimates is for Factor I, where Cattell's value is somewhat higher than the corresponding data reported here.

We can see from the table that the primary source traits of highest reliability are F (happy-go-lucky), H (venturesome), O (apprehensive) and Q4 (tense). Low internal consistency estimates were obtained on the other hand for Factors L (suspicious), M (imagination), N (shrewdness) and Q1 (experimenting). These findings are very much in line with those reported in the previous section where the parallel form method was employed. That is to say, that the primaries of low reliability as measured by the alternate form approach are precisely those factors which show

TABLE: 13.1.

COMPOSITE ITEM-SCALE CORRELATIONS (DIRECT VALIDITIES) FOR CATTELL'S PRIMARY SOURCE TRAITS

FACTOR	COMPOSITE ITEM-SCALE CORRELATIONS		COEFFICIENT ALPHA		MULTIPLE R OF SCALE ITEMS WITH PURE FACTOR (CATTELL) *
	MALES	FEMALES	MALES	FEMALES	
A	.601	.532	.626	.554	.62
B	.581	.561	.599	.579	.60
C	.673	.653	.695	.675	.54
E	.665	.646	.687	.667	.53
F	.786	.763	.814	.790	.76
G	.628	.575	.654	.599	.69
H	.840	.848	.871	.880	.79
I	.591	.454	.616	.471	.73
L	.471	.506	.488	.525	.44
M	.374	.446	.385	.459	.51
N	.369	.364	.382	.377	.40
O	.723	.706	.748	.730	.65
Q1	.448	.424	.465	.439	.47
Q2	.570	.549	.593	.570	.57
Q3	.660	.622	.688	.647	.64
Q4	.791	.750	.819	.776	.73

* corrected for two form length by the Spearman Brown formula

low internal consistency, either in terms of homogeneity or by the 'direct validity' approach.

Referring back to Table 13.1,we in fact notice that the item-composite correlations are in every case, for both the male and female groups, lower than the alpha homogeneity estimates. This must lead us to reject our second hypothesis that suppressor action in the 16PF scales would lead to higher composite item-scale correlations than would be obtained by conventional internal consistency methods. We are forced to the conclusion, therefore, that no suppressor action of any marked extent is present in the 16PF scales and that the internal consistency reliabilities of the primary source traits are not underestimated by conventional techniques,as has been claimed by the proponent of the scales.

Despite Cattell's theoretical standpoint on the production of scales with balanced specifics, the evidence reported here suggests that suppressor items are fickle in behaviour and that an author would generally do better to consider the addition of more predictor items in a scale. It may be the case in Cattell's theory of personality that the liking for suppressor action is merely a reflection of the fact that it has been found extremely difficult to construct simple predictor questionnaire items for some of the primary source traits. This problem might well have arisen, of course, as a result of Cattell transferring a model of personality from his studies on ratings which included inadequate or arbitrary traits.

The third hypothesis in this section concerned the question of buffered scales; the principle of items suppressing unwanted variance due to the influence of other personality traits. The vital test of this claim is the size of the composite item-scale correlations in relation to the factor scale intercorrelations. If a set of items has a composite item-scale correlation which is lower than that scale's relationship with another primary, it in effect means that:-

(a) the items measure another scale better than they measure their own scale.

(b) the construct validity of the model is in doubt because the scale in question is not demonstratably a separate identity from other scales.

Table 13.2. represents the intercorrelation matrix of the 16PF factors as scale scores, based on the British adult group, the matrix for males being above and for females below the main diagonal. Information from this and a previous table have been included in Table 13.3 which shows the item composite correlation for males and females with the highest intercorrelations of the relevant scale with the other primaries.

It is evident from this table that the items of Factor C (emotional stability) measure Factors O (apprehension) and Q4 (tension) as well, if not better than they measure their own scale. Indeed these three factors, although of tolerable reliability, all show

TABLE: 13.2.

CORRELATIONS BETWEEN THE SOURCE TRAITS OF THE 16PF AS SCALE SCORES

FORMS A AND B

	A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
A		-07	08	14	31	02	42	-22	01	-02	-03	-12	04	-43	01	-04
B	-04		17	15	07	-05	09	-05	-03	28	-14	-21	22	02	03	-06
C	11	20		06	08	11	41	-14	-37	12	11	-70	02	-12	42	-66
E	10	10	01		48	-15	45	-18	38	32	-44	-16	43	-10	-15	09
F	27	17	12	50		-33	50	-15	30	-07	-42	-09	32	-42	-30	12
G	04	05	09	-18	-30		08	-04	-14	-15	29	-15	-31	-03	60	-24
H	34	17	40	49	58	-01		-03	00	18	-12	-51	16	-44	22	-31
I	08	15	01	-17	-07	10	01		-08	25	05	18	-08	04	-07	12
L	-01	-07	-41	38	19	-09	-01	-16		03	-30	31	19	04	-29	44
M	-10	23	18	34	19	-10	33	18	00		-22	-12	33	08	-11	-04
N	09	-08	09	-41	-42	28	-19	04	-24	-28		-13	-38	05	38	-28
O	-15	-14	-67	-13	-14	-09	-48	07	28	-18	-08		-07	12	-50	71
Q1	07	11	-01	38	32	-23	25	-05	22	27	-31	-08		00	-25	10
Q2	-31	-12	-13	-06	-43	-04	-39	-04	07	00	07	07	00		00	06
Q3	05	09	36	-20	-31	56	09	02	-26	-12	37	-39	-20	02		-56
Q4	-12	-03	-64	09	11	-15	-27	05	40	-07	-24	69	05	03	-48	

MALES (N=833)

FEMALES (N=717)

TABLE: 13.3.

COMPARISON OF THE ITEM-COMPOSITE CORRELATIONS WITH SCALE INTERCORRELATIONS

FACTOR	ITEM COMPOSITE CORRELATION		A	B	C	E	F	G	H	I	L	M	N	O	Q1	Q2	Q3	Q4
	MALES	FEMALES																
A	.60	.53																
B	.58	.56																
C	.67	.65												-70 -67				-66 -64
E	.67	.65																
F	.79	.76																
G	.63	.58															60 56	
H	.84	.85																
I	.59	.45																
L	.47	.51			37 41	38 38												44 40
M	.37	.45				32 34			33									
N	.37	.36				44 41	42 42								38		38 37	
O	.72	.71			-70 -67													71 69
Q1	.45	.42				43 38												
Q2	.57	.55																
Q3	.66	.62						60 56										
Q4	.79	.75			66 64									71 69				

such high intercorrelations that their existence as separate identities seems doubtful in the extreme. This possibility has been suggested previously by Eysenck (1972) and Saville & Blinkhorn (1976), where as a result of their researches into student samples, the C, O and Q4 primary source traits seemed to form one underlying vector.

Two other factors, unassociated it would appear with the anxiety primaries considered above, but which show intercorrelations about as high as their own direct validities are G (superego strength) and Q3 (social precision).

The picture is a little more confused with the remaining primaries of L, M, N and Q1. Factor L (suspicious) shows intercorrelations almost as high as its direct validity estimates with the two anxiety factors of C (emotional stability) and Q4 (tense) and with E (dominance). Similarly, Factors M (imaginative) and Q1 (experimenting) show a strong enough association with the Factor E primary source trait, as to make one wonder as to their functional independence. Finally, the data demonstrate that Factor N (shrewdness) is a glaringly weak factor, with the items of F (happy-go-lucky), G (superego strength) and Q3 (social precision) having higher correlations with the scale than the items in the scale itself. Thus, there is the nonsense that the best estimate of this particular source trait is provided not by itself but by three other scales.

DIRECT VALIDITIES OF THE SOURCE TRAITS: SUMMARY AND CONCLUSIONS

We have seen that the direct validities calculated here on two-form length scale scores are about as high as Cattell's claims for Form A only. We have utilised the statistical methods advocated by Cattell with the exception of dealing with scale scores rather than the more esoteric factor estimates. This approach was adopted because of the great difficulties of replicating Cattell's factor structure and in the belief that scale scores are in any event more scientifically defensible criteria against which to validate items.

The values obtained for scale score direct validities were comparable to the alternate form reliability coefficients reported in an earlier section; particularly weak factors being L, M, N and Q1. We found no evidence to suggest that the alternate form reliabilities severely underestimate the reliability of the primary source traits (Cattell, 1972, Krug personnel communication, 1977).

When the role of suppressor action in the 16PF scale scores was investigated, the direct validity estimates showed no tendency to be higher than alpha statistics calculated on the item data. We are forced to conclude, therefore, that the suppressor action as a means of enhancing scale validities is not operating within the primary source traits, as represented by Cattell's latest questionnaire forms.

Moreover, it was clear from these analyses that certain primary factors were untenable as separate identities. Namely, the traits of C (emotional stability), O (guilt prone) and Q4 (tense) seemed to form one anxiety constellation and G (superego strength) and Q3 (social precision), a measure of the extent to which an individual adheres to conventional social standards.

The position with a number of further 16PF primaries was more complex. Factor M (imagination) appeared to have a good deal in common with Factor E (dominance), as did Q1 (experimenting) and N (shrewdness). The N trait also had a good deal in common with Factor F, so as to exhaust most of its meaningful variance. Finally, Factor L (suspicious) was highly associated with both the anxiety dimensions and E (dominance).

14. FACTOR ANALYSIS AND THE PRIMARY SOURCE TRAITS

INTRODUCTION

There would seem considerable evidence here to suggest that Cattell's model of personality as represented by the 16PF first order factors is open to serious criticism, especially as we could find little support for Cattell's contention that the primaries all represent separate identities.

Because, moreover, no suppressor action of any great influence was discovered within the item structure of the 16PF and because the scales were, therefore, very much to be judged by their homogeneity, there can be no real objection to a conventional factor analysis of the primary source traits as scale scores.

It is beyond the scope of this thesis, however, to construct an alternative personality theory to that of Cattell or the other major factor theorists. The literature is strewn with many one-off analyses which add little to a more general understanding of the structure of personality. There is also the point that it is inappropriate here to become heavily involved in the controversial issues of the type of factor analysis best employed.

Nevertheless, it is feasible to test whether as few as three factors are sufficient to account for the 16PF traits; for example, are the three dimensions of the Eysenck Personality Questionnaire (Eysenck and Eysenck, 1976) sufficient to explain Cattell's primaries?

For this purpose promax factor analyses of the 32 scale scores of Forms A and B of the 16PF was undertaken on the male (N = 1004) and female (N = 1003) samples collected for the purposes of these researches.

Promax (Hendrickson and White, 1964) involves first rotating to an orthogonal varimax solution and then relaxing the orthogonality of the factors to better fit simple structure. From the orthogonally rotated matrix, an ideal factor matrix is constructed in which high loadings of varimax are made higher and low loadings smaller. This is achieved by normalising the orthogonal matrix by rows and columns and taking, in this case, the fourth power of each loading. Finally, the least squares fit to the ideal matrix is found using Hurley and Cattell's Procrustes technique.

Because of the nature of the hypothesis that as few as three factors will account for Cattell's primary source traits, a relatively conservative criterion of the number of factors to extract was adopted here. The criterion was that of limiting the factors to those with eigenvalues greater than one (Kaiser, 1960).

TABLE: 14.1.

16PF FACTOR ANALYSIS: MALES:
EIGEN VALUES AND PERCENTAGE OF TRACE

FACTOR	EIGEN VALUE	PERCENTAGE OF TRACE	CUMULATIVE PERCENTAGE
1	5.6249	17.58	17.58
2	4.9684	15.52	33.10
3	2.5615	8.01	41.11
4	1.9918	6.22	47.33
5	1.6511	5.16	52.40
6	1.2370	3.87	56.36

TABLE: 14.2.

16PF FACTOR ANALYSIS: FEMALES:
EIGEN VALUES AND PERCENTAGE OF TRACE

FACTOR	EIGEN VALUE	PERCENTAGE OF TRACE	CUMULATIVE PERCENTAGE
1	5.2104	16.28	16.28
2	4.9571	15.49	31.77
3	2.1967	6.87	38.64
4	1.9962	6.24	44.88
5	1.6954	5.30	50.18
6	1.2906	4.03	54.21
7	1.1149	3.48	57.69

TABLE:14.3.

PROMAX FACTOR ANALYSIS: MALES: TABLE OF FACTOR LOADINGS

	FIRST ORDER TRAIT	OBLIQUE PRIMARY FACTOR LOADINGS					
		1	2	3	4	5	6
FORM A	A			0.6873	-0.2582		
	B						0.8743
	C	0.8345					
	E		-0.8141				
	F		-0.3226	0.5100		-0.3027	
	G					0.9366	
	H	0.2832	-0.4938	0.5041			
	I				-0.7739		
	L	-0.4453	-0.5825				
	M				-0.3899		0.3121
	N		0.4395				
	O	-0.7494					
	Q1		-0.4639			-0.2966	
	Q2			-0.7673			
	Q3	0.2976				0.6337	
	Q4	-0.8688					
FORM B	A			0.6303	-0.3266		
	B						0.8668
	C	0.6988					
	E		-0.8619			0.2033	
	F		-0.3747	0.4240		-0.2852	
	G					0.7970	
	H	0.4111	-0.3892	0.4500			
	I		0.2322		-0.7710		
	L	-0.4005	-0.5420			0.2089	
	M		-0.4364		-0.4572		
	N	0.2185	0.3124			0.2676	
	O	-0.7732					
	Q1		-0.2700		-0.2364		0.2821
	Q2		-0.2132	-0.7699			
	Q3	0.3739				0.6190	
	Q4	-0.8170					

TABLE: 14.4.

PROMAX FACTOR ANALYSIS: FEMALES: TABLE OF FACTOR LOADINGS

	FIRST ORDER TRAIT	OBLIQUE PRIMARY FACTOR LOADINGS						
		1	2	3	4	5	6	7
FORM A	A							0.7304
	B						-0.7959	
	C	-0.7854						
	E		0.7307					
	F		0.3094	0.5232		-0.2310		
	G					0.9093		
	H	-0.2363	0.6126	0.3822				
	I				-0.7455			0.2804
	L	0.4600	0.5066		0.2194	0.1825		
	M	-0.2441	0.3360		-0.4630			
	N		-0.4677	-0.2577				0.3277
	O	0.7478	-0.2177					
	Q1		0.2132	-0.2118	0.2531	-0.4180		
	Q2			-0.7436				
	Q3	-0.2496				0.6291		
	Q4	0.8472						
FORM B	A							0.7948
	B						-0.8176	
	C	-0.6391					-0.2734	
	E		0.8278					
	F		0.3575	0.4670		-0.2470		
	G					0.7847		
	H	-0.4227	0.5005	0.3186				
	I	0.2273			-0.7462			
	L	0.3400	0.4412	-0.2147	0.2018			
	M		0.6303		-0.3406			-0.2187
	N	-0.2024	-0.2925			0.2944		0.2287
	O	0.8231			-0.2052			
	Q1		0.5525	-0.3029	-0.3145			0.2534
	Q2			-0.7873				
	Q3	-0.3722				0.5769		
	Q4	0.7935						

TABLE:14.5.

CORRELATIONS OF THE OBLIQUE PRIMARY FACTORS

MALES

	1	2	3	4	5	6
1		01	16	-08	32	23
2			-24	03	41	-32
3				06	-07	-10
4					-03	-18
5						-18

TABLE:14.6.

CORRELATIONS OF THE OBLIQUE PRIMARY FACTORS

FEMALES

	1	2	3	4	5	6	7
1		01	-21	21	-25	18	-08
2			24	03	-42	-22	05
3				-10	-15	-09	15
4					-08	15	26
5						00	10
6							-04

FACTOR ANALYSIS: RESULTS AND DISCUSSION

The promax factor analysis of the 16PF scale scores produced a six factor solution for the male groups. Factor loadings are contained in Table 14.3. and the correlations between the oblique primary factors and the percentage of the variance which they accounted for are contained in Table 14.5.. The corresponding data for the female group are contained in Tables 14.4. and 14.6..

If we first turn our attention to the results, based on the male sample, we can see that the first major factor to be extracted from the matrix and accounting for some 17% of the variance, appears to be a general anxiety vector with high loadings on C (emotional stability), O (guilt prone) and Q4 (tense). The second and third factors appear as two extraversion-introversion factors; the second factor having high negative loadings on E (assertiveness) and to a lesser extent, L (suspicious) and H (socially boldness). The high factor loadings for the third factor are with Q2 negatively (group dependence) and A positively (outgoingness). Also loaded on this factor are F (happy-go-lucky) and H (social boldness).

Factor four is largely Cattell's I (tough minded) with some relationship with M (practical). As we might have expected from our previous section, the fifth factor is largely G (superego strength) and Q3 (social precision). Finally, there is an ability factor highly loaded by B (intelligence) with smaller loadings on M (imagination).

Turning to the factor analysis undertaken on the female group, we find that seven factors had eigenvalues greater than unity and that there is a good deal of agreement with the male study. Factors one and two seem largely to be an anxiety and assertiveness factor respectively. Factors four (tough mindedness), five (superego strength) and six (intelligence) are also closely in line with results found for the male group.

The important departure between the two studies is on the third factor in the male group. In males this factor has high loadings on A, F, H and Q2,whilst in the female sample A (outgoing) seems to form a separate factor.

The results of these factor analyses are interesting in that they do not support the hypothesis that only three factors are required to explain Cattell's primary source traits. It would appear that a minimum of six to seven and perhaps a maximum of nine are needed.

If we are to accept the trait labels provided by Cattell for these studies, the following structure evolves from the promax factor analyses.

PROVISIONAL FACTOR NAME		HIGH PRIMARY SOURCE TRAIT LOADINGS			
I	Anxiety	C–	O+	Q4+	
II	Dominance/Assertiveness	E+	L+	H+	N–
III	Group Adherence	Q2–	F+		
IV	Tender-mindedness	I+	M+		
V	Superego Strength	G+	Q3+	Q1–	
VI	Intelligence	B+			
	and possibly				
VII	Outgoingness/warmheartedness	A+			

Some confusion exists as to the dimensionality of the extraversion components of the 16PF but it would certainly seem that Cattell has managed to break this factor down into meaningful sub-factors, even if not as many as he would claim. Clearly what is needed in future research is to further investigate this domain using more sensitive factor analytic techniques, perhaps working on item statistics rather than scale scores.

CONCLUSIONS ON THE FACTOR ANALYSES

The results of the factor analyses conducted on the male and female samples produced highly comparable results to the calculation of direct validities on the 16PF scale scores. By using a promax technique, six factors provisionally named anxiety, assertiveness, group dependence, tender-mindedness, superego strength and intelligence with the possibility of a seventh factor of outgoingness were extracted. From all the evidence presented in this section, we are forced to conclude that Cattell's primary source traits are not the most parsimonious description of personality but that perhaps as many as seven to nine factors are required to explain the domain as represented by Cattell's questionnaire scales.

SECTION 6:

S U M M A R Y   A N D   C O N C L U S I O N S

15. SUMMARY AND CONCLUSIONS

The general hypothesis developed in this research was that Cattell's theory of personality rests on a system of primary source traits which is untenable in terms of the verifiability of important group differences, the reliability of measurement which it affords and its internal consistency. It was also hypothesised that despite the existence of some independent, reliable and descriptively useful factors, Cattell's model, as represented by his primary questionaire scales, is not as parsimonious as he has previously claimed.

It was also pointed out in the introduction to this thesis that there is unlikely to be a once and for all test of Cattell's theories. As Howarth (1976) has stated "what is now needed is not a system defence but a number of investigations to form a 'concensus buttressed by co-ordinated studies'".

What evidence have these studies provided then on the existence and value of Cattell's primaries as identifiable constructs? We shall seek to answer this question by considering each of the primary source traits in turn, observing how well the model actually fits the data base of some 2000 British adults collected here. We shall also take the opportunity at this stage to paraphrase the 16PF items which best define Cattell's primaries. For the purpose of this section, items which have reached an arbitrary criterion of a correlation of .25 or more with the scale it was designed to measure are included. Items, which are paraphrased here merely for reasons of copyright, are expressed in this format where an affirmative response corresponds to the positive pole of the primary source traits.

FACTOR A (Reserved vs. Outgoing)

1. GROUP DIFFERENCES

1.1. Cross National:- British adults tended to be significantly lower on this factor than American adults.

1.2. Sex Differences:- As was hypothesised, the female sample obtained a significantly higher mean score on this factor.

1.3. Social Class:- As hypothesised from Cattell's theory, no significant differences were found between the social classes on this factor.

1.4. Age:- No evidence was found for Cattell's claim of an increase up to 30 years with subsequent levelling off. A relatively flat profile of differences was in fact found across the age cohorts. There was no evidence of any curvilinear relationship of this primary with age.

2. RELIABILITY

2.1. Group Values:- The alternate form reliability of this factor was approximately .5, with significantly higher reliability in male over female subjects.

2.2. Social Class & Age as Moderators:- Reliability was found to be higher in the higher social classes. Age did not act as a significant moderator here.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- Values of .60 (males) and .53 (females) were found as estimated direct validities for this scale. Coefficient alpha was .626 and .554 for males and females respectively.

3.2. Items Defining the Factor:-

Item Number	Form A
51	I would rather be a secondary school teacher than a forester.
	Form B
26	At work I would rather be in charge of interviewing people than mechanical matters.
51	I would rather be a hotel manager than a research chemist.
52	I enjoy selling things or asking for funds.
53	I'd rather be a business manager than architect.
176	I'd prefer being in charge of children than helping a watchmaker.

3.3. Factor Analyses: The varimax factor analyses of the female data, where A (Outgoing) emerged as a separate variable gives support to the view that this trait could conceivably be a first order factor of a second order extraversion/introversion factor. In males, however, this primary source trait was absorbed into a more generalised extraversion measure. We can see from the items defining this particular trait that they are in the main concerned with occupational preferences and it may well be that the social stereotype of women being attracted to people orientated jobs is responsible for differences in the factor solution across the sexes. It is also possible that this factor is mainly a 'thing (job)' versus 'people' orientated discriminator. It is not altogether surprising, therefore, that Cattell has claimed that Factor A is important in distinguishing between, for example, scientists and sales persons. The content of high loading items on this primary does not suggest that this factor is necessarily closely associated with softheartedness, adaptability and easy-goingness. There is also the considerable danger that this factor's apparent power to distinguish between occupational groups is based upon teleological causes.

FACTOR B (Less Intelligent vs. More Intelligent)

1. GROUP DIFFERENCES

1.1. Cross-National:- Whilst results were not significant with the female groups, the British males were found to be significantly higher on this factor than their American counterparts.

1.2. Sex Differences:- On this factor males were found to achieve a significantly higher mean score than the female group.

1.3. Social Class:- As was hypothesised, the higher social classes tended to achieve higher scores. This was a relatively strong trend.

1.4. Age:- There was a significant negative correlation between this primary source trait and age for both males and females. Tests of the departure of linearity of regression were also significant, scores showing a more rapid decline after 40 years of age than they had shown thereto.

2. RELIABILITY

2.1. Group Values:- This was a factor of relatively low reliability of approximately .44.

2.2. Social Class and Age as Moderators:- Some evidence was found for lower social classes and higher age groups to have lower reliability on this factor.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities for this factor were .58 for males and .56 for females. The corresponding alpha statistics were .60 and .58 respectively.

3.2. Items Defining the Factor:- Most of the adequate items on this particular scale were of the conventional verbal analogous type. Three items, however, (103 and 152 on Form A and 177 on Form B) showed negative item scale correlations.

3.3. Factor Analyses:- Despite the relatively low reliabilities of this factor, it still emerged as a separate identity accounting for some 4% of the variance. In addition, this trait generally behaved consistently with regard to group differences hypothesised from Cattell's model and the estimated scale direct validities suggest that with the exception of Factor M, this primary is relatively untouched by the other 16PF variables. Not surprisingly, these researches suggest that Factor B (Intelligence) is an important and independent variable within Cattell's 16PF. Its low reliability, however, only makes it suitable for use with group rather than individual comparisons.

FACTOR C (Affected by Feelings vs. Emotionally Stable)

1. GROUP DIFFERENCES

1.1. Cross-National:- In line with the hypothesis, no significant differences between British and American subjects were found in this factor.

1.2. Sex Differences:- The female group were found to be significantly lower than males on this particular trait. This was contrary to the hypothesis of no difference between group means.

1.3. Social Class:- There was a significant positive linear trend between emotional stability and social class in this sample. This finding is in line with the prediction made from Cattell's description of his primaries.

1.4. Age:- No evidence was found for a slight positive relationship between this factor and age.

2. RELIABILITY

2.1. Group Values:- The group reliability coefficients for Factor C were approximately .5 with no significant differences between the male and female subjects.

2.2. Social Class & Age as Moderators:- Neither social class nor age were seen as significant moderators upon the reliability of this particular scale.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated composite item scale correlations obtained for this study were .67 for males and .65 for females. This compares with alpha coefficients of .70 and .68 respectively.

3.2. Items Defining the Factor:-

Item Number	Form A
55	I have hardly ever been let down by my friends.
79	People do not seem to ignore or avoid me.
80	People do not treat me unreasonably.
129	After looking forward to something, I always feel like going.
154	My sleep is not disturbed by vivid dreams.
	Form B
4	I never feel 'shut in' when in a small space.
5	I never find it difficult to put trivial troubles out of my mind.
80	The way people say things never hurts me.
130	I am ready for life and what it demands.
154	I never find it difficult understanding some people because of their unusual use of words.
179	I do not want a more sheltered life.

3.3. Factor Analyses:- This primary was highly loaded on an anxiety factor extracted from the intercorrelation matrix of the 32 Form A and B scale scores. Direct validities estimated from the data were about as high as the intercorrelation of this scale with Factors C and Q4. From the evidence collected here, this trait would not seem to constitute a separate identity from the other anxiety variables within the 16PF.

FACTOR E (Humble vs. Assertive)

1. GROUP DIFFERENCES

1.1. Cross-National:- Whilst there were no differences between the female American and British groups, the British males were significantly higher on this factor than the average American male.

1.2. Sex Differences:- As was hypothesised very marked sex differences were found on this primary source trait; males being significantly more assertive than females at every age group.

1.3. Social Class:- No significant correlation was found between this factor and social class.

1.4. Age:- This factor showed significant negative linear correlations with age in both groups. For the male sample there was a slight but statistically significant departure from linearity. This was in line with the hypothesised age differences although the decline would appear to commence somewhat earlier than 40 years of age as has been proposed by Cattell.

2. RELIABILITY

2.1. Group Values:- The alternate form coefficient between Forms A and B of the 16PF was .57 for the total sexes but somewhat lower for the single sex groups.

2.2. Social Class & Age as Moderators:- When account had been taken of restriction in range across the various groupings, no important differences in reliability were found across either age or social class.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The composite item scale correlations for this factor were .66 for males and .65 for females. The corresponding alpha reliability estimates were .69 and .67 respectively.

3.2. Items Defining the Factor:-

Item Number	Form A
6	I do not hold back from criticising others.
7	I make clever, sarcastic remarks to others.
56	In some ways I feel definitely superior to others.
81	Foul language does not disgust me, not even in mixed company.
106	I am best described as 'forceful'.

156 I am pleased when I become the one in command.

180 I almost always put forward ideas.

181 I am good at meeting challenges.

Form B

6 I tend to speak out when another person's reasoning is in error.

31 I do not avoid saying things that embarrass others.

32 I would not feel nervous with a loaded gun in my hand.

57 It is important to get your ideas into practice.

106 I usually tell a superior when my opinion differs from his.

131 I am more energetic and ambitious than many equally successful people.

3.3. Factor Analyses:- In both the male and female groups Factor E had high loadings on a second oblique primary factor, which accounted for some 15% of the variance. It seemed to have little in common, for example, with Factor A and appears to constitute an important primary within Cattell's exvia second order factor. Group differences were generally in line with those hypothesised on this particular factor.

FACTOR F (Sober vs. Happy-go-Lucky)

1. GROUP DIFFERENCES

1.1. Cross-National:-Group differences between the American and British subjects were not significant either for males or females on this primary source trait.

1.2. Sex Differences:- Similarly, there was no significant difference between the sexes.

1.3. Social Class:- Whilst there were no significant product moment correlation coefficients between this factor and social class, there was some slight tendency for eta coefficients to reach statistical significance; the higher social classes scoring more highly on this primary.

1.4. Age:- The trend in this factor is for a very pronounced negative correlation with age for both sexes.

2. RELIABILITY

2.1. Group Values:- The Factor F primary source trait was seen to be one of the more reliable variables in Cattell's personality model; the reliability being estimated at approximately .65 for both sexes.

2.2. Social Class & Age as Moderators:- No systematic variation was found as a result of age or social class acting as potential moderators on the reliability of this factor.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated direct validities for this primary were .79 for males and .76 for females which compare with values of .81 and .79 respectively by the alpha statistic.

3.2. Items Defining the Factor:-

Item Number	Form A
33	I am rated as an amusing talker.
58	I go out for entertainment more than average.
82	I have more friends than most people.
107	I do not avoid social functions.
132	I spend a good deal of my time talking with friends.
133	I like doing daring things for fun.
157	I like dressing with eye-catching style.
158	I prefer a lively party to a quiet hobby.
182	I am considered an enthusiastic person.
183	I like jobs which offer change and travel.
	Form B
8	I often tell amusing jokes.
33	I enjoy playing practical jokes.
58	I enjoy the principle of 'laugh and be merry'.
83	I like being in exciting situations and bustle.
107	I do not avoid embarrassing topics when talking with the opposite sex.
132	I would like more excitement.
182	I tend to act on impulse.
183	I am best described as 'happy-go-lucky'.

3.3. Factor Analyses:- In the varimax factor analysis, this source trait did not emerge as an independent factor but rather was absorbed into Assertiveness (E+) and Group Adherence (Q2-). This factor also appeared to have some negative loading on a factor well defined by Cattell's G (Superego Strength). It would seem, therefore, that whilst this is a relatively reliable trait, it is not independent of certain other extraversion/introversion variables within the 16PF.

FACTOR G (Expedient vs. Conscientious)

1. GROUP DIFFERENCES

1.1. Cross-National:- Contrary to the hypothesis of no significant differences between the two nations, American adults achieved significantly higher results on this factor.

1.2. Sex Differences:- No significant differences were found between the sexes on this variable.

1.3. Social Class:- With regard to social class, no clear relationship was found.

1.4. Age:- A strong positive correlation with age was found in both males and females.

2. RELIABILITY

2.1. Group Values:- This source trait was of moderate reliability with an estimated value of approximately .47.

2.2. Social Class & Age as Moderators:- When account was taken of differences in variability between the sub-groups, no consistent evidence was found for age and social class acting as significant moderators on scale reliability.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities for this primary were .63 for males and .58 for females with corresponding values of .65 and .60 by the alpha method.

3.2. Items Defining the Factor:-

Item Number	Form A
34	I get annoyed when I see untidy people.
134	The sight of an untidy room annoys me.
160	I always refer to the rules of right and wrong.
184	I insist on always doing things correctly.
	Form B
134	It is good to plan and avoid wasting time.
184	I do not like seeing disorder.

3.3. Factor Analyses:- This trait, with Q3 (social precision), emerged with high loadings on the fifth factor extracted from the correlation matrices. The serious question emerges, however, whether the items which define the factor can in any real sense be regarded as measures of superego strength. Rather they would seem to centre on tidiness of dress, order and perhaps a love of structure. It is not surprising then that this variable shows a considerable increase over age; adults, after all, generally become less accepting and more critical of the dress of others as they mature in age. Cattell (1972) has claimed that G is negatively related with creativity and it may well be that the variable is merely a liking for orderliness and routine in daily life. In any event, if we are to judge this factor by the adequate items within Factor G, there can be little reason for viewing this source trait as representing superego strength within the generally accepted definition of the term.

FACTOR H (Shy vs. Venturesome)

1. GROUP DIFFERENCES

1.1. Cross-National:- American females were seen as higher on this factor whilst there were no differences between the American and British males.

1.2. Sex Differences:- As was hypothesised, males scored significantly higher on this factor.

1.3. Social Class:- With regard to social class, a positive relationship was found in the female sample but no significant trend was discovered for male subjects.

1.4. Age:- The results of the age analysis for this primary source trait showed a relatively flat pattern of differences across the six age cohorts. The hypothesis of a positive relationship between this source trait and age was rejected.

2. RELIABILITY

2.1. Group Values:- This was the most reliable of Cattell's primary source traits with an estimated alternate form coefficient of .73.

2.2. Social Class & Age as Moderators:- Some evidence was found that age was a significant moderator on the reliability of Factor H; older age groups (65+ years) tended to have higher standard error of measurements than younger subjects. No significant effects on reliability were found, however, with social class.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The composite item scale correlations for this factor were .84 for males and .85 for females. The Cronbach alpha statistics were calculated as .87 (males) and .88 (females) on Forms A and B of the 16PF.

3.2. Items Defining the Factor:-

Item Number	Form A
10	I come forward at social occasions.
35	I like being the focus of attention in a group.
36	I like to join a gathering of people.
60	I do not keep quiet in the presence of senior people.
61	I do not find it difficult to speak to a group of people.
86	I am not content to let others do the talking in a small group.
110	It is easy for me to mix with people at a social event.
111	I can use tact and persuasion to get people moving.
135	I am a sociable, outgoing person.
136	I show my feelings in social relationships.
161	I do not mind people watching me at work.

Item Number	Form B
10	I have been active in organising social groups.
35	I am not unsure of myself socially.
36	I like getting into conversation with others.
60	I am not troubled by feelings of inferiority in my social relations.
61	I do not feel awkward in company.
85	I am not embarrassed by people watching me in a shop.
86	I avoid joining in a conversation with other people.

110	I usually succeed in impressing people favourably.
135	I am usually involved with what is going on.
136	I fit into a new group immediately.
161	It is not difficult for me to start conversations with strangers.
186	I am not bothered by shyness.

3.3. Factor Analyses:- Like Factor F, this variable has loadings on a number of different factors extracted in the male and female analyses. It seems to be related to anxiety, assertiveness (negatively) and group adherence (A+, F+, Q2-). We can see, therefore, that despite its very high reliability, this scale is unlikely to be uni-dimensional and is related to a rather complicated cluster of extraversion/introversion and perhaps anxiety components.

FACTOR I (Toughminded vs. Tenderminded)

1. GROUP DIFFERENCES

1.1. Cross-National:- In both male and female groups, American subjects achieved a mean score which was significantly higher than that of the British samples.

1.2. Sex Differences:- This is one of the major discriminators between the sexes and in line with the hypothesis, females attained a considerably higher mean score than males in the British sample.

1.3. Social Class:- No differences were found between the social class groups in the male sample. There was, however, a significant positive relationship between this variable and social class for the female sample.

1.4. Age:- Some support was found for the hypothesis of a low positive relationship between this primary source trait and age.

2. RELIABILITY

2.1. Group Values:- The reliability coefficient calculated on the total sex group was approximately .55. However, the sex of the respondent was a significant moderator here with males and females showing reliabilities of .47 and .32 respectively.

2.2. Social Class & Age as Moderators:- Age had no significant effect as a moderator on the reliability of this primary source trait. Whilst there were differences in the reliability coefficients for the various social class groups, (the higher social classes showing higher reliability), there were no significant differences between the groups when account was taken of differences in variability of scores.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities were .59 for males and .45 for females. The corresponding alpha statistics were .62 and .47 respectively.

3.2. Items Defining the Factor:-

Item Number	Form A
11	I would rather be a playwright than a construction engineer.
62	I do not have a good sense of direction.
87	I prefer reading a novel to accounts of battles.
112	Being a guidance counsellor appeals to me more than an engineering manager.
138	The beauty of a poem appeals to me more than that of a well-made gun.
	Form B
87	I do not tend to be interested in mechanical matters.
112	I would rather be a philosopher than a mechanical engineer.
163	I would rather watch a concert artist than a program on new inventions on the television.

3.3. Factor Analyses:- This scale was highly loaded on factors extracted from both the male and female intercorrelation matrices by the promax technique. Other 16PF variables with sizeable loadings on this factor included A (negatively) and L (negatively) in males and L (negatively), M (negatively) and Q1 (positively) in females. Perhaps the similarity of the items defining the I and A primary source traits should not go without mention. Both possess a high vocational content with particular emphasis on practical versus people orientated jobs.

FACTOR L (Trusting vs. Suspicious)

1. GROUP DIFFERENCES

1.1. Cross-National:- Despite the hypothesis of no significant differences between the two nations, British adults had a significantly higher mean than their American counterparts for both male and female subjects.

1.2. Sex Differences:- A significant difference in favour of males was found in this primary.

1.3. Social Class:- With regard to social class, a negative relationship was found in females, whilst there was no significant association in the male group.

1.4. Age:- This primary source trait showed the strongest non-linear association with age; males showing a slight decrease in scores over age group, whilst females demonstrated a decline in scores until about 50 years of age where they began to increase again.

2. RELIABILITY

2.1. Group Values:- Cattell's Factor L was one of the less reliable primary source traits with an approximate alternate form reliability coefficient of .31.

2.2. Social Class & Age as Moderators:- Age had no significant effect as a moderator in the reliability of this trait. There were significant differences between the reliability coefficients of different social classes. However this effect was largely due to differences in variability of sums across the various social groups.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- When Cattell's direct validities were estimated by the composite item scale method, values of .47 for males and .51 for females were obtained. This compared with alpha values of .49 and .53 respectively. When these data were compared with the scale intercorrelation with other factors, the items in Factor L appeared to measure the C (negatively), E (positively) and Q4 (positively) source traits almost as well as they measure themselves.

3.2. Items Defining the Factor:-

Item Number	Form A
113	If a person is selfish, I will show him up.
114	I do not tend to make silly remarks in fun.

Form B

Adopting the criterion of item remainder first order scale correlations of .25 and over, there was not one adequate item in Form B of the 16PF to measure this variable. The best item with the value of .203 was No. 64 - "People would like to see me in trouble" - .

3.3. Factor Analyses:- As to be expected from the direct validity estimates, this variable did not emerge with particularly strong loadings on any of the oblique primary factors. This trait appeared to be related to anxiety (positively), assertiveness (positively) and tendermindedness (positively) and as such seems an unreliable amalgam of different variables within Cattell's personality model.

FACTOR M (Practical vs. Imaginative)

1. GROUP DIFFERENCES

1.1. Cross-National:- In both the male and female groups, British adults attained a significantly higher mean score than that of Cattell's American standardisation sample.

1.2. Sex Differences:- Contrary to the hypothesis, males were higher on this factor than female subjects.

1.3. Social Class:- A significant positive relationship was found between this variable and social class for both the male and female samples.

1.4. Age:- Results on this source trait indicated relatively small differences across age groups. Product moment coefficients were generally non-significant, as were statistical tests for the significance of departures from linearity.

2. RELIABILITY

2.1. Group Values:- This was another factor of low alternate form reliability with an estimated value of .27.

2.2. Social Class & Age as Moderators:- Reliability estimates tended to be particularly low in the lower social classes and in higher age groups, although both of these trends appear to have their origin in differences in variability of scores.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities for this factor were .37 for males and .45 for females. The corresponding alpha values were .39 and .46 for males and females respectively. It was also noticeable that the items in this source trait measured E, H and Q1 almost as well as they measured their own scale.

3.2. Items Defining the Factor:- None of the items in either Forms A or B reached the criterion of a composite item-scale correlation in excess of .25. The best items, however, were as follows:-

Item Number	Form A
90	I dislike the way some people stare at others. (r = .22)
141	One should be careful about being with strangers because of problems of disease, etc. (r = .22)

Item Number	Form B
15	I dislike completing routine jobs ($r = .24$).
65	It is more important to be concerned about the meaning of life than making a good income. ($r = .24$)

3.3. Factor Analyses:- From the factor analyses of the male and female intercorrelation matrices, this trait had negative loadings on anxiety in females, positive loadings on assertiveness for both sexes, positive loadings on tendermindedness for both sexes and positive loadings independence for males. The overall picture for this factor, especially in view of its very low reliability, is extremely complex. From these analyses, however, it would seem to be a combination of emotional stability, an interest in artistic matters and ideas and high independence. We must question, therefore, whether this is in fact an independent factor and whether the practical versus imaginative label is the most appropriate term to be applied to this collection of very heterogeneous items.

FACTOR N (Forthright vs. Shrewd)

1. GROUP DIFFERENCES

1.1. Cross-National:- British females were significantly higher than American females on this factor, whilst there were no significant differences for the male samples.

1.2. Sex Differences:- Contrary to the hypothesis, females exceeded males significantly in terms of their group mean.

1.3. Social Class:- Despite Cattell's claim that this variable is highly related to social class, no clear relationship was found.

1.4. Age:- This factor showed a moderately strong relationship with age with no significant departure from linearity. This was in line with the hypothesis developed from Cattell's model.

2. RELIABILITY

2.1. Group Values:- Along with Factor Q1, this primary source trait was the most unreliable variable with an estimated coefficient of .25.

2.2. Social Class & Age as Moderators:- Some evidence was found for Factor N to show lower reliability coefficients in the unskilled working class but this effect was mainly as a consequence of lower test score variance in these groups. No relationship was discovered between age and the reliability of the scale.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated direct validities of the scales were .37 for males and .36 for females. These values were in relatively close agreement with alpha statistics of .38 for both male and female groups. When these internal consistency estimates were compared with intercorrelations of Factor N items with other scales, there was in fact a higher negative correlation with Factors E, F and Q3.

3.2. <u>Items Defining the Factor</u>:- Only one item (No. 42 in Form A) reached the criterion of an item scale correlation exceeding .25. Two other items did in fact exceed .20, however, and these are listed below.

Item Number	Form A
41	I do not feel like taking part in tough physical activity.
42	I prefer polite people to rough individuals.
	Form B
67	I get many unusual ideas which are too many to put into use.

3.3. <u>Factor Analyses</u>:- The major loading of this trait is negatively on a factor best defined by E (Assertiveness) on the 16PF. In females, however, there is also a negative loading on a general social extraversion factor defined by Cattell's F and H primary source traits. The results of the estimated scale direct validities, factor analyses and the reliability studies suggest that this is a variable already contained within the extraversion/introversion domain.

FACTOR O (Self-Assured vs. Apprehensive)

1. GROUP DIFFERENCES

1.1. Cross-National:- No significant differences were found between the American and British female groups, although in males, American adults were significantly higher.

1.2. Sex Differences:- As was hypothesised, British females scored higher than the male respondents in this survey.

1.3. Social Class:- Slight negative association with social class was found for this variable.

1.4. Age:- When Factor O was analysed by age cohorts, a relatively flat profile of mean scores was found.

2. RELIABILITY

2.1. Group Values:- This primary was one of the more reliable source traits with an estimated value of .61.

2.2. Social Class & Age as Moderators:- No significant differences in the reliability of this scale for different age or social class groups were found.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The internal consistency of Factor O estimated by the composite item scale correlation on items with the scale score was .72 for males and .71 for females. Alpha statistics achieved a value of .75 and .73

respectively. When these values were compared with the intercorrelation of the factor with the remaining primaries, they were found to be about as high as the scale's correlation with C and Q4.

3.2. <u>Items Defining the Factor</u>:-

Item Number	Form A
18	I occasionally have a sense of danger which I cannot understand.
43	I feel very down when I am criticised in a group.
44	I fear I have done something wrong when called in by my boss.
68	Often I do not feel in the right mood to see anybody.
93	I feel down if acquaintances show they dislike me.
118	I often feel that I will be punished even though I have done nothing wrong.
168	I am not regarded as a solid, undisturbed person.

	Form B
18	I can be overcome by thoughts of worthlessness.
43	My friends do not need me as much as I need them.
44	I worry if people think badly of me.
68	My spirits are not generally high.
69	I worry about an event at night.
93	I feel overcome when small things go wrong.

94	I am disturbed by guilt feelings.
118	I become afraid that my happiness will not last.
119	I occasionally feel depressed and miserable.
143	When catching a train, I get tense and anxious.

3.3. Factor Analyses:- Cattell's O (Apprehensive) loaded highly on the first and largest factor from the promax solution. This was clearly a general anxiety factor where Factor C and Q4 also loaded highly. From the scale direct validities and the factor analyses, there would seem no reason to suppose that O is in any way different from the C and Q4 primary source traits in Cattell's model.

FACTOR Q1 (Conservative vs. Experimenting)

1. GROUP DIFFERENCES

1.1. Cross-National:- As was predicted from Cattell's model of personality, there were no significant differences between the American and British groups on this factor.

1.2. Sex Differences:- Males achieved significantly higher scores on this primary source trait. This result was in line with the hypothesis developed in an early section of this thesis.

1.3. Social Class:- No significant relationship was found between this variable and social class.

1.4. Age:- Despite Cattell's hypothesis that this factor shows no clear relationship with age, these results showed a very strong negative correlation both in the male and female groups.

2. RELIABILITY

2.1. Group Values:- This particular primary source trait was one of the most unreliable of Cattell's variables with an estimated alternate form coefficient of .25.

2.2. Social Class & Age as Moderators:- The reliability coefficients of this factor showed significant differences between the social groups, higher social grades showing more marked consistency of scores across the two forms. It was also noted that coefficients tend to be lower in the older age groups. However, when account was taken of differences in variability of scores by the use of the SEM statistic, no significant trend was found.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities were found to be .45 for males and .42 for female subjects. The corresponding alpha statistics were .47 and .44 respectively. These estimates were about as high as the intercorrelation of this primary with Factor E (Assertiveness).

3.2. Items Defining the Factor:- No items reached the criterion of having a correlation of .25 or more with the scale.

However, five items exceeded the value of .20 and these are listed below.

Item Number	Form A
70	As a teenager, I kept to my own opinions if I differed with my parents.
95	I would rather have a job with a large salary which meant my persuading people that I was worth it.
145	In a heated argument between people, I like to see one side or the other win.
	Form B
46	In a newspaper I like to see discussion of basic social issues.
95	I disagree with the idea that people should get together in order to worship regularly.

3.3. Factor Analyses:- This source trait had loadings on the factor which we have provisionally entitled 'Superego Strength' (G+, Q3+). Sizeable loadings were also evident on Assertiveness (E+) and negatively on Tendermindedness (I+). In all, this seems a relatively unreliable factor which has variance in common with a number of other source traits. It certainly is poorly described by Cattell in terms of its relationship with external variables such as age. Whilst it is difficult at this stage to say whether Cattell's Q1 is in any way comparable to Eysenck's social attitude of radicalism, we have seen from these analyses that the trait as measured by 16PF items does not appear to be independent of the remaining primaries.

Further, clarification and definition of this trait is required, hopefully with far more reliable items than those employed in Cattell's inventories.

FACTOR Q2 (Group-Dependent vs. Self-Sufficient)

1. GROUP DIFFERENCES

1.1. Cross-National:- Despite the hypothesis of no difference between the two national groups, both the male and female British samples achieved significantly higher mean scores on this factor than their American counterparts.

1.2. Sex Differences:- British males were significantly higher than females on this source trait.

1.3. Social Class:- No significant relationship with social class was found with this variable.

1.4. Age:- The general trend is for scores to increase on Self-Sufficiency after adolescence until about 20-25 years where they level off until about 55 years. There was a significant positive relationship between Q2 and age in males but only a slight association for female subjects.

2. RELIABILITY

2.1. Group Values:- This primary source trait was only of moderate reliability with an approximate alternate form coefficient of .41.

2.2. Social Class & Age as Moderators:- There was some evidence that reliability coefficients tend to be lower in higher age groups and in the lower social classes. This trend was largely eradicated, however, when account was taken of differences in variability of scores. The one exception to this was in Form B of the 16PF where older subjects demonstrated higher standard errors of measurement.

3. INTERNAL CONSISTENCY:-

3.1. Estimated Scale Direct Validities:- The direct validities estimated by the composite item scale correlations were .57 for males and .55 for females. These corresponded to values of .59 and .47 respectively based on alpha internal consistency values.

3.2. Items Defining the Factor:-

Item Number	Form A
97	I do not like to take an active part in social affairs and committee work.
122	I would rather work on my own than with a committee.
171	I learn better by reading a good book on the topic than by joining a group.
	Form B
47	Books are more entertaining than companions.

3.3 Factor Analyses:- This source trait had high negative loadings on a third factor extracted form the promax factor analyses. The other traits with high loadings were F (positively), H (positively) and in the case of males A (positively). Unlike F and H, this source trait did not load heavily on a factor provisionally called 'Assertiveness' and as such seems to be a purer measure of group dependence or perhaps group adherence. From our analyses it would seem that Q2 along with E measure two sub-components of extraversion/introversion which show only low intercorrelation.

FACTOR Q3 (Undisciplined Self-conflict vs. Controlled)

1. GROUP DIFFERENCES

1.1. Cross-National:- No significant cross-national differences were found on this factor.

1.2. Sex Differences:- The adult male sample achieved a significant higher mean score on this source trait.

1.3. Social Class:- This variable showed a significant non-linear relationship with social class. Mean scores tended to be high for the higher social classes, to decrease in the middle class,skilled and unskilled working class and to increase again in the unemployed and retired (Group E).

1.4. Age:- Results showed a relatively strong, positive linear relationship with age but that little evidence of any levelling off at 40 years as has been postulated by Cattell.

2. RELIABILITY

2.1. Group Values:- The estimated alternate form reliability of this factor was .51, it tending to be significantly higher in male rather than female subjects.

2.2. Social Class & Age as Moderators:- The reliability coefficients for this factor were considerably higher in higher social class groups but there was little appreciable difference within the age cohorts. Little difference between either the age or social class groups was noticed however when the SEM statistic was used to investigate reliability.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities were .66 for males and .62 for females with corresponding alpha values of .69 and .65. These estimates were approximately as high as the intercorrelation of the scale with Cattell's Factor G (Superego Strength).

3.2. Items Defining the Factor:-

Item Number	Form A
23	When looking in the mirror, I rarely get confused as to which is right or left.

48	I keep my room well organised.
98	I am never satisfied until minor details are given close attention.
123	I never have times when I feel sorry for myself.
147	I do not allow my actions to get influenced by jealousy.

<u>Form B</u>

23	I do not like to leave things to chance.
24	I go about my life in a deliberate, methodical way.
73	When I need to make a quick decision, I rely on calm logic.
147	I do not tend to get over-excited and rattled easily.
148	I am not absent-minded.
173	I cannot really be described as a dreamer.

A most interesting anomaly occurs with item 98, Form B of the 16PF, which correlates -.22 with the Q3 scale. Inspection of the item (I make a fuss if I am left out of something by others) suggests that the score of this scale has in some way been reversed with respect to the underlying factor. We are in the position, therefore, that removal of this item will tend to increase the reliability of the scale.

3.3. <u>Factor Analyses</u>:- This source trait tended to have some positive loading on the first oblique factor of anxiety extracted from the male and female correlation matrices.

Its major loading, however, was on a factor provisionally called 'Superego Strength' where Factor G was also highly loaded. It would seem, therefore, that this variable is largely Cattell's G with some anxiety variance. This conclusion is very much supported by the list of items defining the factor which is provided above.

FACTOR Q4 (Relaxed vs. Tense)

1. GROUP DIFFERENCES

1.1. Cross-National:- British female subjects were significantly higher on this factor than their American counterparts, whilst there were no significant differences between the male groups.

1.2. Sex Differences:- As was hypothesised, females were significantly higher on this factor.

1.3. Social Class:- With regard to social class, no differences were found for male respondents but there was a significant negative relationship with social class in the female group.

1.4. Age:- The hypothesis of slight, negative relationship on Factor Q4 with age was in fact found in this data.

2. RELIABILITY

2.1. Group Values:- The alternate form reliabilities for this factor were relatively high with a value of approximately .66.

2.2. Social Class & Age as Moderators:- Neither age nor social class were seen as moderators on the reliability of this scale.

3. INTERNAL CONSISTENCY

3.1. Estimated Scale Direct Validities:- The estimated scale direct validities were .79 for males and .75 for females. The corresponding alpha statistics were .82 and .78 for males and females respectively. These tended to be about as high as the intercorrelation of this scale with Factors C (negatively) and O (positively).

3.2. Items Defining the Factor:-

Item Number	Form A
25	I find it difficult to calm down when something makes me angry.
49	I sometimes feel tense when I think of the day's happenings.
50	I sometimes feel that others are not interested in what I am saying.
74	I find that I am upset by criticism.
75	I find it difficult to keep my feelings under control.
99	Small setbacks can irritate me too much.
124	I often get angry with people too quickly.
149	I get tense when I think of the things in front of me.
174	Trivial things can get on my nerves.

Form B

25	I often feel restless without knowing why.
49	Certain sounds can set my nerves on edge.
50	I often feel tired when I get up in the morning.
74	Useless thoughts tend to stray through my mind.
99	I can be easily distracted from working.
125	If I am annoyed, I must let off steam.
149	A near accident or argument can leave me shaky.
150	I often feel that I am boiling up inside.
174	My emotions can run away with me.
175	I frequently feel so furious, I could break a window.

3.3. Factor Analyses:- This primary source trait had high loadings on the general anxiety factor extracted from the correlation matrices. As previously indicated, there would seem to be no reason to suppose that this variable is in any way different from C (emotionally unstable) and O (apprehensive).

CONCLUSIONS ON GROUP DIFFERENCES

In order to summarise results on group differences in personality, Table 15.1 shows the relationships between Cattell's primary source traits and the sex, social class and age of the adults sampled in this study. This information has been organised under the seven factor solution originating from the promax factor analysis of the female intercorrelation matrix. The factors have been provisonally named from the Cattellian variables which have the highest factor loadings.

It is not suggested that these seven factors are in any real sense the true definition of the personality domain. Factor analysis, utilising a relatively conservative criterion of the number of factors to rotate, was employed here to test the hypothesis which we have subsequently rejected that as few as two or three variables are required to explain the sixteen source traits. But the results of the factor analyses can also serve as a convenient descriptive and summary device under which to consider Cattell's primaries.

The first and largest factor, provisionally entitled Anxiety (C-, O+, Q4+) shows group differences where females and the lower social classes tend to score higher but where there is no clear relationship with age. On Assertiveness (E+, L+, H+, N-), males achieve higher scores as do younger subjects. Social class, on the other hand, is not related here. The third factor of Group Adherence (F+, Q2-) shows rather conflicting sex differences, no relationship with social class but strong negative correlations with age.

TABLE: 15.1

CONSISTENCY OF SEX, SOCIAL CLASS AND AGE DIFFERENCES ON CATTELL'S SOURCE TRAITS FOR THE SEVEN FACTOR SOLUTION

FACTOR	Sex Differences (Higher Scoring Sex)	Relationship with Social Class	Relationship with Age
I "Anxiety"			
C–	F	Negative	Zero
O+	F	Negative	Zero
Q4+	F	Negative	Slight Negative
II "Assertiveness"			
E+	M	Zero	Negative
L+	M	?	Negative
H+	M	Zero	Zero
N–	M	Zero	Negative
III "Group Adherence"			
F+	NS	Zero	Negative
Q2–	F	Zero	Negative
IV "Tendermindedness"			
I+	F	Positive	Positive
M+	M	Positive	Zero
V "Superego Strength"			
G+	NS	Zero	Positive
Q3+	M	?	Positive
Q1–	F	Zero	Positive

TABLE 15.1 (Continued)

FACTOR	Sex Differences (Higher Scoring Sex)	Relationship with Social Class	Relationship with Age
VI "Intelligence"			
B+	M	Negative	Negative
VII "Outgoing"			
A+	F	Zero	Zero

NOTES:

(1) In order to maintain consistency with regard to the direction of relationships in this table, group differences are reversed where a primary trait has a negative loading on the factor concerned.

(2) KEY:

F: Females scoring significantly higher on the negative or positive pole of the primary trait.

M: Males scoring significantly higher.

NS: No significant differences.

?: Relationship unclear due to conflicting results.

In terms of the fourth factor, Superego Strength (G+, Q3+, Q1-), the picture of sex differences is rather confused but the relationships with age are consistently strong positive with no apparent differences between the social classes. Tender-mindedness (I+, M+) again has conflicting sex and age differences, perhaps because Cattell's M tends also to be related to B (intelligence), but shows positive relationships with social class.

Finally, Intelligence (B+) has demonstrated a negative association with age and social class,whilst Outgoingness (A+), unlike the Assertiveness and Group Adherence factors, has no clear relationship with either variable.

Thus these researches provide further support for the view that Cattell's primaries are not functionally independent. When grouped under the relatively coarse headings used here, the source traits acting as major contributors to these factors behave with considerable consistency. And this is despite the fact that a number of the primaries load on more than one of the oblique factors derived from these analyses.

We have also seen that Cattell's age corrections had little appreciable effect on some eight of his source traits (B,E,G,H,I,L,Q1 and Q3). On six of the remaining factors (A,C,M,O,Q2 and Q4), they introduced error which was far more extreme than the original scale-age correlations.

There was no clear benefit to be gained, moreover, in using non-linear explanations of age differences in personality. Indeed, in some instances, Cattell's quadratic expressions tended to compound rather than minimise error.

CONCLUSIONS REGARDING THE RELIABILITY OF THE PRIMARY SOURCE TRAITS

The reliability of the primary source traits estimated by the correlation between the scale scores on the corresponding factors of Forms A and B of the 16PF were generally in line with those provided by Cattell, although as a result of reduced variability in scores, somewhat lower than those calculated on student groups.

The most reliable primaries were the factors of E (assertive), F (happy-go-lucky), H (socially bold), I (tenderminded), O (apprehensive) and Q4 (tense), whilst four factors, L (suspicious), M (imaginative), N (shrewd) and Q1 (experimenting), were of such low reliability (coefficients ranged from .31 to .25) as to be of little practical utility.

The variables of age and particularly social class were found to be significant moderators on the reliability coefficients of the questionnaire scale scores. These effects were largely eradicated, however, when the SEM statistic was used to take account of differences in the variability of scores within the various sub-groups. Nevertheless, some tendency still remained for lower social class respondents to show lower reliability of scores.

The traits which cause most concern in terms of reliability appear to be the primaries of L, M and N, which make up three of the last four factors previously extracted from L data, and Q1, the first of the four primaries only found in the questionnaire realm. We must accept, therefore, our general hypothesis; reliabilities as low as .2

certainly suggest that these factors are untenable in terms of the precision of measurement afforded by the model. Moreover, use of the scales which supposedly measure these traits in the lower social classes will mean that the reliability of measurement is lower still.

CONCLUSIONS ON THE INTERNAL CONSISTENCY OF THE MODEL

The internal consistency of the primary source traits was investigated by way of composite item-scale correlations, being the multiple correlation of sums of the items with the 16PF Forms A + B scale scores corrected for spurious item scale-score overlap. This is analogous in scale score terms with Cattell's concept of 'direct validities' which he has described as the multiple correlation of the items in a scale with the 'pure' factor abstracted from factor analyses.

It was also shown that the multiple correlation of sums of the items in one scale with another scale is directly equivalent to the intercorrelation of the two scales. It was possible, therefore, to compare composite item-scale coefficients with scale intercorrelations not only as a measure of the estimated 'direct validities' of items on their own scale but also the 'direct validities' for items on external scales.

The primaries of high estimated scale direct validity were C,E,F,H,O, Q3 and Q4. Factors L,M,N and Q1, on the other hand, showed relatively low composite item-scale correlations; precisely those traits which showed low alternate form reliability values. In general, the composite item correlations tended to be slightly below alpha values and the alternate form reliabilities corrected for two form length by the Spearman-Brown prophecy formula.

When the scale direct validity estimates were compared with the 'validities' of items with external scales (ie. scale intercorrelations), it was found that the anxiety factors of C, O and Q4 tended to measure themselves about as well as they measured one another. Similarly, Factor G (superego strength) items had direct validity estimates on Factor Q3 (social precision) which were virtually as high as their direct validities on their own scale. Other source traits which appear to be made up of non-discreet item content were the low reliability primaries of L (suspicious), M (imaginative), N (shrewd) and Q1 (experimenting).

We have noted that Cattell has advocated the use of suppressor action to improve the multiple correlation of items with some estimate of the pure personality factor. The presence of suppressor action within the adult personality questionnaires was tested here by comparing the composite item-scale correlations with conventional homogeneity estimates provided by Cronbach's coefficient alpha. If the action of suppressor items was marked within the scales, then according to the general law of multiple correlation the composite item-scale correlations would tend to be higher than alpha statistics calculated on the same data.

Unfortunately, no evidence was found in this study for any pronounced suppressor effects within the primary source traits as represented by the 16PF scale scores. Indeed, alpha coefficients tended to be slightly but consistently higher than the composite item-scale correlations. We must conclude, therefore, that despite Cattell's claims, conventional alternate form or homogeneity estimates do not underestimate the reliability of his scales.

CONCLUDING REMARKS

There would seem a good deal of evidence here to suggest that Cattell's primary source traits cannot be described as the simplest, most reliable definition of the personality domain. It is particularly alarming that so many glaring inadequacies exist in such widely used personality questionnaires. Most obvious of these are inaccurate age corrections, the low reliability and the complete interdependence of certain source traits.

What is the most likely explanation of these findings? Perhaps it was Cattell's early work on ratings based on small student groups and using relatively unsophisticated correlational techniques which was in error. Considerable criticism has been made of Cattell's method of rotating to a defined target. As factor analytic and computer techniques improved, Cattell, perhaps misguidedly, has spent his resources attempting to replicate the results of early researches, rather than refine his initial strictures on the structure of personality. In other words, Cattell's heavy investment in his theory has blinded him to criticisms made of the primary source traits.

Indeed, if this theory has undergone any change it has been by the addition of new traits rather than by the critical evaluation of those already existing in the model.

This is not to detract from Cattell's pioneering work on the factor analytic investigation of personality. His writings on the methodology of factor analysis have made a considerable contribution to the field. But, in the case of Cattell's primary source traits, our conclusion must be that theory seems to have outstripped experimental verification.

AREAS OF FURTHER RESEARCH

There would appear to be little point in carrying out further cosmetic research on Cattell's model of personality. Howarth and Browne (1971), Eysenck (1972) and Saville and Blinkhorn (1976) have all shown that clear inconsistencies exist in the model as represented in questionnaire data.

Whereas anxiety as represented by factors C, O and Q4 in the 16PF emerge as a unitary trait, the nature of introversion/extraversion as a variable in the personality domain is far less clear-cut. The evidence here points to possibly three sub-components of this dimension and further research should concern itself with the problem of defining these components by factor analytic investigations of the 16PF items, which supposedly measure the A, E, F, G, H, L, N and Q2 'source' traits.

In addition, the nature of the factors which have been provisionally named Tendermindedness (I+, M+) and Superego Strength (G+, Q3+ and Q1-) need further study in order to establish their psychological significance and to ascertain their exact relationship with variables in other personality theories.

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SECTION 7:

A P P E N D I C E S

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APPENDIX 6*

N-STEN NORM TABLES

* Please note that Appendix numbering cross references with the main text.

APPENDIX 6

INDEX OF NORM TABLES

	16PF	AGE GROUP					SOCIAL CLASS			
	FORM	15-24	25-34	35-44	45-54	55+	AB	C1	C2	DE
MALES	A	1	2	3	4	5	6	7	8	9
	B	10.	11	12	13	14	15	16	17	18
	A + B	19	20	21	22	23	24	25	26	27
FEMALES	A	28	29	30	31	32	33	34	35	36
	B	37	38	39	40	41	42	43	44	45
	A + B	46	47	48	49	50	51	52	53	54
TOTAL	A	55	56	57	58	59	60	61	62	63
	B	64	65	66	67	68	69	70	71	72
	A + B	73	74	75	76	77	78	79	80	81

TABLE 1

16PF BRITISH GENERAL POPULATION

MALE FORM A

AGE GROUP 15-24 , N=245

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-3	4-5	6	7-8	9	10	11-12	13	14-15	16-20	A	9.47	2.90
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.36	1.96
C	0-7	8-9	10-11	12-13	14-15	16-17	18-19	20	21-22	23-26	C	15.16	3.91
E	0-5	6-7	8-9	10-11	12-13	14-15	16-17	18-20	21	22-26	E	13.49	4.21
F	0-6	7-8	9-11	12-13	14-16	17-18	19-20	21-23	24	25-26	F	16.00	4.68
G	0-1	2-4	5-6	7-8	9-10	11	12-14	15-16	17-18	19-20	G	10.12	3.93
H	0-3	4-5	6-8	9-11	12-14	15-17	18-20	21-22	23-24	25-26	H	14.34	5.43
I	0-2	3	4-5	6	7-8	9-11	12	13-15	16-17	18-20	I	9.11	3.71
L	0-2	3-4	5	6-7	8-9	10-11	12-13	14	15-16	17-20	L	9.42	3.67
M	0-5	6-7	8	9-10	11-12	13	14-15	16-17	18-19	20-26	M	12.14	3.43
N	0-3	4	5-6	7-8	9	10	11-12	13-14	15	16-20	N	9.43	2.90
O	0-1	2-3	4-6	7-8	9-10	11-12	13-15	16-17	18-20	21-26	O	10.58	4.48
Q1	0-5	6-7	8	9-10	11	12-13	14-15	16	17-18	19-20	Q1	11.75	3.16
Q2	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15	16-17	18-20	Q2	10.52	3.68
Q3	0-4	5	6-7	8-9	10-11	12	13-14	15-16	17	18-20	Q3	11.11	3.35
Q4	0-1	2-3	4-7	8-10	11-12	13-15	16-17	18-19	20-21	22-26	Q4	12.38	5.15
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 2

16 PF BRITISH GENERAL POPULATION

MALES, FORM A

AGE GROUP 25–34, N = 246

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–3	4	5	6–7	8–9	10	11–12	13–14	15	16–20	A	9.15	3.29
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.56	2.05
C	0–8	9	10–11	12–13	14–15	16	17–19	20–21	22–23	24–26	C	15.45	3.75
E	0–5	6–7	8	9–10	11–13	14–15	16–17	18–20	21	22–26	E	13.20	4.18
F	0–3	4–5	6–8	9–10	11–12	13–15	16–18	19–20	21–22	23–26	F	13.13	4.89
G	0–5	6–7	8	9–10	11	12–13	14–15	16–17	18	19–20	G	12.02	3.38
H	0–2	3–4	5–7	8–10	11–12	13–15	16–18	19–21	22–23	24–26	H	12.94	5.50
I	0–2	3	4–5	6–7	8	9–10	11–12	13–14	15–16	17–20	I	9.01	3.56
L	0–2	3	4–5	6	7–8	9–10	11–12	13–14	15–16	17–20	L	8.74	3.54
M	0–6	7–8	9	10	11–12	13–14	15–16	17	18–19	20–26	M	12.64	3.26
N	0–4	5	6–7	8	9	10–11	12–13	14	15	16–20	N	9.96	2.89
O	0–3	4	5	6–8	9–10	11–12	13–14	15–16	17	18–26	O	10.33	3.99
Q1	0–4	5	6	7–8	9–10	11–12	13–14	15–16	17	18–20	Q1	10.61	3.44
Q2	0–4	5–6	7–8	9	10–11	12–13	14–15	16	17–18	19–20	Q2	11.70	3.33
Q3	0–5	6–7	8–9	10	11–12	13	14–15	16	17	18–20	Q3	12.04	3.18
Q4	0–3	4–5	6–7	8–9	10–12	13–14	15–17	18–19	20–21	22–26	Q4	12.24	4.80
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 3

16 PF BRITISH GENERAL POPULATION

MALES, FORM A

AGE GROUP 35–44, N = 191

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–2	3–4	5–6	7	8–9	10	11–12	13	14	15–20	A	9.17	2.90
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.41	2.16
C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20–21	22–23	24–26	C	15.37	4.04
E	0–5	6	7	8–9	10–11	12–14	15–16	17–18	19–21	22–26	E	12.19	4.23
F	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–18	19–20	21–26	F	11.65	4.35
G	0–5	6–7	8–9	10–11	12–13	14–15	16	17	18–19	20	G	13.03	3.41
H	0–3	4–5	6–8	9–10	11–13	14–16	17–19	20–22	23	24–26	H	13.63	5.31
I	0–2	3–4	5	6–7	8–9	10	11–12	13–14	15–16	17–20	I	9.32	3.46
L	0–1	2–3	4	5–6	7–8	9	10–11	12–13	14	15–20	L	8.16	3.19
M	0–6	7–8	9	10	11–12	13–14	15–16	17–18	19–20	21–26	M	12.85	3.41
N	0–4	5	6–7	8	9–10	11–12	13–14	15	16	17–20	N	10.73	3.26
O	0–1	2–3	4–5	6–7	8–10	11–12	13–14	15–16	17–18	19–26	O	10.17	4.53
Q1	0–3	4–5	6	7–8	9–10	11	12	13	14–15	16–20	Q1	9.77	2.77
Q2	0–4	5–6	7	8–10	11	13–14	15	16	17–18	19–20	Q2	11.85	3.52
Q3	0–7	8	9–10	11	12–13	14–15	16	17	18–19	20	Q3	13.48	2.95
Q4	0–2	3	4–6	7–8	9–11	12–14	16–17	18–19	20–21	22–26	Q4	11.77	5.16
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 4

16 PF BRITISH GENERAL POPULATION

MALES, FORM A

AGE GROUP 45-54, N = 182

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–2	3–5	6	7	8–9	10	11–12	13–14	15	16–20	A	9.46	3.09
B	0–2	3	4	5	6	7–8	9	10	11	12–13	B	7.07	2.22
C	0–7	8	9–10	11–12	13–15	16–17	18	19–20	21–22	23–26	C	14.97	3.86
E	0–3	4–5	6–8	9	10–11	12–13	14–15	16–17	18–21	22–26	E	11.67	3.97
F	0–2	3–5	6	7–8	9–10	11–12	13–15	16–17	18–19	20–26	F	10.81	4.28
G	0–6	7–8	9–10	11	12–13	14–15	16–17	18	19	20	G	13.65	3.19
H	0–2	3–5	6	7–9	10–12	13–15	16–19	20–21	22–23	24–26	H	12.87	5.53
I	0–2	3–4	5	6–7	8	9–10	11–12	13–14	15	16–20	I	9.01	3.22
L	0–2	3	4	5–6	7	8–9	10–11	12–13	14–15	16–20	L	8.05	3.31
M	0–5	6	7–8	9–10	11–12	13–14	15	16–17	18–19	20–26	M	12.06	3.61
N	0–5	6	7–8	9	10–11	12	13–14	15	16–17	18–20	N	11.15	2.94
O	0–3	4	5	6–7	8–10	11–12	13–15	16–17	18–20	21–26	O	10.70	4.50
Q1	0–4	5	6	7	8–9	10	11–12	13	14–15	16–20	Q1	9.41	2.81
Q2	0–5	6	7–8	9	10–11	12–13	14–15	16	17	18–20	Q2	11.60	3.26
Q3	0–6	7–8	9–10	11–12	13	14	15–16	17	18	19–20	Q3	13.42	3.05
Q4	0–2	3–5	6–7	8–10	11–12	13–14	15–17	18–19	20–22	23–26	Q4	12.48	4.74
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 5

16PF BRITISH GENERAL POPULATION

MALE, FORM A

AGE GROUP 55+, N=240

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-2	3-4	5-6	7-8	9	10-11	12	13-14	15-16	17-20	A	9.47	3.21
B	0-2	3	4	5	6	7	8	9	10	11-13	B	6.46	2.18
C	0-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22	23-26	C	15.25	3.87
E	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17-19	20-26	E	10.64	4.14
F	0-1	2	3-5	6-7	8-9	10-11	12-13	14-16	17-19	20-26	F	9.7	4.32
G	0-7	8	9-10	11-12	13-14	15	16-17	18	19	20	G	13.97	3.20
H	0-3	4	5-6	7-8	9-11	12-15	16-18	19-20	21-23	24-26	H	12.43	5.57
I	0-3	4	5-6	7	8-9	10	11-12	13-14	15	16-20	I	9.34	3.07
L	0-2	3	4-5	6	7-8	9-10	11	12-13	14-15	16-20	L	8.57	3.20
M	0-4	5-6	7-8	9-10	11-12	13-14	15	16-17	18-19	20-26	M	12.20	3.55
N	0-5	6-7	8	9-10	11	12	13-14	15	16-17	18-20	N	11.56	2.85
O	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-18	19-26	O	9.67	3.89
Q1	0-3	4	5	6-7	8	9-10	11	12-13	14-15	16-20	Q1	8.78	2.92
Q2	0-5	6-7	8	9-10	11-12	13-14	15	16-17	18	19-20	Q2	12.38	3.31
Q3	0-8	9-10	11	12	13-14	15	16-17	18	19	20	Q3	14.23	2.86
Q4	0-1	2-3	4-5	6-8	9-11	12-13	14-16	17-18	19-20	21-26	Q4	11.15	4.99
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 6

16PF BRITISH GENERAL POPULATION.

MALE, FORM A

SOCIAL CLASS A,B, N=174

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6	7-8	9-10	11	12-13	14	15-16	17-20	A	10.01	3.19
B	0-3	4	5-6	7	8	9	10	11	-	12-13	B	8.21	2.03
C	0-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22	23-26	C	15.64	4.07
E	0-4	5	6-8	9-10	11-12	13-14	15-17	18-19	20-21	22-26	E	12.68	4.44
F	0-2	3-4	5-6	7-8	9-11	12-13	14-16	17-20	21-23	24-26	F	11.42	5.19
G	0-3	4-6	7-9	10-11	12-13	14-15	16-17	18	19	20	G	13.11	3.99
H	0-3	4-5	6-7	8-11	12-14	15-17	18-20	21-22	23-24	25-26	H	14.05	5.66
I	0-2	3	4-5	6-7	8-9	10-11	12-13	14-16	17	18-20	I	9.53	3.99
L	0-1	2-3	4	5-6	7	8-9	10-12	13	14	15-20	L	8.24	3.53
M	0-7	8-9	10	11-12	13	14-15	16-17	18-19	20	21-26	M	13.90	3.16
N	0-4	5	6-7	8	9-10	11-12	13	14-15	16-17	18-20	N	10.56	3.22
O	0-2	3	4	5-6	7-8	9-10	11-13	14-15	16-18	19-26	O	9.06	4.27
Q1	0-4	5	6	7	8-9	10	11-12	13-14	15-16	17-20	Q1	9.48	3.07
Q2	0-4	5-6	7-8	9-10	11-12	13	14-15	16-17	18	19-20	Q2	11.95	3.53
Q3	0-5	6-7	8-9	10-11	12-13	14-15	16	17-18	19	20	Q3	13.18	3.67
Q4	0-1	2-3	4-6	7-8	9-11	12-14	15-16	17-19	20-22	23-26	Q4	11.74	5.23
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 7

16 PF BRITISH GENERAL POPULATION

MALES, FORM A

SOCIAL CLASS C1, N = 241

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–2	3–4	5	6–7	8–9	10	11–12	13–14	15	16–20	A	9.22	3.31
B	0–3	4	5	6	7	8	9–10	10	11	12–13	B	7.63	2.19
C	0–8	9–10	11	12–13	14–15	16–17	18–19	20–21	22–23	24–26	C	15.49	3.81
E	0–3	4–5	6–7	8–9	10–12	13–14	15–16	17–19	20–21	22–26	E	12.19	4.59
F	0–2	3	4–7	8–9	10–12	13–15	16–18	19–21	22–24	25–26	F	12.81	5.61
G	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17	18	19–20	G	12.19	3.75
H	0–2	3	4–6	7–10	11–13	14–16	17–19	20–21	23–24	25–26	H	13.17	5.84
I	0–2	3	4–5	6–7	8–9	10	11–12	13–14	15–16	17–20	I	9.23	3.51
L	0–2	3	4	5–6	7–8	9	10–12	13	14–16	17–20	L	8.51	3.48
M	0–6	7	8–9	10–11	12–13	14–15	16	17–18	19–20	21–26	M	13.22	3.52
N	0–4	5	6	7–8	9–10	11	12–13	14	15–16	17–20	N	10.08	3.12
O	0–2	3	4–5	6–7	8–9	10–11	13–14	15–16	17	18–26	O	9.87	4.09
Q1	0–3	4	5–6	7–8	9–10	11–12	13	14–15	16–17	18–20	Q1	10.23	3.49
Q2	0–3	4–5	6–7	8–9	10–12	13	14–15	16–17	18	19–20	Q2	11.62	3.69
Q3	0–4	5–7	8–9	10	11–12	13–14	15–16	17	18–19	20	Q3	12.69	3.61
Q4	0–2	3–4	5–6	7–8	9–12	13–14	15–17	18–19	20	21–26	Q4	11.87	5.03
FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 8

16 PF BRITISH GENERAL POPULATION

MALES, FORM A

SOCIAL CLASS C2, N = 420

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–2	3–4	5–6	7	8	9–10	11–12	13	14	15–20	A	9.05	2.96
B	0–3	–	4	5	6	7	8–9	10	11	12–13	B	6.95	2.01
C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20–21	22	23–26	C	15.35	3.71
E	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17–18	19–21	22–26	E	12.35	4.13
F	0–3	4–5	6–7	8–9	10–12	13–15	16–17	18–19	20–22	23–26	F	12.56	4.72
G	0–4	5–7	8–9	10	11–12	13–14	15–16	17	18–19	20	G	12.51	3.59
H	0–3	4–5	6–7	8–10	11–13	14–16	17–19	20–21	22	23–26	H	13.25	5.31
I	0–2	3–4	5	6–7	8	9–10	11–12	13–14	15–16	17–20	I	8.80	3.26
L	0–2	3	4–5	6	7–8	9–10	11–12	13–14	15	16–20	L	8.71	3.47
M	0–4	5–6	7–8	9	10–11	12–13	14–15	16	17–18	19–26	M	11.78	3.39
N	0–4	5–6	7	8	9–10	11–12	13	15	16	17–20	N	10.50	3.08
O	0–2	3–4	5	6–7	8–10	11–12	13–14	15–17	18–19	20–26	O	10.33	4.30
Q1	0–4	5	6–7	8	9–10	11	12–13	14–15	16–17	18–20	Q1	10.31	3.18
Q2	0–4	5	6–7	8–9	10–11	12–13	14–15	16	17	18–20	Q2	11.55	3.50
Q3	0–6	7–8	9	10–11	12	13–14	15	16–17	18	19–20	Q3	12.78	3.02
Q4	0–1	2–4	5–7	8–9	10–11	13–14	15–17	18–19	20–21	22–26	Q4	11.98	4.91
FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 9

16PF BRITISH GENERAL POPULATION

MALE, FORM A

SOCIAL CLASS D+E, N=264

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6	7	8-9	10	11-12	13	14-15	16-20	A	9.48	2.95
B	0-2	3	4	5	6	7	8	9	10	11-13	B	6.47	2.00
C	0-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	C	14.57	4.00
E	0-3	4-6	7-8	9	10-11	12-13	14-16	17	18-21	22-26	E	11.98	4.09
F	0-3	4-5	6-7	8-9	10-12	13-14	15-17	18-20	21-22	23-26	F	12.36	4.90
G	0-4	5-6	7-8	9-10	11-12	13-14	15-16	17	18	19-20	G	12.19	3.68
H	0-3	4-5	6-7	8-9	10-12	13-15	16-18	19-21	22-23	24-26	H	12.78	5.29
I	0-3	4	5-6	7	8-9	10	11-12	13-14	15-16	17-20	I	9.40	3.14
L	0-2	3	4-5	6-7	8	9-10	11-12	13	14-15	16-20	L	8.95	3.26
M	0-5	6	7-8	9	10-11	12	13-14	15-16	17	18-26	M	11,55	3.16
N	0-5	6	7	8-9	10	11-12	13-14	15	16	17-20	N	10.94	2.85
O	0-2	3-4	5-6	7-9	10-11	12-13	14-15	16-17	18-19	20-26	O	11.32	4.16
Q1	0-4	5	6	7-8	9-10	11	12-13	14-15	16	17-20	Q1	10.14	3.15
Q2	0-4	5-6	7-8	9-10	11	12	13-14	15-16	17	18-20	Q2	11.47	3.15
Q3	0-6	7	8-9	10-11	12	13-14	15-16	17	18	19-20	Q3	12.63	3.18
Q4	0-2	3-4	5-6	7-9	10-12	13-15	16-17	18-19	20	21-26	Q4	12.29	4.93
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 10

16PF BRITISH GENERAL POPULATION

MALE, FORM B

AGE GROUP 15-24, N=234

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-2	3	4	5-6	7-8	9-10	11-12	13-14	15	16-20	A	8.61	3.66
B	0-4	-	5	6	7	8	9	10	11	12-13	B	7.70	1.83
C	0-7	8	9-11	12	13-14	15-17	18-19	20-22	23	24-26	C	15.30	4.24
E	0-6	7	8-9	10-11	12	13-15	16-17	18-19	20-21	22-26	E	13.24	4.02
F	0-7	8-9	10-12	13-14	15-16	17-19	20-21	22-23	24	25-26	F	16.70	4.48
G	0-4	5-6	7-8	9	10-11	12	13-14	15	16	17-20	G	11.06	3.09
H	0-3	4-5	6-8	9-10	11-14	15-17	18-20	21-22	23-24	25-26	H	14.23	5.63
I	0-1	2-3	4	5-6	7	8-9	10-11	12-13	14-15	16-20	I	7.94	3.31
L	0-4	5	6	7	8-9	10	11-12	13	14	15-20	L	9.44	2.74
M	0-3	4-5	6-7	8-9	10	11-12	13-14	15-17	18-20	21-26	M	11.19	3.82
N	0-3	4	5-6	7	8-9	10-11	12	13	14	15-20	N	9.35	2.94
O	0-1	2	3-4	5-7	8-10	11-12	13-14	15-17	18-19	20-26	O	9.87	4.86
Q1	0-3	4	5-6	7	8-9	10-11	12-13	14	15-16	17-20	Q1	9.74	3.22
Q2	0-2	3	4-5	6 6	7-8	9	10-11	12-13	14	15-20	Q2	.8.31	3.11
Q3	0-3	4-5	6	7-8	9-10	11-12	13-14	15-16	17	18-20	Q3	10.55	3.59
Q4	0-3	4-5	6-7	8-10	11-13	14-15	16-18	19-20	21-22	23-26	Q4	13.03	5.01
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 11

16 PF BRITISH GENERAL POPULATION

MALES, FORM B

AGE GROUP 25-34, N = 227

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2	3–4	5–6	7–8	9–10	11–12	13–14	15	16–20	A	8.39	3.81
B	0–3	4	5	6	7–8	9	–	10	11	12–13	B	7.77	2.05
C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20–22	23	24–26	C	15.78	4.06
E	0–5	6–7	8–9	10–11	12–13	14–15	16–17	18–19	20	21–26	E	13.41	3.91
F	0–5	6–7	8–9	10–11	12–14	15–17	18–19	20–21	22–23	24–26	F	14.68	4.72
G	0–6	7	8	9–10	11	12–13	14	15–16	–	17–20	G	11.64	2.86
H	0–2	3–4	5–7	8–10	11–13	14–15	16–18	19–22	23	24–26	H	13.33	5.44
I	0–2	3	4	5–6	7	8–9	10–11	12–13	14–15	16–20	I	8.11	3.28
L	0–3	4	5–6	7	8–9	10	11–12	13	14	15–20	L	9.29	2.83
M	0–4	5	6	7–8	9–10	11–12	13–14	15–17	18–19	20–26	M	10.67	3.95
N	0–4	5	6–7	8	9–10	11	12	13–14	15	16–20	N	10.04	2.79
O	0–1	2	3–4	5–6	7–9	10–11	12–14	15	16–18	19–26	O	9.33	4.53
Q1	0–3	4	5–6	7	8–9	10	11	12–14	15–16	17–20	Q1	9.20	2.96
Q2	0–2	3	4–5	6–7	8	9–10	11–12	13–14	15–16	17–20	Q2	8.79	3.41
Q3	0–4	5–6	7–8	9–10	11	12–13	14–15	16	17	18–20	Q3	11.79	3.33
Q4	0–3	4	5–7	8–9	10–11	12–14	15–16	17–19	20–21	22–26	Q4	12.06	4.69
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 12

16 PF BRITISH GENERAL POPULATION

MALES, FORM B

AGE GROUP 35–44, N = 176

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2	3–4	5–6	7–8	9	10–11	12	13–14	15–20	A	8.03	3.46
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.52	1.84
C	0–7	8–9	10–11	12–13	14–15	16–17	18–20	21–22	23	24–26	C	15.65	4.09
E	0–6	7	8–9	10	11–12	13–14	15–17	18–19	20	21–26	E	13.03	3.81
F	0–4	5–7	8–9	10–11	12–13	14–15	16–18	19–20	21–22	23–26	F	13.66	4.47
G	0–6	7–8	9	10–11	12	13–14	15	16–17	18	19–20	G	12.74	2.90
H	0–1	2–5	6–7	8–10	11–14	15–17	18–20	21–22	23	24–26	H	13.90	5.65
I	0–2	3	4–5	6	7–8	9	10–11	12–13	14	15–20	I	8.38	3.09
L	0–3	4	5–6	7	8–9	10	11	12–13	14	15–20	L	9.03	2.65
M	0–3	4	5–6	7	8–10	12	13–14	15	16–17	18–26	M	10.28	3.87
N	0–4	5	6–7	8	9–10	11–12	13	14	15–16	17–20	N	10.45	2.92
O	0–1	2–3	4	5–7	8–9	10–11	12–13	14–15	16–19	20–26	O	9.38	4.35
Q1	0–3	4	5	6	7–8	9	10–11	12–13	14	15–20	Q1	8.51	2.94
Q2	0–1	2–4	5	6–7	8	9–10	11–12	13	14–15	16–20	Q2	8.93	3.30
Q3	0–5	6–7	8–9	10–11	12–13	14	15–16	17	–	18–20	Q3	12.72	3.10
Q4	0–2	3	4–6	7–8	9–11	12–13	14–17	18–19	20–21	22–26	Q4	11.43	5.21
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 13

16 PF BRITISH GENERAL POPULATION

MALES, FORM B

AGE GROUP 45–54, N = 153

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0	1–2	3	4–6	7	8–9	10–12	13	14–15	16–20	A	7.87	3.79
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.36	1.90
C	0–6	7–9	10–11	12–13	14–15	16–17	18	19–21	22–23	24–26	C	15.16	3.95
E	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17	18–19	20–26	E	12.42	3.89
F	0–2	3–5	6–7	8–9	10–12	13–15	16–17	18–20	21–23	24–26	F	12.63	5.10
G	0–7	8	9–10	11–12	13	14–15	16	17	18	19–20	G	13.34	2.88
H	0–4	5	6–7	8–10	11–14	15–18	19–20	21–22	23	24–26	H	14.19	5.71
I	0–3	4	5	6	7–8	9–10	11	12–14	13–15	16–20	I	8.60	3.18
L	0–3	4–5	6	7	8	9	10–11	12–13	14	15–20	L	8.90	2.55
M	0–3	4	5–6	7–8	9–10	11	12–13	14–15	16–17	18–26	M	10.22	3.56
N	0–4	5–6	7–8	9	10	11–12	13–14	15	16–17	18–20	N	11.08	3.09
O	0–2	3	4–5	6	7–8	9–12	13–15	16–17	18–19	20–26	O	9.73	4.59
Q1	0–2	3	4–5	6	7	8–9	10	11–12	13	14–20	Q1	7.88	2.71
Q2	0–1	2–3	4	5–6	7	8–9	10	11–12	13–14	15–20	Q2	7.86	3.15
Q3	0–4	5–7	8–9	10–11	12–13	14	15–16	17	18	19–20	Q3	12.73	3.35
Q4	0–2	3–4	5–6	7–9	10–11	13–14	15–17	18–19	20–22	23–22	Q4	11.84	5.15
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 14

16PF BRITISH GENERAL POPULATION

MALES, FORM B

AGE GROUP 55+, N=218

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-1	2	3-4	5-6	7-8	9	10-11	12-13	14-15	16-20	A	8.05	3.64
B	0-2	3	4	5	6	7-8	9	–	10	11-13	B	6.79	2.20
C	0-5	6-9	10-11	12-13	14-15	16-17	18-20	21	22-23	24-26	C	15.56	4.27
E	0-3	4-5	6-7	8	9-11	12-13	14-15	16-17	18-20	21-26	E9	11.17	3.94
F	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-17	18	19-26	F	10.69	3.97
G	0-6	7-8	9-10	11	12-13	14	15-16	17	18	19-20	G	13.11	2.86
H	0-2	3-4	5-8	11	12-14	15-17	18-20	21-22	23-24	25-26	H	14.06	5.74
I	0-2	3-4	5-6	7	8-9	10-11	12	13-14	15-16	17-20	I	9.45	3.29
L	0-3	4	5	6-7	8	9	10	11-12	13	14-20	L	8.50	2.49
M	0-2	3-5	66	7-8	9	10-11	12-13	14-15	16-17	18-26	M	10.07	3,54
N	0-6	7	8	9-10	11	13	14	15-16	17	18-20	N	11.71	2.80
O	0-1	2-3	4	5-6	7-9	10-11	12-13	14-16	17-18	19-26	O	9.27	4.25
Q1	0-2	3	4-5	6	7	8-9	10	11	12-13	14-20	Q1	7.86	2.63
Q2	0-2	3-4	5-6	7-8	9	10-11	12-13	14-15	16	17-20	Q2	9.66	3.52
Q3	0-6	7-8	9	10-11	12-13	14	15-16	17	18	19-20	Q3	13.14	3.18
Q4	0-1	2	3-4	5-7	8-10	11-12	13-15	16-17	18-19	20-26	Q4	10.23	4.90
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 15

16PF BRITISH GENERAL POPULATION

MALE, FORM B
SOCIAL CLASS A+B, N=163

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0	1	2-3	4-6	7-8	9-10	11-12	13	14-15	16-20	A	8.21	3.88
B	0-4	5	6	7	8	9	10	-	11	12-13	B	8.31	1.68
C	0-6	7-9	10-11	12-13	14-16	17-18	19-20	21-22	23	24-26	C	16.10	4.44
E	0-5	6-7	8	9-10	11-13	14-15	16-17	18-19	20	21-26	E	13.09	4.08
F	0-3	4-6	7	8-9	10-11	12-15	16-18	19-21	22-23	24-26	F	12.79	5.15
G	0-5	6	7-8	9-10	11-12	13	14-15	16	17	18-20	G	12.16	3.32
H	0-1	2-5	6-7	8-10	11-15	16-18	19-20	21-23	24	25-26	H	14.44	5.95
I	0-2	3	4-5	6-7	8	9-10	11-12	13-15	16	17-20	I	9.06	3.57
L	0-3	4-5	6	7	8-9	10	11	12-13	14-15	16-20	L	9.21	2.85
M	0-3	4-5	6-7	8-9	10-11	12-13	14-15	16-18	19-20	21-26	M	11.56	4.22
N	0-4	5	6-7	8-9	10	11-12	13-14	15-16	17	18-20	N	10.90	3.26
O	0-1	2	3-4	5-6	7-9	10-11	12-13	14-17	18-19	20-26	O	9.41	4.77
Q1	0-3	4	5	6-7	8-9	10-11	12	13-14	15-16	17-20	Q1	9.38	3.43
Q2	0-1	2-3	4	5-6	7-8	9-10	11-12	13-14	15-16	17-20	Q2	8.80	3.86
Q3	0-4	5-6	7-8	9-11	12-13	14	15-16	17	18	19-20	Q3	12.66	3.60
Q4	0-1	2	3-5	6-7	8-10	11-14	15-17	18-19	20-22	23-26	Q4	11.17	5.63
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 16

16 PF BRITISH GENERAL POPULATION

MALES, FORM B

SOCIAL CLASS C1, N = 223

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2–3	4	5–6	7–8	9–10	11–12	13–14	15–16	17–20	A	8.76	3.84
B	0–4	4	6	7	8	9	10	–	11	12–13	B	8.16	1.86
C	0–7	8–9	10–11	12–13	14–15	16–18	19–20	21–22	23	24–26	C	15.85	4.14
E	0–4	5–6	7–8	9–10	11–13	14–15	16–17	18–19	20	21–26	E	13.26	4.24
F	0–2	3–5	6–8	9–11	12–14	15–17	18–20	21–22	23–24	25–26	F	14.52	5.51
G	0–5	6	7–8	9–10	11–12	13	14–15	16	17	18–20	G	12.09	3.25
H	0–3	4–5	6–8	9–11	12–14	15–17	18–20	21–22	23–24	25–26	H	14.57	5.64
I	0–2	3	4	5–6	7–8	9–10	11–12	13–14	15–16	17–20	I	8.57	3.51
L	0–4	5	6	7	8–9	10	11	12–13	14	15–20	L	9.20	2.54
M	0–3	4–5	6–7	8	9–11	12–13	14–15	16–17	18–20	21–26	M	11.27	4.10
N	0–4	5	6–7	8	9–10	11–12	13	14–15	16–17	18–20	N	10.50	3.30
O	0	1–2	3–4	5–6	7–9	10–11	12–14	15–16	17–18	19–26	O	9.11	4.63
Q1	0–3	4	5	6–7	8–9	10–11	12	13–14	15–16	17–20	Q1	9.41	3.24
Q2	0–2	3	4–5	6–7	8	9–10	11–12	13–14	15	16–20	Q2	8.92	3.43
Q3	0–5	6	7–8	9–10	11–12	13–14	15	16–17	18	19–20	Q3	12.26	3.54
Q4	0–2	3–4	5–6	7–8	9–11	12–13	14–16	17–19	20–21	22–26	Q4	11.36	4.89
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 17

16 PF BRITISH GENERAL POPULATION

MALES, FORM B

SOCIAL CLASS C2, N = 381

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2	3–4	5	6–7	8–9	10–11	12–13	14–15	16–20	A	7.83	3.60
B	0–2	3–4	5	6	7	8	9	-	10	11–13	B	7.16	1.93
C	0–7	10	11	12–13	14–15	16–17	18–19	20–22	23	24–26	C	15.75	3.93
E	0–5	6–7	8	9–10	11–12	13–14	15–16	17–18	19–21	22–26	E	12.74	3.89
F	0–4	5–6	7–9	10–11	12–13	14–16	17–19	20–21	22	23–26	F	14.00	4.78
G	0–6	7	8–9	10	11–12	13–14	15	16	17	18–20	G	12.42	2.97
H	0–2	4–5	6–7	8–10	11–14	15–17	18–20	21–22	23	24–26	H	13.93	5.58
I	0–2	3	4	5–6	7	8–9	10	11–12	13–15	16–20	I	7.97	3.11
L	0–3	4	5–6	7	8	9–10	11	12–13	14	15–20	L	8.97	2.74
M	0–3	4–5	6	8	9–10	11	12–13	14–15	16–17	18–26	M	10.27	3.53
N	0–4	5	6–7	8	9–10	11	12–13	14	15–16	17–20	N	10.29	2.90
O	0–1	2	3–4	5–6	7–9	10–11	12–13	14–16	17–18	19–26	O	9.36	4.33
Q1	0–2	3–4	5	6	7–8	9	10	11–12	13–14	15–20	Q1	8.31	2.80
Q2	0–2	3	4–5	6–7	8	9–10	11	12–13	14–15	16–20	Q2	8.69	3.19
Q3	0–5	6	7–8	9–10	11–12	13–14	15	16–17	18	19–20	Q3	12.14	3.39
Q4	0–2	3–4	5–6	7–9	10–11	12–14	15–16	17–19	20–21	22–26	Q4	11.79	4.84
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 18

16PF BRITISH GENERAL POPULATION

MALE, FORM B

SOCIAL CLASS D+E, N=239

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-1	2-3	4	5-6	7-8	9-10	11-12	13	14-15	16-20	A	8.36	3.45
B	0-2	3	4	5	6	7	8	9	10	11-13	B	6.59	2.01
C	0-6	7-8	9-10	11-12	13-14	15-16	17-18	19-20	21-23	24-26	C	14.39	4.06
E	0-4	5-6	7-8	9	10-11	12-13	14-15	16-17	18-20	21-26	E	11.73	3.77
F	0-5	6-7	8-9	10	11-13	14-16	17-18	19-20	21-23	24-26	F	13.49	4.58
G	0-6	7-8	9	10	11-12	13	14-15	16	17	18-20	G	12.27	2.79
H	0-1	2-5	6-7	8-10	11-12	13-15	16-18	19-21	22-23	24-26	H	12.96	5.36
I	0-3	4	5	6-7	8	9-10	11-12	13	14-15	16-20	I	8.81	2.99
L	0-3	4	5-6	7	8	9-10	11	12-13	14	15-20	L	8.90	2.58
M	0-2	3-4	5-6	7	8-9	10-11	12	13-14	15	16-26	M	9.52	3.19
N	0-4	5-6	7	8-9	10	11	12-13	14	15-16	17-20	N	10.45	2.72
O	0-2	3	4-5	6-7	8-9	10-12	13-14	15-16	17-19	20-26	O	10.17	4.50
Q1	0-3	4	5	6	7-8	9	10	11-12	13	14-20	Q1	8.25	2.56
Q2	0-2	3	4-5	6-7	8	9-10	11	12	13-15	16-20	Q2	8.62	3.11
Q3	0-4	5-6	7-8	9	10-11	12-13	14	15-16	17	18-20	Q3	11.52	3.31
Q4	0-2	3-4	5-7	8-10	11-12	13-14	15-17	18-19	20-21	22-26	Q4	12.44	5.09
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 19

16PF BRITISH GENERAL POPULATION

MALE FORM A+B

AGE GROUP 15-24,N=234

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-7	8-9	10-12	13-15	16-17	18-20	21-24	25-26	27-29	30-40	A	18.03	5.69
B	0-8	9-10	11-12	13	14	15-16	17-18	19	20-21	22-26	B	15.02	3.01
C	0-15	16-19	20-23	24-26	27-30	31-34	35-37	38-41	42-44	45-52	C	30.48	7.12
E	0-14	15-16	17-19	20-22	23-26	27-30	31-35	36-38	39-41	42-52	E	26.77	7.33
F	0-13	14-19	20-24	25-28	29-32	33-37	38-40	41-45	46-48	49-52	F	32.67	8.41
G	0-9	10-12	13-14	15-18	19-21	22-24	25-27	28-30	31-32	33-40	G	21.07	6.12
H	0-7	8-11	12-17	18-23	24-28	29-35	36-39	40-42	43-46	47-52	H	28.56	10.19
I	0-6	7-8	9-10	11-13	14-16	17-19	20-23	24-27	28-30	31-40	I	17.03	6.10
L	0-9	10-11	12-13	14-15	16-18	19-21	22-24	25-26	27-29	30-40	L	18.89	5.31
M	0-13	14-15	16-17	18-20	21-22	23-25	26-29	30-32	33-37	38-52	M	23.32	5.82
N	0-10	11	12-13	14-16	17-18	19-20	21-23	24-26	27	28-40	N	18.79	4.62
O	0-3	4-7	8-12	13-16	17-20	21-24	25-28	29-33	34-36	37-52	O	20.47	8.31
Q1	0-12	13-14	15-16	17-18	19-21	22-24	25-27	28-29	30-31	32-40	Q1	21.57	5.02
Q2	0-7	8-9	10-12	13-16	17-19	20-21	22-24	25-27	28-30	31-40	Q2	18.85	5.84
Q3	0-9	10-12	13-15	16-18	19-21	22-24	25-27	28-31	32-33	34-40	Q3	21.57	6.08
Q4	0-6	7-10	11-15	16-22	23-25	26-30	31-35	36-39	40-42	43-52	Q4	25.54	9.22
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 20

16PF BRITISH GENERAL POPULATION

MALE , FORM A+B

AGE GROUP 25-34, N=227

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–5	6–8	9–11	12–14	15–17	18–20	21–24	25–26	27–29	30–40	A	17.58	6.10
B	0–8	9–10	11	12–13	14–15	16–17	18	19–20	21	22–26	B	15.32	3.34
C	0–16	17–21	22–25	26–28	29–31	32–34	35–38	39–41	42–44	45–52	C	31.28	6.80
E	0–12	13–16	17–19	20–22	23–26	27–29	30–34	35–37	38–40	41–52	E	26.67	6.98
F	0–10	11–15	16–18	19–23	24–27	28–32	33–37	38–41	42–44	45–52	F	27.87	8.64
G	0–11	12–15	16–18	19–20	21–23	24–26	27–28	29–31	32–34	35–40	G	23.50	5.28
H	0–6	7–10	11–15	16–21	22–27	28–31	32–36	37–42	43–44	45–52	H	26.27	10.10
I	0–6	7–9	10–11	12–13	14–16	17–19	20–22	23–25	26–30	31–40	I	17.10	5.86
L	0–8	9–10	11–12	13–15	16–18	19–20	21–23	24–25	26–27	28–40	L	18–05	5.18
M	0–13	14–15	16–17	18–20	21–22	23–25	26–29	30–31	32–37	38–52	M	23.39	5.77
N	0–10	11–12	13–15	16–17	18–20	21–22	23–24	25–26	27–28	29–40	N	19.99	4.50
O	0–6	7–9	10–11	12–15	16–19	20–22	23–27	28–30	31–34	35–52	O	19.58	7.50
Q1	0–10	11–12	13–14	15–17	18–19	20–22	23–25	26–27	28–29	30–40	Q1	19.86	5.09
Q2	0–9	10–12	13–14	15–17	18–20	21–22	23–26	27–29	30–33	34–40	Q2	20.55	5.69
Q3	0–11	12–15	16–18	19–21	22–23	24–27	28–29	30–32	33–34	35–40	Q3	23.79	5.75
Q4	0–8	9–11	12–15	16–18	19–24	25–28	29–33	34–37	38–41	42–52	Q4	24.26	8.74
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 21

16PF BRITISH GENERAL POPULATION

MALES, FORM A+B

AGE GROUP 35-44, N=174

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-6	7-8	9-11	12-14	15-17	18-19	20-22	23-25	26-27	28-40	A	17.20	5.45
B	0-8	9	10-11	12-13	14-15	16-17	18	19	20	21-26	B	15.03	3.46
C	0-16	17-20	21-24	25-27	28-30	31-34	35-39	40-41	42-43	44-52	C	31.10	7.15
E	0-13	14-16	17-18	19-21	22-24	25-28	29-32	33-35	36-40	41-52	E	25.34	6.95
F	0-10	11-13	14-17	18-21	22-25	26-28	29-33	34-37	38-42	43-52	F	25.26	7.99
G	0-14	15-18	19-20	21-23	24-26	27-28	29-31	32-33	34-35	36-40	G	25.87	5.35
H	0-7	8-12	13-15	16-21	22-27	28-33	34-39	40-43	44-46	47-52	H	27.57	10.45
I	0-8	9	10-11	12-14	15-17	18-20	21-23	24-27	28-30	31-40	I	17.70	5.73
L	0-9	10	11-12	13-14	15-16	17-19	20-21	22-24	25-28	29-40	L	17.20	4.47
M	0-12	13-15	16-17	18-20	21-22	23-25	26-28	29-32	33-34	35-52	M	23.21	5.63
N	0-12	13-14	15-16	17-18	19-21	22-23	24-25	26-27	28	29-40	N	21.11	4.52
O	0-5	6-8	9-10	11-14	15-19	20-23	24-27	28-31	32-36	37-42	O	19.31	7.99
Q1	0-9	10-12	13	14-16	17-18	19-20	21-22	23-25	26-27	28-40	Q1	18.20	4.38
Q2	0-9	10-11	12-15	16-18	19-21	22-23	24-26	27-29	30-32	33-40	Q2	20.92	5.70
Q3	0-15	16-17	18-21	22-23	24-26	27-28	29-32	33	34-35	36-40	Q3	26.26	5.30
Q4	0-4	5-8	9-12	13-17	18-22	23-27	28-33	34-38	39-42	43-52	Q4	23.15	9.69
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 22

16PF BRITISH GENERAL POPULATION

MALE FORM A+B

AGE GROUP 45-54, N=152

FACTOR	STEN SCORE											
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-7	8	9-11	12-14	15-17	18-20	21-23	24-27	28-29	30-40	A	17.55	5.95
B	0-7	8-9	10	11-12	13-14	15-16	17-18	19	20	21-26	B	14.51	3.55
C	0-15	16-19	20-23	24-26	27-30	31-33	34-37	38-40	41-42	43-52	C	30.22	6.78
E	0-10	11-14	15-18	19-20	21-24	25-27	28-30	31-33	34-39	40-52	E	24.14	6.63
F	0-6	7-11	12-15	16-19	20-23	24-27	28-31	32-37	38-40	41-52	F	23.64	8.42
G	0-15	16-19	20-22	23-24	25-27	28-29	30-32	33	34	35-40	G	26.98	5.07
H	0-7	8-12	13-16	17-21	22-28	29-33	34-38	39-42	43-46	47-52	H	27.48	10.29
I	0-8	9-10	11-12	13-14	15-17	18-19	20-23	24-26	27-29	30-40	I	17.60	5.21
L	0-7	8-10	11-12	13-14	15-16	17-18	19-21	22-24	25-28	29-40	L	16.88	4.86
M	0-11	12-14	15-17	18-19	20-22	23-24	25-27	28-30	31-32	33-52	M	22.29	5.09
N	0-13	14-15	16-17	18-19	20-22	23-24	25-26	27-29	30-31	32-40	N	22.26	4.55
O	0-6	7-9	10-12	13-14	15-19	20-24	25-28	29-34	35-37	38-52	O	20.23	8.01
Q1	0-9	10-11	12-13	14	15-17	18-19	20	21-22	23-26	27-40	Q1	17.17	3.98
Q2	0-8	9-11	12-14	15-16	17-19	20-21	22-24	25-28	29-31	32-40	Q2	19.43	3.41
Q3	0-12	13-16	17-20	21-23	24-26	27-29	30-32	33-34	35	36-40	Q3	26.16	5.75
Q4	0-7	8-11	12-14	15-20	21-23	24-28	29-34	35-38	39-44	45-52	Q4	24.34	9.08
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 23

16PF BRITISH GENERAL POPULATION

MALE FORM A+B

AGE GROUP 55+, N=217

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-5	6-7	8-11	12-14	15-17	18-20	21-23	24-25	26-29	30-40	A	17.39	5.99
B	0-5	6-7	8-9	10-11	12-13	14-15	16-17	18	19-20	21-26	B	13.35	3.71
C	0-17	18-20	21-23	24-26	27-30	31-34	35-38	39-41	42-43	44-52	C	30.83	7.06
E	0-7	8-11	12-14	15-18	19-21	22-24	25-28	29-33	34-38	39-52	E	21.65	7.15
F	0-5	6-9	10-13	14-17	18-19	20-23	24-27	28-31	32-35	36-52	F	20.32	7.20
G	0-16	17-18	19-22	23-24	25-27	28-30	31	32-34	35	36-40	G	27.03	4.99
H	0-7	8-11	12-15	16-20	21-26	27-32	33-37	38-42	43-47	48-52	H	26.46	10.41
I	0-8	9-10	11-12	13-15	16-18	19-21	22-24	25-26	27-31	32-30	I	18.79	5.55
L	0-8	9-10	11-12	13-14	15-16	17-19	20-21	22-23	24-26	27-40	L	17.10	4.47
M	0-11	12-14	15-16	17-19	20-22	23-24	25-28	29-31	32-33	34-52	M	22.32	5.56
N	0-14	15-16	17-18	19-20	21-23	24-25	26-27	28-29	30-31	32-40	N	23.29	4.41
O	0-5	6-8	9-11	12-15	16-18	19-22	23-26	27-29	30-34	35-40	O	18.88	7.14
Q1	0-8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-27	28-40	Q1	16.60	4.16
Q2	0-10	11-13	14-16	17-19	20-22	23-25	26-27	28-29	30-33	34-40	Q2	22.16	5.50
Q3	0-17	18-19	20-22	23-25	26-27	28-30	31-33	34	35-36	37-40	Q3	27.50	4.95
Q4	0-3	4-8	9-11	12-16	17-21	22-26	27-30	31-34	35-39	40-52	Q4	21.44	8.86
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 24

16PF BRITISH GENERAL POPULATION

MALE FORM A+B

SOCIAL CLASS A,B, N=163

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-5	6-8	9-11	12-15	16-18	19-21	22-25	26-27	28	29-40	A	18.20	6.21
B	0-9	10	11-13	14-15	16-17	18	19	20	21	22-26	B	16.52	3.20
C	0-14	15-20	21-23	24-28	29-32	33-36	37-39	40-41	42-43	44-52	C	31.62	7.52
E	0-10	11-15	16-18	19-21	22-25	26-30	31-33	34-37	38-40	41-52	E	25.82	7.44
F	0-7	8-11	12-15	16-19	20-22	23-27	28-34	35-41	42-46	47-52	F	24.28	9.47
G	0-10	11-14	15-18	19-22	23-25	26-28	29-32	33-34	35	36-40	G	25.21	6.59
H	0-7	8-11	12-16	17-22	23-28	29-34	35-39	40-45	46-47	48-52	H	28.31	10.81
I	0-7	8-9	10-11	12-14	15-18	19-21	22-25	26-30	31-33	34-40	I	18.70	6.71
L	0-6	7-10	11-12	13-14	15-17	18-20	21-22	23-25	26-28	29-40	L	17.53	5.16
M	0-14	15-17	18-20	21-22	23-24	25-28	29-31	32-34	35-38	39-52	M	25.43	5.87
N	0-10	11-14	15-16	17-18	19-21	22-24	25-26	27-29	30-31	32-40	N	21.47	4.98
O	0-5	6-7	8-10	11-13	14-17	18-22	23-26	27-30	31-36	37-52	O	18.54	8.14
Q1	0-8	9-11	12-13	14-16	17-18	19-20	21-24	25-27	28-30	31-40	Q1	18.89	5.29
Q2	0-9	10-12	13-14	15-17	18-20	21-23	24-27	28-31	32-33	34-40	Q2	20.78	6.25
Q3	0-9	10-13	14-19	20-23	24-26	27-29	30-32	33-34	35-36	37-40	Q3	25.79	6.77
Q4	0-3	4-6	7-13	14-17	18-22	23-28	29-34	35-38	39-44	45-52	Q4	23.06	10.20
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 25

16PF BRITISH GENERAL POPULATION

MALE FORM A+B

SOCIAL CLASS C1, N=220

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-5	6-8	9-10	11-14	15-18	19-21	22-24	25-26	27-30	31-40	A	18.03	6.42
B	0-8	9-10	11-12	13-14	15-16	17	18-19	20	21	22-26	B	15.92	3.35
C	0-18	19-21	22-24	25-28	29-31	32-35	36-38	39-41	42-43	44-52	C	31.53	6.70
E	0-10	11-13	14-17	18-20	21-25	26-29	30-34	35-38	39	40-52	E	25.57	8.03
F	0-7	8-11	12-16	17-21	22-27	28-33	34-38	39-43	44-47	48-52	F	27.45	10.43
G	0-10	11-13	14-17	18-21	22-24	25-27	28-30	31-32	33-34	35-40	G	24.25	6.17
H	0-6	7-10	11-15	16-22	23-29	30-33	34-39	40-43	44-48	49-52	H	27.85	10.86
I	0-6	7-8	9-11	12-14	15-17	18-20	21-24	25-27	28-30	31-40	I	17.78	6.13
L	0-9	10	11-12	13-15	16-17	18-19	20-23	24-25	26-29	30-40	L	17.71	5.00
M	0-13	14-15	16-17	18-21	22-24	25-27	28-30	31-33	34-36	37-52	M	24.60	6.03
N	0-11	12	13-14	15-17	18-20	21-23	24-26	27-29	30	31-40	N	20.52	5.41
O	0-3	4-7	8-11	12-14	15-18	19-22	23-26	27-30	31-34	35-52	O	18.75	7.62
Q1	0-9	10-11	12-13	14-16	17-19	20-23	24-25	26-28	29	30-40	Q1	19.72	5.66
Q2	0-8	9-10	11-13	14-17	18-20	21-23	24-26	27-29	30-33	34-40	Q2	20.60	6.11
Q3	0-10	11-14	15-17	18-22	23-25	26-28	29-31	32-33	34-35	36-40	Q3	24.95	5.48
Q4	0-7	8-10	11-13	14-17	18-23	24-27	28-33	34-37	38-41	42-52	Q4	23.21	9.01
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 26

16PF BRITISH GENERAL POPULATION

MALES, FORM A+B

SOCIAL CLASS C2, N=381

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–6	7–8	9–11	12–13	14–16	17–19	20–22	23–25	26–28	29–40	A	16.91	5.56
B	0–7	8–9	10–11	12	13–14	15	16–17	18	19–20	21–26	B	14.10	3.14
C	0–17	18–20	21–24	25–27	28–30	31–34	35–38	39–41	42–44	45–52	C	31.14	6.78
E	0–12	13–14	15–18	19–21	22–24	25–27	28–32	33–36	37–39	40–52	E	25.05	7.00
F	0–9	12–13	14–17	18–22	23–26	27–30	31–35	36–39	40–43	44–52	F	26.65	8.60
G	0–12	13–15	16–19	20–22	23–25	26–28	29–30	31–33	34–358	36–40	G	24.84	5.68
H	0–7	8–11	12–16	17–21	22–27	28–33	34–38	39–42	43–44	45–52	H	27.38	10.03
I	0–7	8–9	10–11	12–13	14–16	17–19	20–21	22–24	25–28	29–40	I	16.76	5.39
L	0–8	9–10	11–12	13–14	15–17	18–19	20–23	24–25	26–28	29–40	L	17.70	5.03
M	0–12	13–14	15–17	18–19	20–21	22–24	25–27	28–30	31–32	33–52	M	22.08	5.18
N	0–10	11–13	14–16	17–18	19–20–	21–23	24–25	26–27	28–29	30–40	N	20.77	4.62
O	0–5	6–8	9–11	12–15	16–19	20–22	23–27	28–32	33–36	37–52	O	19.56	7.67
Q1	0–10	11–12	13–14	15–16	17–18	19–20	21–23	24–26	27–28	29–40	Q1	18.60	4.63
Q2	0–8	9–11	12–14	15–17	18–20	21–22	23–26	27–28	29–31	32–40	Q2	20.24	5.68
Q3	0–13	14–16	17–19	20–22	23–25	26–27	28–30	31–33	34–35	36–40	Q3	24.90	5.53
Q4	0–6	7–10	11–14	15–19	20–23	24–27	28–33	34–38	39–41	42–52	Q4	23.71	8.93
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 27
16PF BRITISH GENERAL POPULATION

MALE FORM A+B

SOCIAL CLASS D,E, N=238

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-6	7-9	10-12	13-15	16-17	18-20	21-22	23-25	27-29	30-40	A	17.79	5.39
B	0-5	6-7	8-10	11	12-13	14	15-16	17	18-19	20-26	B	13.08	3.32
C	0-15	16-18	19-22	23-25	26-28	29-32	33-36	37-40	41-43	44-52	C	29.07	5.96
E	0-11	12-14	15-17	18-20	21-23	24-26	27-30	31-35	36-40	41-52	E	23.86	6.88
F	0-8	9-14	15-17	18-20	21-25	26-29	30-34	35-39	40-44	45-52	F	25.93	8.69
G	0-12	13-15	16-18	19-21	22-24	25-27	28-30	31-32	33-34	35-40	G	24.27	5.47
H	0-6	7-12	13-16	17-20	21-25	26-29	30-36	37-41	42-46	47-52	H	25.82	9.72
I	0-8	9-10	11-12	13-15	16-17	18-20	21-23	24-25	26-28	29-40	I	18.09	5.07
L	0-8	9-11	12-13	14-15	16-18	19-20	21-22	23-24	25-28	29-40	L	17.89	4.64
M	0-11	12-13	14-16	17-18	19-20	21-22	24-25	26-28	29-30	31-52	M	21.10	4.64
N	0-13	14	15-17	18	19-21	22-23	24-26	27-28	29	30-40	N	21.34	4.34
O	0-6	7-9	10-13	14-17	18-21	22-25	26-28	29-33	34-36	37-52	O	21.48	7.61
Q1	0-10	11	12-14	15-16	17-18	19-20	21-22	23-25	26-28	29-40	Q1	18.45	4.48
Q2	0-8	9-12	13-15	16-18	19-20	21-22	23-25	26-27	28-29	30-40	Q2	20.20	5.08
Q3	0-12	12-16	17-18	19-21	22-23	24-26	27-29	30-33	34-35	36-40	Q3	24.09	5.62
Q4	0-6	7-10	11-14	15-20	21-25	26-29	30-34	35-38	39-41	42-52	Q4	24.85	9.06
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 28

16PF BRITISH GENERAL POPULATION

FEMALE FORM A

AGE GROUP 15-24, N=267

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-4	5-6	7-8	9	10-11	12	13	14-15	16	17-20	A	11.13	2.81
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.09	2.03
C	0-7	8	9-10	11	12-13	14-15	16-17	18-20	21-22	23-26	C	13.96	3.83
E	0-3	4-5	6-7	8	9-10	11-12	13	14-15	16-18	19-26	E	10.64	3.61
F	0-6	7-8	9-10	11-12	13-15	16-18	19-20	21	22-24	25-26	F	15.30	4.66
G	0-3	4-5	6	7-8	9-10	11-12	13	14-15	16-17	18-20	G	10.43	3.40
H	0-1	2-3	4-6	7-9	10-11	12-14	15-17	18-20	21-22	23-26	H	12.04	5.40
I	0-7	8	9-10	11	12-13	14	15-16	17	18	19-20	I	13.28	2.77
L	0-2	3	4	5-6	7-8	9-10	11-12	13-14	15	16-20	L	8.65	3.50
M	0-4	5	6-7	8-9	10-11	12-13	14	15-16	17-18	19-26	M	11.31	3.59
N	0-4	5	6-7	8-9	10-11	12	13-14	15	16-17	18-20	N	10.99	3.20
O	0-5	6-7	8-9	10	11-12	13-14	15-17	18-19	20-21	22-26	O	13.03	3.95
Q1	0-3	4	5-6	7	8-9	10-11	12	13-14	15-16	17-20	Q1	9.50	3.14
Q2	0-3	4-5	6	7-8	9-10	11-12	13-14	15	16-17	18-20	Q2	10.53	3.60
Q3	0-3	4-5	6-7	8	9-10	11-12	13	14-15	16	17-20	Q3	10.40	3.25
Q4	0-6	7-8	9-10	11-12	13-15	16-17	18-19	20-21	22-23	24-26	Q4	15.12	4.40
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 29

16 PF BRITISH GENERAL POPULATION

FEMALES, FORM A

AGE GROUP 25-34, N = 293

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-5	6-7	8	9-10	11	12	13-14	15	16	17-20	A	11.34	2.84
B	0-2	3	4-5	6	7	8	9	-	10-11	12-13	B	7.06	2.01
C	0-7	8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	C	14.27	3.86
E	0-2	3	4-5	6-7	8	9-10	11-12	13-15	16-18	19-26	E	9.28	4.05
F	0-3	4-5	6-8	9-10	11-13	14-15	16-17	18-19	20-22	23-26	F	13.06	4.67
G	0-5	6	7-8	9-10	11	12-13	14	15-16	17	18-20	G	11.71	3.16
H	0-2	3-4	5-6	7-9	10-11	12-14	15-17	18-20	21-23	24-26	H	12.04	5.19
I	0-7	8-9	10	11-12	13	14	15-16	17	18	19-20	I	13.37	2.72
L	0-1	2	3-4	5	6-7	8-9	10-11	12	13-14	15-20	L	7.56	3.34
M	0-5	6	7-8	9	10-11	12-13	14-15	16-17	18-19	20-26	M	11.68	3.60
N	0-5	6	7-8	9	10-11	12-13	14	15	16-17	18-20	N	11.38	3.08
O	0-4	5-6	7-8	9-10	11-12	13-14	15-16	17	18-19	20-26	O	12.39	3.81
Q1	0-2	3	4-5	6	7-8	9	10-11	12-13	14	15-20	Q1	8.27	3.12
Q2	0-4	5-6	7	8-9	10-11	12-13	14-15	16	17	18-20	Q2	11.31	3.48
Q3	0-6	7	8	9-10	11	12-13	14	15-16	17-18	19-20	Q3	11.86	2.91
Q4	0-5	6-7	8-10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	Q4	14.37	4.18
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 30

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A

AGE GROUP 35-44, N=198

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-5	6-7	8	9	10-11	12	13	14-15	16	17-20	A	11.11	2.59
B	0-3	4	5	6	7	8	9	10	-	11-13	B	7.05	1.95
C	0-6	7-8	9-10	11	12-13	14-16	17-18	19-20	21-23	24-26	C	14.16	4.04
E	0-2	3	4	5-6	7-8	9-11	12-13	14-15	16-17	18-26	E	9.11	4.26
F	0-3	4	5-6	7-8	9-11	12-14	15-16	17-18	19-21	22-26	F	11.39	4.80
G	0-5	6-7	8	9-10	11-12	13-14	15	16	17	18-20	G	12.11	3.14
H	0-2	3	4-5	6-8	9-11	12-15	16-18	19-20	21	22-26	H	11.74	5.59
I	0-7	8-9	10	11-12	13	14-15	16	17	18	19-20	I	13.58	2.78
L	0-1	2	3-4	5	6-7	8	9-10	11-12	13-15	16-20	L	7.52	3.39
M	0-4	5-6	7-8	9	10-11	12-14	15-16	17-18	19	20-26	M	12.11	3.97
N	0-5	6	7-8	9-10	11-12	13	14	15-16	17-18	19-20	N	11.84	3.13
O	0-5	6	7-8	9-10	11-12	13-14	15-17	18-19	20	21-26	O	12.65	4.17
Q1	0-2	3	4	5	6-7	8	9-10	11	12	13-20	Q1	7.47	2.70
Q2	0-4	5	6-8	9	10-11	12-13	14-15	16	17-18	19-20	Q2	11.66	3.57
Q3	0-6	7	8	9-10	11-12	13	14-15	16	17	18-20	Q3	11.99	2.99
Q4	0-4	5-6	7-8	9-11	12-14	15-16	17-19	20-21	22-23	24-26	Q4	14.18	5.00
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 31

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A

AGE GROUP 45–54, N=150

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–4	5–6	7–8	9	10	11–12	13	14–15	16–17	18–20	A	10.94	2.84
B	0–2	3	4	5	6	7–8	9	10	11	12–13	B	6.96	2.15
C	0–6	7–8	9	10–11	12–13	14–15	16–18	19	20	21–26	C	13.54	4.01
E	0–1	2–3	4	5–6	7–8	9–10	11–12	13–15	16–19	20–26	E	8.79	4.12
F	0–1	2–5	6	7–8	9–10	11–12	13–15	16–17	18	19–26	F	10.63	4.20
G	0–6	7–8	9–10	11	12–13	14	15	16–17	18	19–20	G	13.00	2.77
H	0–1	2–3	4–5	6–8	9–11	12–14	15–16	17–19	20–22	23–26	H	11.58	5.27
I	0–6	7–9	10	11	12–13	14	15–16	17–18	19	20	I	13.39	2.98
L	0–0	1–2	3	4–5	6	7–8	9–10	11–12	13–15	16–20	L	7.26	3.56
M	0–4	5–6	7–8	9–10	11	12–13	14	15–16	17–18	19–26	M	11.74	3.35
N	0–5	6–7	8–9	10	11–12	13–14	15	16–17	18	19–20	N	12.57	3.18
O	0–5	6	7–8	9–10	11–12	13–14	15–16	17–18	19–21	22–26	O	12.62	3.90
Q1	0–3	4	–	5–6	7	8	9–10	11	12–13	14–20	Q1	7.69	2.62
Q2	0–5	6	7	8–9	10–11	12–13	14–15	16	17–18	19–20	Q2	11,52	3.44
Q3	0–7	8	9–10	11	12	13–14	15	16–17	18	19–20	Q3	12.95	2.78
Q4	0–3	4–7	8	9–10	11–13	14–16	17–19	20–21	22–23	24–26	Q4	13.79	4.82
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 32

16PF BRITISH GENERAL. POPULATION

FEMALE, FORM A

AGE GROUP 55+, N=203

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-5	6	7-8	9	10	11-12	13	14	15-16	17-20	A	10.80	2.75
B	0-1	2	3	4-5	6	-	7	8-9	10	11-13	B	5.91	2.16
C	0-7	8	9-10	11	12-14	15	16-17	18-19	20-21	22-26	C	14.04	3.47
E	0-2	3	4-5	6	7-8	9-10	11-12	13-14	15-17	18-26	E	8.91	3.75
F	0-3	4	5	6-7	8-9	10-11	12	13-15	16-18	19-26	F	9.59	3.87
G	0-6	7-9	10	11-12	13-14	15	16	17-18	19	20	G	13.87	3.10
H	0-2	3	4-5	6-8	9-10	11-12	13-15	16-19	20-22	23-26	H	10.85	5.03
I	0-6	7-9	10	11	12-13	14	15	16	17-18	19-20	I	13,10	2.78
L	0-1	2-3	4	5-6	7-8	9	10-11	12-13	14	15-20	L	8.07	3.15
M	0-4	5-6	7-8	9	10-11	12	13-14	15-17	18-19	20-26	M	11.53	3.41
N	0-6	7-8	9-10	11	12-13	14	15	16	17-18	19-20	N	12.89	2.89
O	0-4	5	6-7	8-10	11-12	13-14	15-16	17-18	19-20	21-26	O	12.17	4.25
Q1	0-1	2-3	4	5	6	7-8	9-10	11	12	13-20	Q1	7.00	2.90
Q2	0-6	7	8	9-10	11-12	13-14	15	16-17	18	19-20	Q2	12.33	3.29
Q3	0-7	8-9	10	11	±2-13	14	15	16-17	18	19-20	Q3	13.25	2.62
Q4	0-4	5-6	7-8	9-11	12-13	14-15	16-18	19-20	21	22-26	Q4	13.67	4.53
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 33

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A

SOCIAL CLASS A+B , N=183

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-4	5-6	7	8-9	10-11	12	13-14	15	16-17	18-20	A	11.09	3.11
B	0-3	4	5	6	7	8	9-10	11	-	12-13	B	7.73	2.09
C	0-8	9	10-11	12	13-14	15-16	17-18	19-20	21-23	24-26	C	14.95	3.71
E	0-1	2-3	4-5	6-7	8-9	10-11	12-14	15-17	18-21	22-26	E	9.82	4.73
F	0-4	5	6-7	8-9	10-12	13-15	16-18	19-20	21-23	24-26	F	12.64	5.15
G	0-5	6	7-8	9-10	11-12	13-14	15-16	17	18	19-20	G	12.37	3.63
H	0-2	3-4	5-7	8-9	10-12	13-16	17-19	20-22	23	24-26	H	13.09	5.65
I	0-7	8-9	10	11-12	13-14	15	16	17	18	19-20	I	13.98	2.94
L	0-1	2	3	4-5	6-7	8	9-10	11-12	13-15	16-20	L	7.10	3.38
M	0-5	6-7	8	9-11	12-13	14.15	16-17	18	19-20	21-26	M	13.15	3.91
N	0-5	6	7-8	9	10-11	12	13-14	15-16	17-18	19-20	N	11.47	3.19
O	0-4	5	6-7	8	9-10	11-13	14-15	16-17	18-19	20-26	O	11.26	3.93
Q1	0-1	2-3	4	5	6-7	8-9	10-11	12-13	14	15-20	Q1	7.85	3.40
Q2	0-3	4-5	6-7	8-9	10-11	12-13	14-15	16	17-18	19-20	Q2	11.18	3.90
Q3	0-5	6-7	8	9-10	11-12	13-14	15	16-17	18-19	20	Q3	12.57	3.40
Q4	0-4	5	6-8	9-10	11-14	15-16	17-18	19-20	21-22	23-26	Q4	13.58	4.87
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 34

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A

SOCIAL CLASS C1, N=239

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–5	6	7–8	9	10–11	12	13–14	15	16	17–20	A	11.27	2.85
B	0–3	4	5	6	7	8	9	10	–	11–13	B	7.33	1.97
C	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21–23	24–26	C	14.64	4.07
E	0–2	3	4–5	6–7	8–9	10	11–13	14–15	16	17–26	E	9.19	3.81
F	0–3	4	5–7	8–10	11–13	14–15	16–18	19–21	22–23	24–26	F	13.00	5.33
G	0–4	5	6–8	9–10	11–12	13–14	15	16	17–18	19–20	G	11.98	3.54
H	0–1	2–3	4–6	7–9	10–11	12–14	15–18	19–21	22–23	24–26	H	12.10	5.75
I	0–7	8	9–10	11–12	13	14–15	16	17	18	19–20	I	13.60	2.96
L	0–1	2	3–4	5	6–7	8	9–10	11	12–13	14–20	L	7.31	2.90
M	0–4	5–6	7–8	9–10	11–12	13–14	15	16–18	19	20–26	M	12.17	3.70
N	0–4	5–6	7	8–9	10–11	12–13	14	15	16–17	18–20	N	11.33	3.27
O	0–4	5	6–8	9	10–11	12–13	14–15	16–18	19–20	21–26	O	11.97	4.03
Q1	0–1	2–3	4	5	6–7	8–9	10	11–12	13–14	15–20	Q1	7.77	3.07
Q2	0–5	6	7	8–9	10–11	12–13	14–15	16	17–18	19–20	Q2	11.44	3.53
Q3	0–4	5–6	7–8	9–10	11–12	13	14–15	16	17–18	19–20	Q3	12.09	3.21
Q4	0–5	6	7–9	10–11	12–14	15–16	17–19	20–21	22	23–26	Q4	14.06	4.68
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 35

16PF BRITISH GENERAL POPULATION

FEMALE , FORM A

SOCIAL CLASS C2, N=392

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–5	6	7–8	9	10	11–12	13	14	15–16	17–20	A	10.85	2.77
B	0–2	3	4	5	6	7	8	9	10	11–13	B	6.73	2.00
C	0–6	7–8	9	10–11	12–13	14–15	16–17	18–19	20–21	22–26	C	13.73	3.85
E	0–2	3	4–5	6	7–9	10–11	12–13	14–15	16–17	18–26	E	9.21	3.90
F	0–3	4–5	6–7	8–9	10–12	13–14	15–17	18–19	20–21	22–26	F	12.30	4.67
G	0–5	6	7–8	9–10	11	12–13	14–15	16	17	18–20	G	11.87	3.21
H	0–2	3	4–5	6–8	9–10	11–13	14–16	17–19	20–21	22–26	H	11.30	5.12
I	0–7	8	9–10	11	12–13	14	15	16–17	18	19–20	I	13.08	2.74
L	0–1	2	3–4	5–6	7	8–9	10–11	12–13	14–15	16–20	L	7.96	3.58
M	0–4	5–6	7	8–9	10–11	12	13–14	15–16	17–18	19–26	M	11.19	3.35
N	0–5	6	7–8	9–10	11–12	13	14–15	16	17	18–20	N	11.97	3.19
O	0–4	5–6	7–8	9–10	11–13	14–15	16	17–18	19–20	21–26	O	12.85	3.91
Q1	0–2	3	4–5	6	7	8–9	10–11	12–13	14	15–20	Q1	8.17	3.06
Q2	0–4	5	6–7	8–9	10–11	12–13	14	15–16	17	18–20	Q2	11.28	3.36
Q3	0–5	6–7	8	9–10	11	12–13	14	15–16	17	18–20	Q3	11.64	2.95
Q4	0–4	5–7	8–9	10–12	13–14	15–17	18	19–21	22	23–26	Q4	14.44	4.51
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 36

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A

SOCIAL CLASS D+E, N=294

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-6	7	8	9-10	11	12	13	14-15	-	16-20	A	11.24	2.50
B	0-1	2	3-4	5	6	7	8	9	10	11-13	B	6.06	2.03
C	0-6	7-8	9-10	11	12-13	14	15-16	17-18	19-20	21-26	C	13.34	3.48
E	0-2	3-4	5-6	7	8-9	10-11	12-13	14-15	16-18	19-26	E	9.77	3.78
F	0-2	3-5	6-7	8-9	10-11	12-13	14-16	17-19	20-22	23-26	F	11.68	4.77
G	0-5	6-7	8	9-10	11-12	13-14	15	16	17-18	19-20	G	12.16	3.24
H	0-2	3	4-5	6-8	9-10	11-13	14-15	16-18	19-20	21-26	H	11.05	4.76
I	0-7	8-9	10	11	12-13	14	15	16	17	18-20	I	13.03	2.54
L	0-1	2-3	4-5	6	7-8	9-10	11-12	13	14-15	16-20	L	8.71	3.43
M	0-4	5	6-7	8-9	10	11-12	13-14	15	16-17	18-26	M	10.89	3.28
N	0-5	6-7	8-9	10	11-12	13	14-15	16	17	18-20	N	12.16	3.02
O	0-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-26	O	13.53	3.86
Q1	0-3	4	5	6	7-8	9	10-11	12	13-14	15-20	Q1	8.48	2.88
Q2	0-4	5-6	7	8-9	10-11	12-13	14-15	16-17	18	19-20	Q2	11.66	3.55
Q3	0-6	7	8	9-10	11	12-13	14-15	16	17	18-20	Q3	11.80	2.98
Q4	0-6	7-8	9-10	11-12	13-14	15-16	17-19	20-21	22	23-26	Q4	14.84	4.21
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 37

16PF BRITISH GENERAL POPULATION

FEMALE, FORM B

AGE GROUP 15-24, N=255

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6-7	8-9	10	11-12	13-14	15	16	17-20	A	10.73	3.29
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.60	1.85
C	0-5	6-7	8-9	10-11	12-13	14-16	17	18-19	20-21	22-26	C	13.86	3.96
E	0-3	4	5-6	7-8	9-10	11	12-13	14-16	17-19	20-26	E	10.24	3.76
F	0-7	8-9	10-11	12-13	14-15	16-17	18-20	21-22	23	24-26	F	15.76	1 .435
G	0-5	6	7-8	9-10	11	12	13-14	15	16-17	18-20	G	11.47	2.97
H	0-1	2	3-5	6-7	8-10	11-13	14-17	18-21	22-23	24-26	H	11.16	5.83
I	0-5	6	7-8	9	10	11-12	13	14	15-16	17-20	I	10.87	2.72
L	0-3	4	5	6-7	8	9-10	11	12	13-14	15-20	L	8.66	2.69
M	0-3	4	5-6	7-8	9	10-11	12-13	14-15	16-18	19-26	M	10.02	3.76
N	0-4	5	6	7-8	9	10-11	12	13-14	15	16-20	N	9.65	2.83
O	0-4	5-6	7-8	9-11	12-13	14-15	16-17	18-19	20-21	22-26	O	13.27	4.23
Q1	0-2	3-4	5	6-7	8	9	10-11	12-13	14-15	16-20	Q1	8.62	3.04
Q2	0-1	2-3	4-5	6-7	8	9	10-11	12	13-14	15-20	Q2	8.48	2.98
Q3	0-2	3-4	5	6-7	8-9	10-11	12-13	14-15	16	17-20	Q3	9.69	3.53
Q4	0-6	7-8	9-11	12-13	14-15	16-17	18-19	20-21	22-23	24-26	Q4	15.53	4.18
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 38

16PF BRITISH GENERAL POPULATION

FEMALE , FORM B

AGE GROUP 25-34, N=275

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-3	4-6	7	8-9	10-11	12	13-14	15	16-17	18-20	A	10.97	3.17
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.44	1.87
C	0-7	8	9-10	11-12	13-14	15-16	17	18-19	20-21	22-26	C	14.31	3.46
E	0-2	3	4-5	6-7	8-9	10-11	12-13	14-15	16-18	19-26	E	9.54	3.88
F	0-4	5-7	8-10	11-12	13-14	15-16	17-18	19-21	22-23	24-26	F	14.55	4.45
G	0-6	7-8	9	10-11	12	13-14	15	16	17	18-20	G	12.76	2.88
H	0-1	2-3	4-5	6-8	9-11	12-14	15-18	19-20	21-22	23-26	H	11.69	5.70
I	0-5	6-7	8	9-10	11	12-13	14	15-16	17-18	19-20	I	11.64	3.06
L	0-2	3-4	5	6	7	8-9	10	11	12	13-20	L	8.01	2.48
M	0-2	3-4	5-6	7-8	9	10-11	12-13	14-15	16-17	18-26	M	9.89	3.59
N	0-5	6	7	8-9	10	11	12-13	14	15	16-20	N	10.50	2.59
O	0-3	4-5	6-7	8-9	10-12	13-15	16-17	18-19	20-21	22-26	O	12.55	4.63
Q1	0-3	4	5	6-7	8	9-10	11	12-13	14-15	16-20	Q1	8.71	2.99
Q2	0-2	3	4-5	6	7-8	9	10-11	12-13	14	15-20	Q2	8.38	3.14
Q3	0-3	4-5	6-7	8-9	10-11	12	13-14	15	16-17	18-20	Q3	10.96	3.32
Q4	0-5	6-7	8-9	10-12	13-15	16-17	18-19	20-21	22-23	24-26	Q4	14.69	4.45
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 39

16PF BRITISH GENERAL POPULATION

FEMALE FORM B

AGE GROUP 35-44, N=180

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-3	4-5	6-7	8-9	10	11-12	13	14-15	16	17-20	A	10.67	3.15
B	0-3	4	5	6	7	8	9	10	-	11-13	B	7.40	1.85
C	0-6	7-8	9	10-11	12-14	15-16	17-18	19-20	21	22-26	C	14.21	4.00
E	0-2	3-4	5-6	7-8	9	10	11-13	14-15	16-19	20-26	E	9.78	3.74
F	0-6	7	8	9-10	11-13	14-16	17-18	19-21	22-23	24-26	F	13.71	4.58
G	0-8	9	10	11	12-13	14	15	16-17	18	19-20	G	13.23	2.64
H	0-1	2-3	4-6	7-8	9-12	13-15	16-19	20-21	22-23	24-26	H	12.44	5.90
I	0-6	7-8	9	10	11	12-13	14	15	16-17	18-20	I	11.83	2.60
L	0-2	3	4-5	6	7	8-9	10	11	12-13	14-20	L	7.79	2.68
M	0-3	4-5	6	7	8-9	10-11	12-13	14-15	16-17	18-26	M	10.12	3,65
N	0-5	6	7-8	9	10	11-12	13	14	15-17	18-20	N	10.75	2.74
O	0-3	4-5	6-8	9-10	11-12	13-14	15-16	17-19	20-21	22-26	O	12.56	4.41
Q1	0-2	3-4	5	6	7	8-9	10	11-12	13	14-20	Q1	7.98	2.76
Q2	0-1	2-3	4	5-6	7-8	9	10-11	12-13	14	15-20	Q2	8.26	3.33
Q3	0-5	6	7	8-9	10-12	13	14-15	16	17-18	19-20	Q3	11.69	3.62
Q4	0-5	6	7-9	10-11	12-14	15-16	17-18	19-22	23	24-26	Q4	14.44	4,68
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 40

16PF BRITISH GENERAL POPULATION

FEMALE FORM B

AGE GROUP 45-54, N=129

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–4	5	6	7–8	9–10	11	12–13	14	15	16–20	A	10.19	2.91
B	0–2	3–4	5	6	7	8	9	–	10	11–13	B	7.10	1.87
C	0–5	6–7	8–9	10–11	12–13	14–15	16–17	18	19–21	22–26	C	13.40	4.06
E	0–2	3–4	5	6–7	8	9–10	11–12	13–14	15–18	19–26	E	9.20	3.55
F	0–4	5–6	7–8	9–10	11–12	13–14	15–16	17–19	20	21–26	F	12.61	4.03
G	0–6	7–9	10	11–12	13	14–15	16–17	18	19	20	G	13.80	3.00
H	0–1	2	3–5	6–8	9–11	12–15	16–18	19–20	21–23	24–26	H	11.69	5.89
I	0–6	7	8	9–10	11–12	13	14	15–16	17–18	19–20	I	11.99	2.96
L	0–2	3	4–5	6	7	8–9	10	11	12	13–20	L	7.72	2.67
M	0–3	4	5–6	7–8	9	10–11	12–14	15	16–18	19–26	M	10.10	3.78
N	0–6	7	8	9	10–11	12	13	14–15	16	17–20	N	11.15	2.58
O	0–4	5–7	8	9–10	11–12	13–15	16–17	18–20	21	22–26	O	13.06	4.52
Q1	0–3	4	5	6	7	8–9	10	11–13	14–15	16–20	Q1	8.21	2.97
Q2	0–1	2–3	4	5–6	7–8	9	10–11	12	13–15	16–20	Q2	8.17	3.20
Q3	0–4	5–6	7–8	9–10	11–12	13–14	15	16	17	18–20	Q3	12.17	3.32
Q4	0–3	4–6	7–9	10–12	13–14	15–16	17–18	19–21	22	23–26	Q4	14.16	4.69
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 41

16PF BRITISH GENERAL POPULATION

FEMALE, FORM B

AGE GROUP 55+, N=167

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-3	4-5	6-7	8	9-10	11	12	13-14	15-16	17-20	A	10.22	3.05
B	0-1	2	3	4-5	6	7	8	9	10	11-13	B	6.33	2.11
C	0-6	7-8	9-10	11	12-13	14-15	16-17	18-20	21-22	23-26	C	13.81	4.00
E	0-3	4	5	6-7	8	9-10	11-12	13-14	15-17	18-26	E	9.08	3.46
F	0-4	5	6-7	8-9	10-11	12-13	14-15	16	17-19	20-26	F	11.25	3.90
G	0-7	8-9	10-11	12	13	14	15-16	17	18	19-20	G	13.54	2.72
H	0-3	4	5-6	7-8	9-11	12-14	15-18	19-22	23-24	25-26	H	12.13	5.55
I	0-6	7-8	9	10-11	12	13	14	15-16	17	18-20	I	12.27	2.67
L	0-2	3-4	5	6	7-8	9	10	11	12-13	14-20	L	7.96	2.56
M	0-4	5	6	7-8	9	10-11	12-13	14-15	16-17	18-20	M	9.93	3.35
N	0-7	-	8-9	10	11	12-13	14	15 15	16-17	18-20	N	11.84	2.57
O	0-2	3-4	5-7	8-10	11-12	13-15	16-17	18	19-22	23-26	O	12.44	4.79
Q1	0-3	4	5	6	7	8	9-10	11	12-13	14-20	Q1	7.74	2.45
Q2	0-2	3	4-5	6-7	8	9-10	11	12	13-14	15-20	Q2	8.58	2.97
Q3	0-5	6-7	8-9	10-11	12-13	14	15	16-17	18	19-20	Q3	12.73	3.20
Q4	0-3	4-5	6-8	9-10	11-12	13-15	16-17	18-20	21-22	23-26	Q4	12.74	4.68
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 42

16PF BRITISH GENERAL POPULATION.

FEMALE, FORM B

SOCIAL CLASS A+B, N=172

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6-7	8-9	10	11	12-13	14	15-16	17-20	A	10.29	3.16
B	0-3	4-5	6	7	8	9	10	-	11	12-13	B	8.22	1.87
C	0-7	8	9-10	11-12	13-15	16-17	18	19-21	22	23-26	C	14.94	3.92
E	0-3	4	5-6	7-8	9	10-11	12-13	14-17	18-20	21-26	E	10.12	4.03
F	0-4	5-7	8	9-10	11-13	14-15	16-18	19-21	22-23	24-26	F	13.58	4.72
G	0-5	6-8	9-10	11-12	13	14-15	16	17	18	19-20	G	13.39	3.14
H	0-2	3-4	5-7	8-10	11-13	14-17	18-20	21-23	24	25-26	H	13.74	6.00
I	0-6	7-8	9	10-11	12	13-14	15	16-17	18	19-20	I	12.84	3.00
L	0-2	3	4-5	6	7	8-9	10	11	12-14	15-20	L	7.70	2.74
M	0-4	5	6-7	8-9	10-11	12-13	14-15	16-17	18-20	21-26	M	11.47	3.93
N	0-5	6	7	8-9	10	11-12	13	14-15	16	17-20	N	10.90	2.99
O	0-3	4-5	6-7	8-9	10-12	13-14	15-16	17-19	20-21	22-26	O	12.23	4.55
Q1	0-3	4	5	6-7	8	9-10	11-13	14	15-17	18-20	Q1	9.31	3.44
Q2	0-1	2-3	4	5-6	7-8	9	10-11	12-13	14-15	16-20	Q2	8.25	3.43
Q3	0-3	4-5	6-7	8-9	10-12	13-14	15	16	17-18	19-20	Q3	11.77	3.81
Q4	0-3	4-6	7-8	9-11	12-13	14-16	17-18	19-21	22	23-26	Q4	13.63	4.79
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 43

16PF BRITISH GENERAL POPULATION

FEMALE FORM B

SOCIAL CLASS C1, N=217

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-3	4-5	6	7-8	9-10	11-12	13-14	15-16	17	18-20	A	10.59	3.46
B	0-3	4	5	6	7	8	9	10	-	11-13	B	7.61	1.69
C	0-7	8-9	10-11	12	13-14	15-16	17-18	19	20-21	22-26	C	14.67	3.52
E	0-2	3-4	5-6	7	8-9	10-11	12-13	14-15	16-17	18-26	E	9.68	3.52
F	0-5	6-7	8-9	10-11	12-14	15-16	17-19	20-21	22-24	25-26	F	14.46	4.95
G	0-6	7-8	9-10	11	12-13	14	15-16	17	18	19-20	G	13.09	2.88
H	0-1	2-3	4-6	7-9	10-12	13-15	16-19	20-21	22-23	24-26	H	12.75	5.87
I	0-6	7-8	9	10	11	12-13	14	15-16	17-18	19-20	I	12.07	2.78
L	0-1	2-3	4-5	6	7	8	9-10	11	12	13-20	L	7.64	2.62
M	0-3	4	5-6	7-8	9-10	11-12	13-14	15-16	17-18	19-26	M	10.40	3.73
N	0-5	6	7	8-9	10	11-12	13	14-15	16-17	18-20	N	10.75	2.98
O	0-4	5-6	7-8	9-10	11-12	13-14	15-16	17-19	20-21	22-26	O	12.44	1.30
Q1	0-3	4	5	6-7	8	9	10-11	12	13	14-20	Q1	8.56	2.69
Q2	0-2	3	4	5-6	7-8	9	10-11	12	13-14	15-20	Q2	8.08	3.19
Q3	0-2	3-5	6-7	8-9	10-11	12-13	14-15	16	17-18	19-20	Q3	11.50	3.82
Q4	0-5	6	7-9	10-11	12-14	15-17	18	19-20	21-23	24-26	Q4	14.13	4.71
FACTOR	1	2	3	4	5 STEN SCORE	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 44
16PF BRITISH GENERAL POPULATION

FEMALE FORM B

SOCIAL CLASS C2, N=360

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–4	5–6	7	8–9	10	11–12	13	14–15	16	17–20	A	10.72	3.01
B	0–2	3–4	5 5	6	7	8	9	–	10	11–13	B	7.14	1.87
C	0–6	7–8	9	10–11	12–13	14–15	16–17	18–19	20–21	22–26	C	13.82	3.97
E	0–2	3–4	5	6–7	8–9	10–11	12–13	14–15	16–18	19–26	E	9.62	3.80
F	0–5	6–7	8–9	10–11	12–14	15–16	17–18	19–21	22	23–26	F	14.21	4.40
G	0–6	7	8–9	10	11–12	13	14–15	16	17–18	19–20	G	12.33	2.87
H	0–1	2	3–5	6–7	8–10	11–13	14–17	18–20	21–22	23–26	H	11.11	5.69
I	0–5	6–7	8	9	10–11	12	13–14	15	16	17–20	I	11.16	2.73
L	0–2	3	4–5	6	7–8	9	10	11–12	13	14–20	L	8.20	2.62
M	0–3	4	5–6	7	8–9	10	11–12	13–14	15–16	17–26	M	9.51	3.35
N	0–5	6	7	8–9	10	11	12–13	14	15	16–20	N	10.51	2.59
O	0–2	3–5	6–8	9–10	11–13	14–15	16–17	18–19	20–21	22–26	O	12.93	4.73
Q1	0–2	3	4–5	6	7	8–9	10	11–12	13–14	15–20	Q1	8.04	2.81
Q2	0–2	3	4–5	6	7–8	9	10–11	12–13	14	15–20	Q2	8.29	2.98
Q3	0–4	5	6–7	8–9	10–11	12	13–14	15–16	17	18–20	Q3	11.04	3.38
Q4	0–4	5–7	8–10	11–12	13–14	15–16	17–19	20–21	22–23	24–26	Q4	14.66	4.43
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 45

16PF BRITISH GENERAL POPULATION

FEMALE, FORM B

SOCIAL CLASS D.E, N=255

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6-7	8-9	10	11-12	13	14-15	16	17-20	A	10.72	3.06
B	0-2	3	4	5	6	7	8	9	-	10-13	B	6.42	1.97
C	0-5	6-7	8-9	10	11-13	14	15-16	17-18	19	20-26	C	12.92	3.69
E	0-2	3-4	5	6-7	8-9	10	11-12	13-14	15-18	19-26	E	9.32	3.59
F	0-4	5-6	7-9	10-11	12-13	14-15	16-17	18-19	20-22	23-26	F	13.22	4.32
G	0-6	7-8	9	10-11	12	13-14	15	16-17	18	19-20	G	12.76	2.97
H	0-1	2-3	4-5	6-7	8-9	10-12	13-15	16-19	20-21	22-26	H	10.45	5.16
I	0-5	6	7-8	9	10-11	12	13	14	15-16	17-20	I	11.11	2.71
L	0-3	4	5-6	7	8	9	10	11-12	13	14-20	L	8.60	2.47
M	0-3	4	5-6	7	8-9	10	11-12	13-14	15-16	17-26	M	9.40	3.43
N	0-5	6	7	8-9	10	11	12-13	14	15-16	17-20	N	10.51	2.68
O	0-4	5-6	7-8	9-11	12-13	14-15	16-17	18-19	20-22	23-26	O	13.29	4.33
Q1	0-3	4	5	6	7	8	9-10	11	12-13	14-20	Q1	7.91	2.61
Q2	0-2	3-4	5	6-7	8	9-10	11	12-13	14	15-20	Q2	8.91	2.96
Q3	0-3	4-5	6-7	8-9	10	11-12	13-14	15	16-17	18-20	Q3	10.81	3.38
Q4	0-5	6-7	8-10	11-12	13-15	16-17	18-19	20-21	22	23-26	Q4	15.15	4.39
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 46

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

AGE GROUP 15-24, N=255

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-10	11-14	15-16	17-19	20-22	23-24	25-26	27-29	29-31	40	A	21.88	5.14
B	0-7	8-9	10-11	12-13	14	15-16	17	18-19	20-21	22-26	B	14.68	3.26
C	0-14	15-17	18-20	21-24	25-28	29-31	32-34	35-37	38-42	43-52	C	27.82	6.64
E	0-8	9-12	13-14	15-17	18-20	21-23	24-26	27-30	31-38	39-52	E	20.87	6.48
F	0-14	15-18	19-22	23-26	27-31	32-35	36-39	40-43	44-46	47-52	F	31.07	8.17
G	0-10	11-13	14-16	17-18	19-22	23-24	25-27	28-30	31	32-40	G	21.89	5.45
H	0-3	4-8	9-12	13-16	17-22	23-28	29-34	35-41	42-44	45-52	H	23.15	10.47
I	0-15	16-17	18-19	20-22	23-24	25-26	27-28	29-30	31-34	35-40	I	24.15	4.47
L	0-7	8-9	10-12	13-14	15-17	18-19	20-22	23-24	25-27	28-40	L	17.29	5.11
M	0-10	11-13	14-15	16-18	19-21	22-23	24-26	27-30	31-35	36-52	M	21.34	6.04
N	0-10	11-13	14-16	17-18	19-21	22-23	24-25	26-27	28-29	30-40	N	20.69	4.66
O	0-11	12-15	16-19	20-22	23-26	27-30	31-33	34-36	37-40	41-52	O	26.34	7.08
Q1	0-9	10-11	12-13	14-15	16-17	18-19	20-22	23-25	26-29	30-40	Q1	18.13	4.80
Q2	0-8	9-10	11-13	14-16	17-18	19-22	23-24	25-26	27-29	30-40	Q2	18.96	5.40
Q3	0-8	9-11	12 14	15-16	17-19	20-22	23-26	27-28	29-31	32-40	Q3	20.02	5.66
Q4	0-14	15-19	20-23	24-27	28-31	32-34	35-38	39-42	43-44	45-52	Q4	30.71	7.36
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 47

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

AGE GROUP 25-34, N=274

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-11	12-14	15-17	18-20	21-22	23-24	25-27	28-29	20-32	33-40	A	22.35	4.95
B	0-8	9	10-11	12	13-14	15-16	17	18-19	20-21	22-26	B	14.56	3.34
C	0-16	17-19	20-22	23-25	26-28	29-31	32-35	36-38	39-40	41-52	C	28.64	6.11
E	0-7	8-9	10-11	12-14	15-18	19-21	22-25	26-30	31-33	34-52	E	18.81	6.92
F	0-10	11-15	16-19	20-23	24-27	28-31	32-35	36-40	41-44	45-52	F	27.65	8.16
G	0-13	14-16	17-19	20-22	23-24	25-27	28-29	30-32	33	34-40	G	24.48	5.12
H	0-5	6-8	9-14	15-17	18-22	23-29	30-36	37-40	41-44	45-52	H	23.81	10.33
I	0-15	16-18	19-20	21-22	23-25	26-27	28-30	31-32	33-34	35-40	I	25.12	4.69
L	0-6	7-8	9-10	11-12	13-15	16-17	18-20	21-22	23-25	26-40	L	15.50	4.69
M	0-10	11-14	15	16-18	19-20	21-24	25-27	28-31	32-36	37-52	M	21.65	6.01
N	0-13	14-15	16-17	18-19	20-21	22-24	25-26	27-28	20-30	31-40	N	21.78	4.53
O	0-9	10-12	13-17	18-21	22-25	26-29	30-32	33-36	37-38	39-52	O	24.91	7.66
Q1	0-8	9	10-12	13-14	15-16	17-18	19-21	22-24	25-28	29-40	Q1	16.94	4.96
Q2	0-9	10-11	12-13	14-16	17-19	20-22	23-25	26-28	29-31	32-40	Q2	19.71	5.65
Q3	0-12	13-14	15-17	18-20	21-22	23-25	26-28	29-30	31-33	34-40	Q3	22.82	5.24
Q4	0-11	12-16	17-21	22-25	26-29	30-33	34-36	37-40	41-44	45-52	Q4	29.08	7.76
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 48

16PF BRITISH GENERAL POPULATION

FEMALE, FORMA+B

AGE GROUP 35-44, N=178

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-12	13	14-16	17-19	20-21	22-24	25-26	27-29	30	31-40	A	21.72	4.93
B	0-7	8-9	10-11	12	13-14	15-16	17	18-19	20	21-26	B	14.51	3.22
C	0-15	16-17	18-21	22-25	26-28	29-32	33-35	36-39	40-41	42-52	C	28.45	6.88
E	0-5	6-9	10-12	13-15	16-18	19-21	22-24	25-29	30-33	34-52	E	18.79	6.66
F	0-10	11-12	13-16	17-20	21-25	26-28	29-33	34-39	40-44	45-52	F	25.28	8.40
G	0-14	15-17	18-20	21-22	23-25	26-28	29-30	31-32	33	34-40	G	25.38	4.88
H	0-5	6-9	10-12	13-17	18-23	24-31	32-36	37-40	41-43	44-52	H	24.14	10.73
I	0-16	17-18	19-21	22-23	24-25	26-27	28-29	30-32	33-34	35-40	I	25.50	4.46
L	0-6	7	8-10	11-12	13-15	16-17	18-19	20-22	23-24	25-40	L	15.17	4.99
M	0-11	12-13	14-15	16-18	19-21	22-25	26-28	29-32	33-35	36-52	M	22.29	6.38
N	0-13	14-15	16-17	18-20	21-22	23-24	25-26	27-29	30-31	32-40	N	22.51	4.43
O	0-11	12-13	14-17	18-20	21-25	26-29	30-32	33-37	38-41	42-52	O	25.18	7.67
Q1	0-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-24	25-40	Q1	15.35	4.21
Q2	0-8	9	10-13	14-16	17-20	21-23	24-25	26-28	29-30	31-40	Q2	19.74	6.02
Q3	0-12	13-14	15-17	18-20	21-24	25-26	27-29	30-31	32-33	34-40	Q3	23.75	5.69
Q4	0-11	12-14	15-20	21-23	24-28	29-32	33-37	38-43	44	45-52	Q4	28.53	8.65
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 49

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

AGE GROUP 45-54, N=129

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-10	11-13	14-15	16-17	18-21	22-23	24-25	26-28	29-30	31-40	A	20.98	5.03
B	0-6	7-8	9-10	11-12	13	14-15	16-18	19	20	21-26	B	14.12	3.45
C	0-13	14-15	16-19	20-22	23-27	28-31	32-34	35-37	38-41	42-52	C	26.98	7.44
E	0-6	7-9	10-11	12-15	16	17-20	21-23	24-29	30-33	34-52	E	18.00	6.56
F	0-8	9-13	14-17	18-19	20-22	23-26	27-30	31-34	35-37	38-52	F	23.31	7.03
G	0-15	16-19	20-22	23-24	25-26	27-29	30-31	32-34	35-37	38-40	G	26.84	4.85
H	0-3	4-7	8-11	12-17	18-23	24-29	30-34	35-39	40-43	44-52	H	23.22	10.41
I	0-14	15-17	18-20	21-23	24-25	26-27	28-30	31-32	33-34	35-40	I	25.39	4.79
L	0-5	6-7	8-10	11-12	13-14	15-17	18-19	20-22	23-26	27-40	L	15.05	5.17
M	0-12	13	14-16	17-19	20-21	22-24	25-26	27-31	32-35	36-52	M	22.19	5.69
N	0-14	15-16	17-18	19-20	21-23	24-26	27-28	29-30	31-32	33-40	N	23.65	4.76
O	0-12	13-15	16-17	18-21	22-25	26-28	29-33	34-37	38-41	42-52	O	25.72	7.33
Q1	0-9	10	11	12-13	14-15	16-17	18-20	21-22	23-27	28-40	Q1	16.05	4.35
Q2	0-10	11	12-13	14-16	17-19	20-22	23-26	27-28	29-30	31-40	Q2	19.66	5.63
Q3	0-15	16-17	18-21	22	23-25	26-27	28-30	31-32	33-35	36-40	Q3	25.26	4.85
Q4	0-8	9-13	14-19	20-23	24-28	29-32	33-36	37-40	41-44	45-52	Q4	27.94	8.70
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE.50

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

AGE GROUP 55+ , N=167

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-10	11-12	13-16	17-19	20-21	22-23	24-26	27-28	29	30-40	A	21.04	4.93
B	0-5	6	7-8	9-10	11-12	13-14	15-16	17	18-19	20-26	B	12.36	3.52
C	0-13	14-19	20-22	23-24	25-27	28-31	32-34	35-39	40-42	43-52	C	28.02	6.71
E	0-7	8-9	10-12	13-14	15-17	18-20	21-23	24-27	28-33	34-52	E	18.04	6.26
F	0-8	9-11	12-14	15-17	18-20	21-23	24-27	28-30	31-37	38-52	F	20.92	6.84
G	0-16	17-19	20-22	23-25	26-27	28-29	30-32	33-34	35-36	37-40	G	27.47	4.83
H	0-6	7-8	9-13	14-17	18-21	22-27	28-33	34-40	41-45	46-52	H	23.04	9.87
I	0-15	16-18	19-21	22-23	24-25	26-27	28-29	30-31	32-33	34-40	I	25.35	4.38
L	0-6	7-9	10-11	12-13	14-15	16-18	19-20	21-22	23-24	25-40	L	15.80	4.47
M	0-12	13-14	15-16	17-18	19-20	21-23	24-26	27-29	30-33	34-52	M	21.56	5.15
N	0-15	16-18	19-20	21-22	23-24	25-27	28	29-30	31-32	33-40	N	24.57	4.14
O	0-8	9-12	13-14	15-20	21-24	25-28	29-32	33-35	36-40	41-52	O	24.41	8.15
Q1	0-7	8-9	10	11-12	13-14	15-16	17-19	20-21	22	23-40	Q1	14.78	3.92
Q2	0-9	10-12	13-15	16-17	18-20	21-23	24-25	26-27	28-30	31-40	Q2	20.69	5.14
Q3	0-14	15-17	18-21	22-24	25-26	27-28	29-30	31-32	33-34	35-40	Q3	26.02	4.93
Q4	0-8	9-12	13-17	18-22	23-26	27-30	31-34	35-38	39-42	43-52	Q4	26.20	8.30
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 51

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

SOCIAL CLASS A,B, N=172

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-8	9-13	14-16	17-19	20-21	22-24	25-26	27-28	29-30	31-40	A	21.33	5.31
B	0-8	9-10	11-12	13-14	15-16	17	18-19	20	21-22	23-26	B	16.01	3.34
C	0-17	18-20	21-22	23-26	27-29	30-33	34-37	38-41	42-43	44-52	C	30.03	6.76
E	0-6	7-10	11-13	14-15	16-18	19-22	23-26	27-33	34-38	39-52	E	19.99	7.76
F	0-9	10-14	15-17	18-21	22-24	25-30	31-35	36-41	42-45	46-52	F	26.08	9.00
G	0-12	13-14	15-18	19-23	24-26	27-29	30-31	32-33	34-35	36-40	G	25.70	6.04
H	0-6	7-10	11-15	16-19	20-26	27-33	34-39	40-43	44-46	47-52	H	26.75	10.95
I	0-15	16-19	20-21	22-24	25-26	27-29	30-31	32-34	35-36	37-40	I	26.85	4.93
L	0-5	6-7	8-9	10-11	12-14	15-17	18-19	20-22	23-27	28-40	L	14.76	5.26
M	0-13	14-16	17	18-20	21-24	25-27	28-32	33-35	36-37	38-52	M	24.74	6.56
N	0-12	13-15	16-17	18-19	20-22	23-24	25-27	28-29	30-32	33-40	N	22.41	4.77
O	0-8	9-12	13-15	16-19	20-23	24-27	28-30	31-34	35-39	40-52	O	23.41	7.48
Q1	0-8	9	10-11	12-13	14-16	17-19	20-23	24-27	28-30	31-40	Q1	17.21	5.58
Q2	0-7	8-9	10-12	13-16	17-19	20-22	23-26	27-28	29-32	33-40	Q2	19.43	6.44
Q3	0-11	12-13	14-16	17-21	22-24	25-28	29-31	32	33-35	36-40	Q3	24.33	6.50
Q4	0-8	9-13	14-17	18-22	23-27	28-31	32-35	36-39	40-43	44-52	Q4	27.03	8.75
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 52

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

SOCIAL CLASS C1, N=215

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-11	12-13	14-15	16-18	19-22	23-24	25-27	28-29	30-32	33-40	A	21.90	5.40
B	0-9	10	11	12-13	14-15	16	17-18	19	20	21-26	B	15.09	2.93
C	0-15	16-18	19-23	24-25	26-29	30-32	33-36	37-39	40-42	43-52	C	29.34	6.59
E	0-6	7-9	10-12	13-15	16-18	19-21	22-25	26-29	30-31	32-52	E	18.88	6.32
F	0-9	10-13	14-17	18-22	23-28	29-32	33-37	38-42	43-46	47-52	F	27.85	9.48
G	0-13	14-16	17-19	20-22	23-25	26-28	29-31	32	33-34	35-40	G	25.13	5.70
H	0-5	6-8	9-12	13-18	19-24	25-30	31-36	37-43	44-46	47-52	H	24-96	10.94
I	0-16	17-18	19-21	22-23	24-25	26-28	29-30	31-33	34-35	36-40	I	25.91	4.79
L	0-5	6-7	8-10	11-12	13-14	15-16	17-18	19-21	22-24	25-40	L	14.78	4.45
M	0-10	11-13	14-16	17-19	20-22	23-25	26-28	29-31	32-37	38-52	M	22.64	6.08
N	0-12	13-14	15-16	17-19	20-22	23-24	25-27	28-29	30-32	33-40	N	21.97	5.24
O	0-9	10-12	13-16	17-20	21-24	25-28	29-31	32-35	36-40	41-52	O	24.38	7.52
Q1	0-7	8-9	10-11	12-14	15-16	17-18	19-20	21-23	24-27	28-40	Q1	16.38	4.69
Q2	0-9	10	11-12	13-16	17-18	19-22	23-25	26-27	28-30	31-40	Q2	19.32	5.69
Q3	0-9	10-13	14-16	17-21	22-24	25-26	27-29	30-31	32-34	35-40	Q3	23.60	6.13
Q4	0-11	12-14	15-19	20-23	24-28	29-32	33-36	37-40	41-44	45-52	Q4	28.24	8.29
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 53

16PF BRITISH GENERAL POPULATION

FEMALE, FORMA+B

SOCIAL CLASS C2, N=360

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-10	11-14	15-16	17-19	20-21	22-24	25-26	27-28	29-31	32-40	A	21.61	4.90
B	0-6	7-9	10	11-12	13	14-15	16-17	18	19-20	21-26	B	13.93	3.21
C	0-14	15-18	19-20	21-23	24-27	28-31	32-34	35-37	38-40	41-52	C	27.60	6.59
E	0-6	7-9	10-12	13-15	16-18	19-21	22-24	25-29	30-33	34-52	E	18.85	6.78
F	0-11	12-14	15-18	19-22	23-26	27-30	31-34	35-39	40-43	44-52	F	26.67	8.02
G	0-13	14-15	16-19	20-22	23-24	25-27	28-29	30-31	32-33	34-40	G	24.18	5.15
H	0-5	6-8	9-12	13-16	17-21	22-27	28-33	34-38	39-42	43-52	H	22.49	10.08
I	0-14	15-17	18-20	21-22	23-24	25-26	27-28	29-30	31-32	33-40	I	24.17	4.38
L	0-6	7-9	10-11	12-13	14-16	17-18	19-21	22-23	24-26	27-40	L	16.23	4.96
M	0-11	12-13	14-15	16-18	19-20	21-22	23-25	26-29	30-33	34-52	M	20.75	5.29
N	0-12	13-15	16-17	18-20	21-22	23-24	25-26	27-28	29-30	31-40	N	22.34	4.58
O	0-9	10-13	14-17	18-22	23-26	27-30	31-33	34-36	37-39	40-52	O	25.81	7.66
Q1	0-8	9-10	11	12-13	14-16	17-18	19-20	21-23	24-26	27-40	Q1	16.27	4.61
Q2	0-9	10-11	12-13	14-16	17-19	20-22	23-24	25-27	28-30	31-40	Q2	19.48	5.29
Q3	0-12	13-14	15-17	18-20	21-22	23-25	26-28	29-30	31-32	33-40	Q3	22.63	5.14
Q4	0-10	11-16	17-21	22-25	26-29	30-33	34-36	37-40	41-44	45-52	Q4	29.11	7.89
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 54

16PF BRITISH GENERAL POPULATION

FEMALE, FORM A+B

SOCIAL CLASS D,E, N=254

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-11	12-14	15-17	18-20	21-22	23-24	25-26	27-28	29-30	31-40	A	21.91	4.64
B	0-5	6-7	8	9-10	11-12	13-14	15-16	17	18	19-26	B	12.46	3.35
C	0-12	13-16	17-20	21-22	23-26	27-29	30-32	33-34	35-37	38-52	C	26.26	6.24
E	0-8	9-10	11-13	14-15	16-18	19-21	22-24	25-29	30-32	33-52	E	19.09	6.03
F	0-9	10-13	14-17	18-20	21-24	25-28	29-32	33-38	39-43	44-52	F	25.09	8.24
G	0-15	16-17	18-19	20-22	23-25	26-27	28-29	30-32	33-35	36-40	G	24.77	5.16
H	0-4	5-8	9-12	13-16	17-20	21-25	26-31	32-36	37-40	41-52	H	21.39	9.13
I	0-15	16-17	18-20	21-22	23-24	25-26	27-28	29	30-31	32-40	I	24.17	3.92
L	0-8	9	10-12	13-14	15-17	18-19	20-21	22-23	24-26	27-40	L	17.16	4.74
M	0-11	12-13	14-15	16-17	18-19	20-22	23-25	26-28	29-31	32-52	M	20.36	5.30
N	0-13	14-15	16-18	19-20	21-22	23-25	26	27-28	29-30	31-40	N	22.54	4.36
O	0-12	13-15	16-19	20-23	24-27	28-30	31-34	35-36	37-41	42-52	O	26.87	7.23
Q1	0-9	10	11-12	13-14	15-16	17-18	19-20	21-22	23-25	26-40	Q1	16.41	4.17
Q2	0-9	10-12	13-14	15-17	18-20	21-23	24-25	26-28	29-30	31-40	Q2	20.46	5.29
Q3	0-11	12-14	15-16	17-19	20-22	23-25	26-28	29-30	31-33	34-40	Q3	22.53	5.49
Q4	0-13	14-18	19-22	23-26	27-30	31-34	35-38	39-41	42-44	45-52	Q4	30.11	7.65
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 55

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A

AGE GROUP 15-24, N = 513

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-4	5	6-7	8	9-10	11	12-13	14	15-16	17-20	A	10.34	2.97
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.23	2.01
C	0-7	8	9-10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	C	14.53	3.90
E	0-4	5	6-7	8-9	10-11	12-13	14-16	17-18	19-20	21-26	E	12.01	4.16
F	0-6	7-8	9-10	11-13	14-15	16-18	19-20	21-22	23-24	25-26	F	15.62	4.69
G	0-2	3-4	5-6	7-8	9-10	11-12	13-14	15-16	17	18-20	G	10.29	3.66
H	0-2	3-4	6-7	8-10	11-13	14-15	16-19	20-21	22-23	24-26	H	13.13	5.53
I	0-3	4-6	7	8-9	10-11	12-13	14-15	16	17-18	19-20	I	11.28	3.86
L	0-2	3	4-5	6	7-8	9-10	11-12	13-14	15-16	17-20	L	9.01	3.60
M	0-4	5-6	7-8	9	10-11	12-13	14-15	16-17	18-19	20-26	M	11.71	3.53
N	0-3	4-5	6-7	8	9-10	11	12-13	14-15	16	17-20	N	10.25	3.16
O	0-2	3-5	6-7	8-9	10-11	12-14	15-16	17-18	19-20	21-26	O	11.86	4.38
Q1	0-4	5	6-7	8	9-10	11-12	13	14-15	16-17	18-20	Q1	10.57	3.34
Q2	0-3	4	5-6	7-8	9-10	11-12	13-14	15	16-17	18-20	Q2	10.54	3.64
Q3	0-4	5	6-7	8	9-10	11-12	13-14	15	16-17	18-20	Q3	10.74	3.31
Q4	0-2	3-5	6-8	9-11	12-13	14-16	17-18	19-20	21-22	23-26	Q4	13.81	4.95
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 56

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM A

AGE GROUP 25–34 N = 540

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–3	4–5	6	7–8	9–10	11–12	13	14	15–16	17–20	A	10.34	3.24
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.29	2.04
C	0–7	8	9–11	12	13–14	15–16	17–18	19–20	21–22	23–26	C	14.81	3.85
E	0–3	4	5–6	7–8	9–10	11–13	14–15	16–18	19–21	22–26	E	11.09	4.56
F	0–3	4–5	6–8	9–10	11–13	14–15	16–17	18–20	21–22	23–26	F	13.09	4.76
G	0–5	6	7–8	9–10	11	12–13	14–15	16	17–18	19–20	G	11.84	3.26
H	0–2	3–4	5–6	7–9	10–12	13–15	16–18	19–20	21–23	24–26	H	12.45	5.34
I	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16	17–18	19–20	I	11.37	3.81
L	0–1	2	3–4	5–6	7	8–9	10–11	12–13	14–15	16–20	L	8.10	3.48
M	0–5	6–7	8	9–10	11	12–13	14–15	16–17	18–19	20–26	M	12.13	3.49
N	0–4	5–6	7	8–9	10	11–12	13	14–15	16	17–20	N	10.73	3.07
O	0–3	4–5	6–7	8–9	10–11	12–13	14–15	16–17	18	19–26	O	11.44	4.03
Q1	0–2	3–4	5	6–7	8–9	10–11	12–13	14	15–16	17–20	Q1	9.34	3.47
Q2	0–4	5–6	7	8–9	10–11	12–13	14–15	16	17	18–20	Q2	11.49	3.41
Q3	0–5	6–7	8	9–10	11	12–13	14–15	16	17	18–20	Q3	11.94	3.03
Q4	0–4	5–6	7–8	9–11	12–13	14–15	16–18	19–20	21	22–26	Q4	13.39	4.59
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 57

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM A

AGE GROUP 35–44 N = 389

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–4	5	6–7	8	9–10	11	12–13	14	15	16–20	A	10.16	2.91
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.23	2.06
C	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19–21	22–23	24–26	C	14.75	4.08
E	0–2	3–4	5	6–8	9–10	11–12	13–15	16–17	18–20	21–26	E	10.62	4.51
F	0–3	4	5–6	7–8	9–11	12–13	14–16	17–18	19–21	22–26	F	11.52	4.58
G	0–5	6–7	8–9	10	11–12	13–14	15	16–17	18	19–20	G	12.56	3.30
H	0–2	3–4	5–6	7–9	10–12	13–16	17–18	19–21	22–23	24–26	H	12.67	5.53
I	0–4	5	6–7	8–9	10–11	12–13	14–15	16	17–18	19–20	I	11.49	3.79
L	0–1	2	3–4	5–6	7	8–9	10	11–13	14	16–20	L	7.83	3.30
M	0–5	6–7	8	9–10	11–12	13–14	15–16	17–18	19	20–26	M	12.47	3.72
N	0–5	6	7	8–9	10–11	12–13	14	15	16–17	19–20	N	11.29	3.24
O	0–2	3–4	5–6	7–8	9–11	12–13	14–15	16–18	19–20	20–26	O	11.43	4.52
Q1	0–2	3–4	5	6	7–8	9–10	11	12	13–14	15–20	Q1	8.60	2.97
Q2	0–4	5–6	7	8–10	11	12–13	14–15	16	17–18	19–20	Q2	11.76	3.54
Q3	0–6	7	8–9	10–11	12	13–14	15	16–17	18	19–20	Q3	12.72	3.06
Q4	0–2	3–4	5–7	9–10	11–13	14–15	16–18	19–20	21–22	23–26	Q4	13.00	5.21
FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			

TABLE 58

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM A

AGE GROUP 45–54 N = 333

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–3	4–5	6–7	8	9–10	11	12–13	14	15–16	17–20	A	10.12	3.07
B	0–2	3	4	5	6	7–8	9	10	11	12–13	B	7.02	2.18
C	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19–20	21	22–26	C	14.32	3.99
E	0–2	3	4–5	6–8	9–10	11–12	13–14	15–17	18–19	20–26	E	10.38	4.28
F	0–2	3–5	6	7–8	9–10	11–12	13–15	16–17	18–19	20–26	F	10.74	4.25
G	0–6	7–8	9–10	11	12–13	14–15	16	17	18	19–20	G	13.37	3.03
H	0–2	3–4	5–6	7–9	10–12	13–15	16–17	18–20	21–23	24–26	H	12.30	5.44
I	0–3	4–5	6–7	8	9–11	12	13–14	15–16	17–18	19–20	I	10.98	3.79
L	0–1	2	3–4	5	6–7	8–9	10–11	12–13	14–15	16–20	L	7.68	3.44
M	0–4	5–6	7–8	9–10	11–12	13	14–15	16–17	18	19–26	M	11.94	3.51
N	0–5	6–7	8	9–10	11	12–13	14	15–16	17–18	19–20	N	11.78	3.13
O	0–4	5	6	7–9	10–11	12–13	14–16	17	18–21	22–26	O	11.59	4.35
Q1	0–3	4	5	6	7–8	9–10	11	12–13	14	15–20	Q1	8.64	2.85
Q2	0–5	6	7–8	9	10–11	12–13	14–15	16	17–18	19–20	Q2	11.57	3.34
Q3	0–7	8	9–10	11	12–13	14	15–16	17	18	19–20	Q3	13.21	2.93
Q4	0–3	4–5	6–8	9–10	11–13	14–15	16–18	19–20	21–22	23–26	Q4	13.09	4.82
FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 59

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A

AGE GROUP 55+, N = 443

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-3	4-5	6-7	8	9-10	11	12-13	14	15-16	17-20	A	10.08	3.08
B	0-1	2	3	4-5	6	7	8	9	10	11-13	B	6.21	2.19
C	0-7	8-9	10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	C	14.70	3.73
E	0-2	3	4-5	6-7	8-9	10-11	12-13	14-16	17-18	19-26	E	9.85	4.06
F	0-1	2-3	4-5	6-7	8-9	10-11	12-13	14-15	16-19	20-26	F	9.66	4.12
G	0-6	7-8	9-10	11-12	13-14	15	16-17	18	19	20	G	13.93	3.15
H	0-2	3-4	5-6	7-8	9-11	12-14	15-17	18-20	21-23	24-26	H	11.70	5.38
I	0-3	4-5	6-7	8-9	10	11-12	13-14	15-16	17	18-20	I	11.06	3.48
L	0-2	3	4-5	6	7-8	9	10-11	12-13	14	15-20	L	8.35	3.18
M	0-4	5-6	7-8	9-10	11	12-13	14-15	16-17	17-19	20-26	M	11.89	3.50
N	0-5	6-7	8-9	10	11-12	13	14-15	16	17	18-20	N	12.17	2.94
O	0-2	3-4	5-6	7-8	9-10	11-12	13-15	16-17	18-19	20-26	O	10.81	4.24
Q1	0-2	3	4	5-6	7	8-9	10-11	12	13-14	15-20	Q1	7.96	3.04
Q2	0-5	6-7	8	9-10	11-12	13-14	15	16-17	18	19-20	Q2	12.36	3.30
Q3	0-7	8-9	10	11-12	13	14-15	16	17-18	19	20	Q3	13.78	2.80
Q4	0-2	3-4	5-6	7-9	10-12	13-15	16-17	18-19	20-21	22-26	Q4	12.31	4.94
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 60

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A

SOCIAL CLASS A AND B, N = 358

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-4	5	6-7	8	9-10	11-12	13	14-15	16	17-20	A	10.55	3.19
B	0-3	4	5	6	7	8-9	10	11	-	12-13	B	7.97	2.07
C	0-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-23	24-26	C	15.28	3.89
E	0-2	3-4	5-6	7-8	9-10	11-13	14-16	17-19	20-21	22-26	E	11.24	4.82
F	0-3	4	5-6	7-9	10-11	12-14	15-17	18-20	21-23	24-26	F	12.04	5.19
G	0-4	5-6	7-8	9-10	11-12	13-15	16	17-18	-	19-20	G	12.72	3.82
H	0-3	4-5	6-7	8-10	11-13	14-16	17-19	20-22	23-24	25-26	H	13.56	5.66
I	0-3	4	5-7	8-9	10-12	13-14	15-16	17	18	19-20	I	11.80	4.14
L	0-1	2	3-4	5	6-7	8-9	10-11	12-13	14-15	16-20	L	7.66	3.50
M	0-6	7-8	9	10-11	12-13	14-15	16-17	18-19	20	21-26	M	13.53	3.58
N	0-5	6	7	8-9	10-11	12	13-14	15	16-18	19-20	N	11.02	3.23
O	0-2	3-4	5	6-7	8-9	10-12	13-14	15-16	17-19	20-26	O	10.18	4.24
Q1	0-2	3	4-5	6	7-8	9-10	11-12	13	14-15	16-20	Q1	8.65	3.34
Q2	0-4	5	6-7	8-9	10-11	12-13	14-15	16-17	18	19-20	Q2	11.56	3.73
Q3	0-5	6-7	8-9	10-11	12-13	14	15-16	17	18-19	20	Q3	12.86	3.54
Q4	0-2	3-4	5-7	8-9	10-12	13-15	16-18	19-20	21-22	23-26	Q4	12.67	5.12
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 61

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM A

SOCIAL CLASS C1 N = 482

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–3	4–5	6	7–8	9–10	11	12–13	14–15	16	17–20	A	10.23	3.25
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.48	2.09
C	0–7	8–9	10–11	12	13–14	15–17	18–19	20–21	22–23	24–26	C	15.05	3.96
E	0–2	3–4	5	6–8	9–10	11–12	13–15	16–17	18–20	26	E	10.71	4.47
F	0–2	3–4	5–7	8–9	10–12	13–15	16–18	19–21	22–23	24–26	F	12.90	5.47
G	0–4	5–6	7–8	9–10	11–12	13–14	15	16–17	18	19–20	G	12.10	3.65
H	0–2	3	4–6	7–9	10–12	13–15	16–18	19–21	22–23	24–26	H	12.63	5.81
I	0–3	4–5	6–7	8–9	10–11	12–13	15	17	18	20	I	11.40	3.90
L	0–1	2–3	4	5–6	7	8–9	10	11–12	13–15	16–20	L	7.90	3.25
M	0–5	6–7	8–9	10	11–12	13–14	15–16	17–18	19–20	21–26	M	12.71	3.65
N	0–4	5	6–7	8	9–10	11–12	13–14	15	16–17	18–20	N	10.70	3.25
O	0–2	3–4	5–6	7–8	9–10	11–12	13–15	16–17	18–19	20–26	O	10.94	4.20
Q1	0–2	3–4	5	6	7–8	9–10	11–12	13–14	15–16	17–20	Q1	9.01	3.50
Q2	0–4	5	6–7	8–9	10–11	12–13	14–15	16	17–18	19–20	Q2	11.54	3.61
Q3	0–4	5–6	7–8	9–10	11–12	13–14	15	16–17	18	19–20	Q3	12.39	3.42
Q4	0–3	4–5	6–7	8–10	11–13	14–15	16–18	19–20	21	22–26	Q4	12.98	4.98
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 62

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM A

SOCIAL CLASS C2 N = 812

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–3	4–5	6	7–8	9	10–11	12	13–14	15	16–20	A	9.92	3.00
B	0–2	3	4	5	6	7	8	9	10	11–13	B	6.84	2.00
C	0–7	8	9–10	11–12	13–14	15–16	17–18	19–20	21–22	23–26	C	14.57	3.86
E	0–2	3–4	5–6	7–8	9–10	11–12	13–15	16–17	18–20	21–26	E	10.83	4.31
F	0–3	4–5	6–7	8–9	10–12	13–14	15–17	18–19	20–22	23–26	F	12.43	4.70
G	0–4	5–6	7–8	9–10	11–12	13–14	15	16–17	18	19–20	G	12.20	3.42
H	0–2	3–4	5–6	7–9	10–12	13–15	16–18	19–20	21–22	23–26	H	12.31	5.31
I	0–3	4–5	6	7–8	9–11	12–13	14	15–16	17	18–20	I	10.87	3.70
L	0–1	2–3	4	5–6	7–8	9–10	11–12	13–14	15	16–20	L	8.35	3.54
M	0–4	5–6	7–8	9	10–11	12–13	14	15–16	17–18	19–26	M	11.50	3.38
N	0–4	5–6	7	8–9	10–11	12	13–14	15–16	17	18–20	N	11.21	3.22
O	0–3	4–5	6	7–9	10–11	12–13	14–15	16–17	18–19	20–26	O	11.55	4.30
Q1	0–3	4	5	6–7	8–9	10	11–12	13–14	15–16	17–20	Q1	9.28	3.30
Q2	0–4	5	6–7	8–9	10–11	12–13	14–15	16	17	18–20	Q2	11.42	3.43
Q3	0–5	6–7	8–9	10	11–12	13	14–15	16	17–18	19–20	Q3	12.23	3.04
Q4	0–2	3–5	6–8	9–10	11–13	14–15	16–18	19–20	21–22	23–26	Q4	13.17	4.88
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 63

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A

SOCIAL CLASS D AND E, N = 558

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-4	5-6	7	8-9	10	11	12-13	14	15	16-20	A	10.41	2.86
B	0-1	2-3	4	5	6	7	8	9	10	11-13	B	6.26	2.03
C	0-6	7-8	9-10	11	12-13	14-15	16-17	18-19	20-21	22-26	C	13.92	3.78
E	0-3	4	5-6	7-8	9-10	11-12	13-14	15-17	18-20	21-26	E	10.82	4.08
F	0-2	3-5	6-7	8-9	10-11	12-14	15-17	18-20	21-22	23-26	F	12.00	4.84
G	0-5	6	7-8	9-10	11-12	13-14	15	16-17	18	19-20	G	12.18	3.45
H	0-2	3-4	5-6	7-9	10-11	12-14	15-16	17-20	21-22	23-26	H	11.87	5.09
I	0-4	5	6-7	8-9	10-11	12-13	14	15-16	17	18-20	I	11.31	3.37
L	0-2	3	4-5	6-7	8	9-10	11-12	13	14-15	16-20	L	8.82	3.35
M	0-4	5-6	7	8-9	10-11	12	13-14	15-16	17	18-26	M	11.21	3.24
N	0-5	6-7	8	9	10-11	12-13	14	15-16	17	18-20	N	11.58	3.00
O	0-4	5	6-8	9-10	11-12	13-14	15-16	17-18	19-20	21-26	O	12.48	4.15
Q1	0-3	4	5-6	7	8-9	10	11-12	13-14	15-16	17-20	Q1	9.26	3.12
Q2	0-4	5-6	7-8	9	10-11	12-13	14-15	16	17	18-20	Q2	11.57	3.36
Q3	0-6	7	8	9-10	11-12	13	14-15	16	18	20	Q3	12.19	3.10
Q4	3	4-5	6-8	9-11	12-13	14-16	17-18	19-20	21-22	23-26	Q4	13.63	4.73
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 64

16PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

AGE GROUP 15-24 N=490

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-2	3	4-5	6-7	8-10	11	12-13	14-15	16	17-20	A	9.70	3.64
B	0-3	4	5	6	7	8	9	10	11	12-13	B	7.65	1.84
C	0-6	7-8	9-10	11-12	13-14	15-16	17-18	19-21	22	23-26	C	14.54	4.16
E	0-4	5	6-7	8-9	10-11	12-13	14-15	16-18	19-20	21-26	E	11.67	4.16
F	0-7	8-9	10-11	12-14	15-16	17-18	19-20	21-22	23-24	25-26	F	16.19	4.46
G	0-5	6	7-8	9	10-11	12	13-14	15	16	17-20	G	11.29	3.04
H	0-1	2-3	4-6	7-91	10-12	13-16	17-19	20-21	22-24	25-26	H	12.61	5.94
I	0-2	3-4	5-6	7	8-9	10-11	12	13-14	15-16	17-20	I	9.48	3.36
L	0-3	4	5-6	7	8-9	10	11	12-13	14	15-20	L	9.02	2.74
M	0-3	4	5-7	8	9-10	11-12	13-14	15-16	17-19	20-26	M	10.60	3.84
N	0-3	4-5	6	7	8-9	10-11	12	13	14-15	16-20	N	9.52	2.89
O	0-1	2-3	4-6	7-9	10-12	13-14	15-16	17-19	20	21-26	O	11.66	4.85
Q1	0-3	4	5-6	7	8	9-10	11-12	13-14	15	16-20	Q1	9.16	3.18
Q2	0-2	3	4-5	6	7-8	9	10-11	12-13	14	15-20	Q2	8.42	3.06
Q3	0-3	4	5-6	7-8	9-10	11	12-13	14-15	16-17	18-20	Q3	10.12	3.60
Q4	0-4	5-6	7-9	10-11	12-14	15-17	18-19	20-21	22	23-26	Q4	15.33	4.75
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 65

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

AGE GROUP 25–34 N = 503

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2–3	4–6	7	8–10	11	12–13	14–15	16	17–20	A	9.80	3.70
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.59	1.96
C	0–7	8	9–11	12–13	14	15–16	17–18	19–20	21–22	23–26	C	14.98	3.81
E	0–3	4	5–6	7–8	9–11	12–13	14–15	16–18	19–20	21–26	E	11.31	4.36
F	0–5	6–7	8–10	11–12	13–14	15–17	18–19	20–21	21–23	24–26	F	14.61	4.56
G	0–6	7	8–9	10	11–12	13	14–15	16	17	18–20	G	12.24	2.94
H	0–2	3–4	5–6	7–9	10–12	13–15	16–18	19–21	22–23	24–26	H	12.43	5.64
I	0–3	4	5–6	7–8	9–10	11	12–13	14–15	16–17	18–20	I	10.04	3.61
L	0–3	4	5	6–7	8	9	10–11	12	13–14	15–20	L	8.60	2.73
M	0–3	4–5	6	7–8	9	10–11	12–13	14–16	17–18	19–26	M	10.26	3.80
N	0–4	5–6	7	8	9–10	11	12	13–14	15	16–20	N	10.29	2.69
O	0–2	3	4–5	6–8	9–10	11–13	14–16	17–18	19–20	26	O	11.09	4.85
Q1	0–3	4	5	6–7	8	9–10	11	12–13	14–15	16–20	Q1	8.94	2.99
Q2	0–2	3	4–5	6	7–8	9–10	11	12–13	14–15	16–20	Q2	8.57	3.27
Q3	0–4	5–6	7	8–9	10–11	12–13	14	15–16	17	18–20	Q3	11.33	3.34
Q4	0–3	4–6	7–8	9–10	11–13	14–16	17–18	19–20	21–22	23–26	Q4	13.50	4.74
FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 66

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

AGE GROUP 35-44 N = 356

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-1	2-3	4-5	6-7	8-9	10-11	12	13-14	15-16	17-20	A	9.37	3.56
B	0-3	4	5	6	7	8	9	j10	11	12-13	B	7.46	1.84
C	0-6	7-8	9-10	11-12	13-14	15-16	17-19	20-21	22	23-26	C	14.92	4.10
E	0-3	4-5	6-7	8-9	10	11-13	14-15	16-18	19-20	21-26	E	11.38	4.11
F	0-5	6-7	8-9	10-11	12-13	14-16	17-18	19-21	22	23-26	F	13.69	4.52
G	0-7	8	9-10	11	12	13-14	15	16-17	18	19-20	G	12.99	2.78
H	0-1	2-5	6-7	8-9	10-13	14-16	17-19	20-22	23	24-26	H	13.16	5.81
I	0-3	4-5	6	7-8	9-10	11	12-13	14-15	16	17-20	I	10.12	3.33
L	0-2	3-4	5	6	7-8	9	10-11	12	13-14	15-20	L	8.40	2.73
M	0-3	4	5-6	7	8-9	10-12	13-14	15	16-17	18-26	M	10.20	3.76
N	0-4	5-6	7	8-9	10	11-12	13	14	15-16	17-20	N	10.60	2.83
O	0-2	3	4-5	6-8	9-10	11-13	14-15	16-18	19-20	21-26	O	10.99	4.65
Q1	0-3	4	5	6	7-8	9	10-11	12	14	15-20	Q1	8.24	2.86
Q2	0-1	2-3	4-5	6	7-8	9-10	11-12	13	14-15	16-20	Q2	8.59	3.32
Q3	0-5	6	7-8	9-10	11-12	13-14	15	16-17	18	19-20	Q3	12.20	3.41
Q4	0-2	3-5	6-7	8-10	11-13	14-15	16-18	19-21	22-23	24-26	Q4	12.96	5.17
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 67

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

AGE GROUP 45–54 N = 283

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2–3	4–5	6–7	8	9–11	12	13–14	15	16–20	A	8.93	3.59
B	0–3	4	5	6	7	8	9	10	11	12–13	B	7.25	1.89
C	0–5	6–7	8–10	11–12	13–14	15–16	17–18	19–20	21–22	23–26	C	14.31	4.13
E	0–3	4	5–7	8	9–10	11–13	14–15	16–17	18–19	20–26	E	10.95	4.05
F	0–3	4–5	6–8	9–10	11–12	13–14	16–17	18–19	20–22	23–26	F	12.64	4.63
G	0–7	8	9–10	11–12	13	14–15	16	17	18	19–20	G	13.56	2.94
H	0–1	2–4	5–6	7–9	10–12	13–16	17–19	20–21	22–23	24–26	H	13.04	5.91
I	0–3	4	5–6	7–8	9–10	11–12	13	14–15	16	17–20	I	10.15	3.50
L	0–2	3–4	5	6–7	8	9	10–11	12	13	14–20	L	8.36	2.66
M	0–3	4	5–6	7–8	9	10–11	12–13	14–15	16–18	19–26	M	10.16	3.65
N	0–5	6	7–8	9	10–11	12	13	14–15	16–17	18–20	N	11.10	2.87
O	0–2	3–4	5–6	7–8	9–10	11–13	14–16	17–19	20	21–26	O	11.29	4.86
Q1	0–3	4	5	6	7	8–9	10	11–12	13–14	15–20	Q1	8.04	2.83
Q2	0–1	2–3	4	5–6	7–8	9	10–11	12	13–14	15–20	Q2	8.01	3.17
Q3	0–4	5–6	7–9	10–11	12	13–14	15	16	17	18–20	Q3	12.48	3.34
Q4	0–3	4–5	6–7	8–9	10–12	13–15	16–18	19–20	21–22	23–26	Q4	12.91	5.06
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 68

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM B

AGE GROUP 55+, N = 385

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-1	2-3	4-5	6-7	8-9	10	11-12	13-14	15	16-20	A	8.99	3.56
B	0-2	3	4	5	6	7	8	9	10	11-13	B	6.59	2.17
C	0-5	6-8	9-10	11-12	13-14	15-16	17-19	20-21	22-23	24-26	C	14.80	4.24
E	0-3	4	5-6	7-8	9	10-12	13-14	15-16	17-19	20-26	E	10.26	3.88
F	0-3	4-5	6	7-8	9-10	11-12	13-15	16	17-19	20-26	F	10.93	3.95
G	0-6	7-9	10	11-12	13	14	15-16	17	18	19-20	G	13.30	2.81
H	0-2	3-4	5-6	7-10	11-13	14-16	17-19	20-22	23-24	25-26	H	13.22	5.73
I	0-3	4-5	6-7	8-9	10	11-12	13	14-15	16-17	18-20	I	10.67	3.34
L	0-3	4	5	6	7-8	9	10	11-12	13	14-20	L	8.26	2.53
M	0-3	4-5	6	7-8	9	10-11	12-13	14-15	16-17	18-26	M	10.01	3.46
N	0-6	7	8	9-10	11	12-13	14	15-16	17	18-20	N	11.76	2.70
O	0-1	2-3	4-5	6-8	9-10	11-12	13-15	16-17	18-19	20-26	O	10.64	4.75
Q1	0-3	4	5	6	7	8-9	10	11	12-13	14-20	Q1	7.81	2.55
Q2	0-2	3-4	5	6-7	8-9	10	11-12	13-14	15-16	17-20	Q2	9.19	3.33
Q3	0-5	6-7	8-9	10-11	12-13	14	15-16	17	18	19-20	Q3	12.96	3.19
Q4	0-1	2-3	4-5	6-8	9-11	12-13	14-16	17-18	19-21	22-26	Q4	11.32	4.96
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 69

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM B

SOCIAL CLASS A, B, N = 336

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0	1-2	3-5	6-7	8-9	10-11	12	13-14	15	16-20	A	9.27	3.67
B	0-4	5	6	7	8	9	10	-	11	12-13	B	8.26	1.77
C	0-7	8-9	10-11	12-13	14-15	16-17	18-20	21	22-23	24-26	C	15.51	4.21
E	0-3	4-5	6-7	8-9	10-11	12-13	14-16	17-19	20	21-26	E	11.60	4.33
F	0-3	4-6	7-8	9-10	11-12	13-15	16-18	19-21	22-23	24-26	F	13.20	4.94
G	0-5	6-7	8-9	10-11	12	13-14	15-16	17	18	19-20	G	12.76	3.31
H	0-2	3-5	6-7	8-10	11-14	15-17	18-20	21-23	24	25-26	H	14.06	5.98
I	0-3	4-5	6-7	8	9-11	12-13	14	15-16	17-18	19-20	I	10.99	3.79
L	0-2	3-4	5	6	7-8	9	10-11	12	13-14	15-20	L	8.46	2.92
M	0-4	5	6-7	8-9	10-11	12-13	14-15	16-18	19-20	21-26	M	11.54	4.10
N	0-4	5-6	7	8-9	10	11-12	13	14-15	16-17	18-20	N	10.89	3.12
O	0-2	3	4-5	6-8	9-10	11-13	14-15	16-18	19-20	21-26	O	10.85	4.85
Q1	0-3	4	5	6-7	8-9	10-11	12-13	14	15-16	17-20	Q1	9.36	3.43
Q2	0-1	2-3	4	5-6	7-8	9-10	11-12	13-14	15	16-20	Q2	8.54	3.66
Q3	0-4	5	6-8	9-10	11-12	13-14	15	16-17	18	19-20	Q3	12.19	3.73
Q4	0-2	3	4-6	7-9	10-12	14-15	16-17	18-20	21-22	23-26	Q4	12.43	5.34
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 70

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

SOCIAL CLASS C1 N = 442

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–2	3	4–5	6–7	8–9	10–11	12–13	14–15	16	17–20	A	9.64	3.77
B	0–3	4	5–6	7	8	–	9	10	11	12–13	B	7.90	1.80
C	0–7	8–9	10–11	12–13	14–15	16–17	18–19	20–21	22	23–26	C	15.23	3.93
E	0–3	4–5	6–7	8–9	10–11	12–13	14–16	17–18	19–20	21–26	E	11.49	4.28
F	0–3	4–6	7–8	9–11	12–14	15–17	18–19	20–22	23–24	25–26	F	14.47	5.25
G	0–5	6–7	8–9	10–11	12	13–14	15	16–17	18	19–20	G	12.60	3.12
H	0–2	3–4	5–7	8–10	11–13	14–17	18–19	20–22	23–24	25–26	H	13.64	5.82
I	0–2	3–4	5–6	7–8	9–10	11–12	13	14–15	16–17	18–20	I	10.31	3.62
L	0–2	3–4	5	6–7	8	9	10–11	12	13–14	15–20	L	8.43	2.69
M	0–3	4–5	6	7–8	9–10	11–12	13–14	15–17	18–19	20–26	M	10.85	3.95
N	0–4	5–6	7	8	9–10	11–12	13	14–15	16–17	18–20	N	10.62	3.15
O	0–1	2–3	4–5	6–8	9–10	11–13	14–15	16–18	19–20	21–26	O	10.79	4.79
Q1	0–3	4	5	6–7	8	9–10	11–12	13	14–15	16–20	Q1	9.01	3.01
Q2	0–2	3	4	5–6	7–8	9–10	11	12–13	14–15	16–20	Q2	8.53	3.36
Q3	0–3	4–5	6–7	8–10	11–12	13–14	15	16–17	18	19–20	Q3	11.90	3.70
Q4	0–3	4–5	6–7	8–9	10–12	13–15	16–18	19–20	21–22	23–26	Q4	12.74	4.98
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 71

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE FORM B

SOCIAL CLASS C2 N = 741

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–1	2–3	4–5	6–7	8–9	10–11	12	13–14	15–16	17–20	A	9.23	3.63
B	0–2	3–4	5	6	7	8	9	–	10	11–13	B	7.15	1.90
C	0–6	7–8	9–10	11–12	13–14	15–16	17–18	19–21	22–23	24–26	C	14.81	4.07
E	0–3	4–5	6–7	8	9–10	11–13	14–15	16–17	18–20	21–26	E	11.22	4.15
F	0–4	5–7	8–9	10–11	12–14	15–16	17–18	19–21	22	23–26	F	14.10	4.60
G	0–6	7	8–9	10	11–12	13	14–15	16	17	18–20	G	12.38	2.92
H	0–1	2–4	5–6	7–9	10–12	13–15	16–19	20–21	22–23	24–26	H	12.56	5.81
I	0–3	4	5–6	7	8–9	10–11	12	13–14	15–16	17–20	I	9.52	3.34
L	0–3	4	5	6–7	8	9	10–11	12	13–14	15–20	L	8.59	2.71
M	0–3	4	5–6	7–8	9	10–11	12–13	14–15	16–17	18–26	M	9.90	3.46
N	0–4	5–6	7	8	9–10	11	12–13	14	15	16–20	N	10.39	2.75
O	0–1	2–3	4–5	6–8	9–10	11–13	14–16	17–18	19–20	21–26	O	11.09	4.86
Q1	0–2	3–4	5	6	7–8	9	10	11–12	13–14	15–20	Q1	8.18	2.81
Q2	0–2	3	4–5	6–7	8	9	10–11	12–13	14–15	16–20	Q2	8.50	3.10
Q3	0–4	5–6	7–8	9	10–11	12–13	14–15	16	17	18–20	Q3	11.60	3.43
Q4	0–3	4–5	6–8	9–10	11–13	14–15	16–18	19–20	21–22	23–26	Q4	13.19	4.86
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 72

16 PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM B

SOCIAL CLASS D, E, N = 494

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-2	3	4-6	7	8-9	10-11	12	13-14	15-16	17-20	A	9.58	3.46
B	0-2	3	4	5	6	7	8	9	10	11-13	B	6.50	1.99
C	0-5	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20-21	22-26	C	13.63	3.94
E	0-3	4	5-6	7-8	9-10	11-12	13-14	15-16	17-19	20-26	E	10.49	3.87
F	0-5	6	7-9	10	11-13	14-15	16-18	19-20	21-22	23-26	F	13.35	4.44
G	0-6	7-8	9	10-11	12	13-14	15	16	17-18	19-20	G	12.52	2.89
H	0-1	2-3	4-6	7-8	9-11	12-14	15-17	18-20	21-22	23-26	H	11.67	5.40
I	0-4	5	6	7-8	9-10	11	12-13	14	15	16-20	I	10.00	3.07
L	0-3	4	5-6	7	8	9	10-11	12	13-14	15-20	L	8.74	2.53
M	0-3	4	5-6	7	8-9	10	11-12	13-14	15-16	17-26	M	9.46	3.31
N	0-4	5-6	7	8-9	10	11	12-13	14	15-16	17-20	N	10.48	2.69
O	0-2	3-4	5-6	7-9	10-12	13-14	15-16	17-18	19-21	22-26	O	11.78	4.68
Q1	0-3	4	5	6	7	8-9	10	11-12	13	14-20	Q1	8.07	2.59
Q2	0-2	3-4	5	6-7	8	9-10	11	12-13	14	15-20	Q2	8.77	3.03
Q3	0-4	5-6	7	8-9	10-11	12	13-14	15-16	17	18-20	Q3	11.16	3.37
Q4	0-3	4-5	6-8	9-11	12-14	15-16	17-19	20	21-22	23-26	Q4	13.84	4.92
FACTOR	1	2	3	4	5	6 STEN SCORE	7	8	9	10	FACTOR	MEAN	S.D.

TABLE 73

16PF BRITISH GENERAL POPULATION

MALES & FEMALES, FORM A+B

AGE GROUP 15–24, N=490

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–8	9–10	11–14	15–17	18–20	21–23	24–25	26–28	29–30	31–40	A	20.02	5.75
B	0–8	9–10	11	12–13	14	15–16	17–18	19	20–21	22–26	B	14.85	3.15
C	0–15	16–18	19–21	22–25	26–29	30–32	33–36	37–39	40–43	44–52	C	29.08	6.99
E	0–9	10–13	14–16	17–19	20–22	23–26	27–31	32–37	38–39	40–52	E	23.69	7.49
F	0–14	15–18	19–23	24–27	28–31	32–36	37–40	41–44	45–47	48–52	F	31.79	8.36
G	0–9	10–12	13–15	16–18	19–21	22–24	25–27	28–30	31–32	33–40	G	21.51	5.79
H	0–6	7–9	10–14	15–19	20–25	26–31	32–37	38–42	43–45	46–52	H	25.70	10.69
I	0–7	8–10	11–13	14–17	18–21	22–24	25–27	28–29	30–32	33–40	I	20.75	6.39
L	0–8	9–10	11–12	13–15	16–17	18–20	21–23	24–25	26–29	30–40	L	18.04	5.26
M	0–12	13	14–16	17–19	20–22	23–24	25–27	28–32	33–36	37–52	M	22.30	6.01
N	0–10	11–12	13–14	15–17	18–19	20–22	23–24	25–26	27–28	29–40	N	19.80	4.74
O	0–6	7–10	11–15	16–19	20–23	24–27	28–32	33–35	36–38	39–52	O	23.55	8.23
Q1	0–10	11–12	13–14	15–17	18–19	20–22	23–25	26–28	29–30	31–40	Q1	19.78	5.19
Q2	0–8	9–10	11–12	13–16	17–19	20–21	22–24	25–27	28–30	31–40	Q2	18.94	5.64
Q3	0–8	9–11	12–14	15–17	18–20	21–23	24–27	28–30	31–32	33–40	Q3	20.77	5.91
Q4	0–8	9–13	14–19	20–24	25–28	29–33	34–37	38–40	41–43	44–52	Q4	28.23	8.68
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
					STEN SCORE								

TABLE 74

16PF BRITISH GENERAL POPULATION

MALE & FEMALE, FORM A+B

AGE GROUP 25-34, N=502

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-7	8-10	11-13	14-17	18-20	21-23	24-26	27-28	29-31	32-40	A	20.18	5.98
B	0-8	9	10-11	12-13	14	15-16	17-18	19	20-21	22-26	B	14.91	3.36
C	0-16	17-20	21-23	24-26	27-29	30-32	33-36	37-39	40-42	43-52	C	29.84	6.55
E	0-8	9-11	12-14	15-18	19-21	22-25	26-30	31-35	36-39	40-52	E	22.41	8.00
F	0-10	11-15	16-19	20-23	24-27	28-31	32-36	37-40	41-44	45-52	F	27.75	8.37
G	0-12	13-16	17-18	19-21	22-23	24-26	27-29	30-31	32-34	35-40	G	24.01	5.23
H	0-5	6-8	9-14	15-19	20-24	25-30	31-36	37-42	42-44	45-52	H	24.92	10.28
I	0-8	9-10	11-14	15-18	19-21	22-25	26-27	28-31	32-33	34-40	I	21.47	6.60
L	0-6	7-9	10-11	12-13	14-16	17-19	20-22	23-24	25-26	27-40	L	16.68	5.09
M	0-11	12-14	15-16	17-19	20-21	22-25	26-28	29-31	32-36	37-52	M	22.48	6.00
N	0-11	12-14	15-16	17-18	19-20	21-23	24-25	26-27	28-29	30-40	N	20.96	4.60
O	0-7	8-10	11-13	14-18	19-22	23-26	27-30	31-34	35-38	39-52	O	22.48	8.03
Q1	0-8	9-10	11-13	14-15	16-17	18-20	21-23	24-26	27-29	30-40	Q1	18.27	5.22
Q2	0-9	10-11	12-14	15-17	18-20	21-22	23-25	26-28	29-32	33-40	Q2	20.11	5.69
Q3	0-12	13-15	16-17	18-20	21-23	24-25	26-29	30-31	32-33	34-40	Q3	23.25	5.48
Q4	0-9	10-13	14-17	18-22	23-27	28-31	32-35	36-38	39-42	43-52	Q4	26.89	8.55
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 75

16PF BRITISH GENERAL POPULATION

MALE & FEMALE, FORM A+B

AGE GROUP 35-44, N=352

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–8	9–10	11–13	14–16	17–19	20–22	23–25	26–27–	28–30	31–40	A	19.49	5.66
B	0–8	9	10–11	12–13	14	15–16	17–18	19	20	21–26	B	14.76	3.34
C	0–15	16–19	20–22	23–26	27–29	30–33	34–37	38–41	42	43–52	C	29.76	7.13
E	0–8	9–11	12–14	15–17	18–21	22–25	26–29	30–34	35–39	40–52	E	22.03	7.55
F	0–10	11–13	14–16	17–20	21–25	26–28	29–33	34–38	39–43	44–52	F	25.27	8.19
G	0–14	15–17	18–20	21–22	23–26	27–28	29–30	31–33	34	35–40	G	25.62	5.12
H	0–5	6–10	11–13	14–18	19–26	27–32	33–37	38–41	42–45	46–62	H	25.84	10.72
I	0–8	9–11	12–14	15–18	19–21	22–25	26–28	29–30	31–33	34–40	I	21.64	6.44
L	0–7	8–9	10–11	12–13	14–16	17–18	19–20	21–23	24–27	28–40	L	16.17	4.84
M	0–12	13–14	15–16	17–19	20–22	23–25	26–28	29–32	33–35	36–52	M	22.74	6.03
N	0–12	13–14	15–16	17–19	20–22	23–24	25–26	27–28	29–30	31–40	N	21.82	4.52
O	0–6	7–9	10–13	14–17	18–22	23–26	27–30	31–35	36–38	39–52	O	22.28	8.36
Q1	0–8	9–10	11–12	13–14	15–16	17–18	19–20	21–24	25–26	27–40	Q1	16.76	4.52
Q2	0–8	9–10	11–13	14–17	18–20	21–23	24–26	27–28	29–31	32–40	Q2	20.32	5.88
Q3	0–13	14–15	16–18	19–22	23–25	26–28	29–30	31–33	34–35	36–40	Q3	24.99	5.63
Q4	0–6	7–11	12–15	16–21	22–25	26–30	31–35	36–40	41–44	45–52	Q4	25.87	9.56
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 76

16PF BRITISH GENERAL POPULATION

MALE & FEMALE, FORM A+B

AGE GROUP 45-54, N=282

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-7	8-9	10-13	14-15	16-19	20-22	23-24	25-27	28-30	31-40	A	19.11	5.79
B	0-7	8-9	10	11-12	13-14	15-16	17-18	19 19	20	21-26	B	14.34	3.50
C	0-13	14-17	18-21	22-25	26-28	29-32	33-36	37-39	40-42	43-52	C	28.68	7.29
E	0-7	8-10	11-14	15-17	18-20	21-24	25-28	29-32	33-37	38-52	E	21.34	7.26
F	0-7	8-11	12-16	17-19	20-23	24-27	28-31	32-35	36-40	41-52	F	23.53	7.82
G	0-15	16-19	20-22	23-24	25-27	28-29	30-32	33-34	35	36-40	G	26.94	4.97
H	0-5	6-9	10-14	15-19	20-25	26-32	33-36	37-42	43-45	46-52	H	25.53	10.53
I	0-9	10-11	12-14	15-17	18-21	22-24	25-27	28-30	31-32	33-40	I	21.17	6.34
L	0-6	7-8	9-11	12-13	14-15	16-18	19-20	21-24	25-27	28-40	L	16.03	5.07
M	0-12	13	14-17	18-19	20-22	23-24	25-27	28-30	31-33	34-52	M	22.26	5.36
N	0-14	15	16-17	18-20	21-22	23-25	26-27	28-29	30-32	33-40	N	22.88	4.69
O	0-8	9-11	12-14	15-17	18-22	23-27	28-31	32-35	36-40	41-52	O	22.81	8.21
Q1	0-9	10	11-12	13-14	15-16	17-18	19-20	21-22	23-26	27-40	Q1	16.68	4.19
Q2	0-9	10-11	12-13	14-16	17-19	20-22	23-25	26-28	29-31	32-40	Q2	19.55	5.50
Q3	0-13	14-17	18-20	21-23	24-25	26-28	29-31	32-33	34-35	36-40	Q3	25.77	5.37
Q4	0-8	9-12	13-16	17-21	22-25	26-30	31-35	36-39	40-44	45-52	Q4	26.03	9.08
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 77

16PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A+B

AGE GROUP 55+, N=384

FACTOR	STEN SCORE												
	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0–6	7–9	10–12	13–16	17–19	20–22	23–24	25–27	28–29	30–40	A	18.98	5.84
B	0–5	6–7	8–9	10	11–12	13–14	15–16	17–18	19	20–26	B	12.92	3.66
C	0–16	17–19	20–22	23–25	26–29	30–33	34–37	38–40	41–43	44–52	C	29.61	7.04
E	0–7	8–10	11–13	14–16	17–19	20–23	24–26	27–31	32–37	38–52	E	20.08	7.00
F	0–7	8–10	11–14	15–17	18–20	21–23	24–27	28–31	32–35	36–52	F	20.58	7.04
G	0–16	17–18	19–22	23–25	26–27	28–29	30–31	32–34	35	36–40	G	27.22	4.92
H	0–7	8–9	10–14	15–19	20–24	25–29	30–36	37–41	42–46	47–52	H	24.97	10.31
I	0–9	10–12	13–15	16–18	19–22	23–24	25–27	28–30	31–32	33–40	I	21.64	6.03
L	0–7	8–9	10–11	12–14	15–16	17–18	19–20	21–23	24–26	27–40	L	16.54	4.51
M	0–11	12–14	15–16	17–19	20–21	22–24	25–27	28–30	31–33	34–52	M	21.99	5.39
N	0–14	15–17	18–19	20–21	22–23	24–26	27–28	29	30–32	33–40	N	23.85	4.34
O	0–6	7–9	10–12	13–16	17–21	22–25	26–29	30–33	34–36	37–52	O	21.28	8.07
Q1	0–8	9–10	11	12–13	14–15	16–17	18–19	20–22	23–25	26–40	Q1	15.81	4.15
Q2	0–10	11–13	14–16	17–18	19–21	22–24	25–26	27–29	30–32	33–40	Q2	21.52	5.39
Q3	0–16	17–18	19–22	23–24	25–26	27–29	30–31	32–34	35–36	37–40	Q3	26.86	4.99
Q4	0–6	7–9	10–13	14–18	19–24	25–28	29–32	33–36	37–40	41–52	Q4	23.51	8.93
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 78

16PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A+B

SOCIAL CLASS A,B, N=336

FACTOR	STEN SCORE 1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
A	0-7	8-10	11-13	14-17	18-19	20-23	24-26	27-28	29-30	31-40	A	19.79	5.96
B	0-9	10	11-12	13-14	15-16	17-18	19	20	21-22	23-26	B	16.26	3.28
C	0-16	17-20	21-23	24-27	28-30	31-35	36-38	39-41	42-43	44-52	C	30.81	7.17
E	0-8	9-11	12-14	15-17	18-21	22-26	27-32	33-36	37-40	41-52	E	22.88	8.19
F	0-8	9-12	13-16	17-20	21-23	24-29	30-35	36-41	42-45	46-52	F	25.21	9.25
G	0-11	12-14	15-18	19-22	23-26	27-29	30-32	33-34	35	36-40	G	25.42	6.34
H	0-7	8-11	12-16	17-20	21-27	28-34	35-39	40-43	44-47	48-52	H	27.49	10.88
I	0-8	9-11	12-14	15-19	20-23	24-27	28-30	31-32	33-35	36-40	I	22.86	7.14
L	0-6	7-8	9-10	11-13	14-16	17-18	19-21	22-24	25-27	28-40	L	16.13	5.41
M	0-14	15-16	17-18	19-21	22-24	25-28	29-31	32-35	36-38	39-52	M	25.12	6.28
N	0-11	12-15	16-17	18-19	20-22	23-24	25-26	27-29	30-32	33-40	N	21.94	4.89
O	0-6	7-9	10-12	13-16	17-20	21-25	26-29	30-32	33-38	39-52	O	21.03	8.16
Q1	0-8	9-10	11-12	13-15	16-17	18-20	21-24	25-27	28-30	31-40	Q1	18.04	5.50
Q2	0-7	8-10	11-13	14-16	17-20	21-23	24-26	27-30	31-32	33-40	Q2	20.11	6.38
Q3	0-11	12-13	14-17	18-22	23-25	26-29	30-31	32-33	34-35	36-40	Q3	25.01	6.66
Q4	0-4	5-10	11-15	16-20	21-25	26-30	31-35	36-39	40-43	44-52	Q4	25.08	9.66
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
						STEN SCORE							

TABLE 79
16PF BRITISH GENERAL POPULATION
MALE AND FEMALE, FORM A+B
SOCIAL CLASS C1, N=437

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–7	8–9	10–13	14–16	17–20	21–23	24–25	26–28	29–31	32–40	A	19.91	6.25
B	0–8	9–10	11–12	13–14	15	16–17	18	19–20	21	22–26	B	15.53	3.18
C	0–16	17–20	21–23	24–26	27–30	31–33	34–37	38–40	41–42	43–52	C	30.40	6.77
E	0–7	8–11	12–14	15–17	18–21	22–26	27–30	31–35	36–38	39–52	E	22.27	7.95
F	0–8	9–12	13–16	17–21	22–27	28–33	34–37	38–42	43–46	47–52	F	27.62	9.98
G	0–11	12–14	15–18	19–22	23–25	26–28	29–30	31–32	33–34	35–40	G	24.71	5.95
H	0–6	7–9	10–14	15–20	21–27	28–32	33–37	38–43	44–46	47–52	H	26.38	10.99
I	0–8	9–10	11–14	15–18	19–22	23–25	26–28	29–31	32–34	35–40	I	21.81	6.83
L	0–6	7–9	10–11	12–13	14–15	16–18	19–20	21–24	25–27	28–40	L	16.25	4.95
M	0–11	12–14	15–17	18–20	21–23	24–26	27–29	30–32	33–36	37–52	M	23.65	6.12
N	0–11	12–13	14–15	16–18	19–21	22–24	25–26	27–29	30–31	32–40	N	21.24	5.37
O	0–6	7–9	10–13	14–17	18–21	22–25	26–29	30–34	35–38	39–52	O	21.60	8.12
Q1	0–8	9–10	11-12	13–15	16–17	18–20	21–24	25–27	28–29	30–40	Q1	18.09	5.45
Q2	0–8	9–10	11–13	14–17	18–20	21–23	24–25	26–28	29–32	33–40	Q2	20.01	5.96
Q3	0–9	10–14	15–17	18–21	22–24	25–27	28–30	31–32	33–34	35–40	Q3	24.31	6.33
Q4	0–8	9–11	12–15	16–21	22–25	26–30	31–34	35–39	40–43	44–52	Q4	25.72	9.01
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 80

16PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A+B

SOCIAL CLASS C2, N=741

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0-7	8-9	10-13	14-16	17-19	20-22	23-24	25-27	28-30	31-40	A	19.19	5.75
B	0-7	8-9	10	11-12	13	14-15	16-17	18	19-20	21-26	B	14.01	3.17
C	0-15	16-19	20-22	23-26	27-29	30-32	33-36	37-40	41-42	43-52	C	29.42	6.91
E	0-8	9-11	12-14	15-18	19-21	22-25	26-29	30-34	35-38	39-52	E	22.04	7.55
F	0-10	11-14	15-17	18-22	23-26	27-30	31-35	36-39	40-43	44-52	F	26.66	8.32
G	0-12	13-15	16-19	20-22	23-24	25-27	28-29	30-32	33-34	35-40	G	24.52	5.43
H	0-6	7-9	10-14	15-18	19-24	25-31	32-36	37-40	41-44	45-52	H	25.00	10.34
I	0-8	9-10	11-13	14-17	18-20	21-23	24-26	27-29	30-32	33-40	I	20.36	6.16
L	0-7	8-9	10-11	12-14	15-16	17-19	20-22	23-24	25-27	28-40	L	16.99	5.05
M	0-12	13	14-16	17-18	19-20	21-23	24-26	27-29	30-32	33-52	M	21.43	5.27
N	0-11	12-14	15-16	17-19	20-21	22-24	25-26	27-28	29-30	31-40	N	21.53	4.67
O	0-6	7-10	11-13	14-18	19-22	23-27	28-31	32-35	36-38	39-52	O	22.60	8.27
Q1	0-9	10-11	12	13-14	15-17	18-19	20-22	23-24	25-28	29-40	Q1	17.47	4.76
Q2	0-9	10-11	12-14	15-16	17-19	20-22	23-25	26-28	29-30	31-40	Q2	19.87	5.51
Q3	0-13	14-15	16-17	18-21	22-23	24-26	27-29	30-31	32-34	35-40	Q3	23.80	5.46
Q4	0-8	9-11	12-17	18-22	23-26	27-31	32-35	36-39	40-43	44-52	Q4	26.33	8.86
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

TABLE 81

16PF BRITISH GENERAL POPULATION

MALE AND FEMALE, FORM A+B

SOCIAL CLASS D,E, N=492

FACTOR	STEN SCORE										FACTOR	MEAN	S.D.
	1	2	3	4	5	6	7	8	9	10			
A	0–8	9–11	12–14	15–17	18–20	21–22	23–25	26–27	28–29	30–40	A	19.92	5.42
B	0–5	6–7	8–9	10–11	12	13–14	15–16	17	18–19	20–26	B	12.76	3.35
C	0–14	15–17	18–20	21–24	25–27	28–30	31–33	34–37	38–42	43–52	C	27.62	6.74
E	0–9	10–12	13–14	15–17	18–20	21–24	25–27	28–32	33–37	38–52	E	21.40	6.87
F	0–9	10–13	14–17	18–20	21–24	25–29	30–34	35–39	40–43	44–52	F	25.50	8.46
G	0–13	14–16	17–19	20–21	22–24	25–27	28–30	31–32	33–34	35–40	G	24.53	5.31
H	0–5	6–9	10–13	14–18	19–22	23–27	28–34	35–39	40–44	45–52	H	23.53	9.67
I	0–9	10–12	13–15	16–18	19–21	22–24	25–26	27–28	29–30	31–40	I	21.23	5.44
L	0–8	9–10	11–12	13–14	15–17	18–19	20–22	23–24	25–27	28–40	L	17.51	4.70
M	0–11	12–13	14–15	16–18	19–20	21–23	24–25	26–28	29–30	31–52	M	20.72	5.00
N	0–13	14–15	16–17	18–19	20–21	22–24	25–26	27–28	29–30	31–40	N	21.96	4.38
O	0–8	9–12	13–15	16–20	21–24	25–28	29–32	33–35	36–38	39–52	O	24.26	7.89
Q1	0–9	10–11	12	13–15	16–17	18–19	20–21	22–24	25–27	28–40	Q1	17.39	4.44
Q2	0–9	10–12	13–15	16–18	19–20	21–23	24–25	26–27	28–29	30–40	Q2	20.33	5.19
Q3	0–11	12–15	16–17	18–20	21–23	24–26	27–28	29–32	33–34	35–40	Q3	23.28	5.60
Q4	0–8	9–12	13–18	19–23	24–27	28–32	33–36	37–40	41–43	44–52	Q4	27.57	8.76
FACTOR	1	2	3	4	5	6	7	8	9	10	FACTOR	MEAN	S.D.
	STEN SCORE												

APPENDIX 7

DESCRIPTIVE STATISTICS: PRIMARY SOURCE TRAITS BY SOCIAL CLASS

TABLE 82

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A FEMALES

FACTOR	A (N = 52)		B (N = 131)		C1 (N = 239)		C2 (N = 392)		D (N = 244)		E (N = 50)		FACTCR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	11.12	3.32	11.08	3.03	11.27	2.85	10.85	2.77	11.23	2.52	11.30	2.43	A
B	7.79	1.99	7.71	2.14	7.33	1.97	6.73	2.00	6.15	1.99	5.62	2.17	B
C	14.62	3.28	15.08	3.87	14.64	4.07	13.73	3.85	13.25	3.47	13.78	3.55	C
E	9.88	5.08	9.79	4.61	9.19	3.81	9.21	3.90	9.70	3.72	10.12	4.06	E
F	12.33	5.28	12.76	5.11	13.00	5.33	12.30	4.67	12.06	4.72	9.84	4.60	F
G	12.88	3.01	12.17	3.84	11.98	3.54	11.87	3.21	11.88	3.17	13.52	3.25	G
H	13.52	5.69	12.92	5.65	12.10	5.75	11.30	5.12	10.94	4.68	11.58	5.17	H
I	13.56	3.50	14.15	2.69	13.60	2.96	13.08	2.74	13.05	2.50	12.96	2.77	I
L	7.42	3.44	6.98	3.37	7.31	2.90	7.96	3.58	8.70	3.46	8.72	3.28	L
M	13.27	3.62	13.10	4.03	12.17	3.70	11.19	3.35	10.82	3.25	11.28	3.48	M
N	11.40	3.18	11.50	3.20	11.33	3.27	11.97	3.19	12.02	3.01	12.86	3.03	N
O	11.52	3.82	11.16	3.98	11.97	4.03	12.85	3.91	13.69	3.86	12.76	3.78	O
Q1	7.69	3.47	7.92	3.38	7.77	3.07	8.17	3.06	8.71	2.74	7.32	3.29	Q1
Q2	11.46	3.56	11.07	4.03	11.44	3.53	11.28	3.36	11.51	3.62	12.38	3.14	Q2
Q3	12.98	3.51	12.40	3.36	12.09	3.21	11.64	2.95	11.58	2.99	12.86	2.74	Q3
Q4	14.33	4.27	13.28	5.08	14.06	4.68	14.44	4.51	15.05	4.16	13.82	4.34	Q4

TABLE 83

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM B FEMALES

FACTOR	A (N = 49)		B (N = 123)		C1 (N = 217)		C2 (N = 360)		D (N = 212)		E (N = 43)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.10	3.36	10.37	3.08	10.59	3.46	10.72	3.01	10.70	3.15	10.84	2.61	A
B	8.18	1.58	8.23	1.98	7.61	1.69	7.14	1.87	6.46	1.96	6.23	2.05	B
C	14.45	3.58	15.14	4.05	14.67	3.52	13.82	3.97	12.92	3.64	12.93	3.94	C
E	9.67	3.67	10.30	4.16	9.68	3.52	9.62	3.80	9.37	3.49	9.07	4.10	E
F	13.16	4.78	13.75	4.71	14.46	4.95	14.21	4.40	13.53	4.22	11.70	4.53	F
G	14.43	2.47	12.98	3.29	13.09	2.88	12.33	2.87	12.60	3.03	13.51	2.54	G
H	13.69	5.93	13.76	6.05	12.75	5.87	11.11	5.69	10.19	4.99	11.74	5.84	H
I	13.18	3.18	12.70	2.92	12.07	2.78	11.16	2.73	10.96	2.65	11.86	2.89	I
L	7.61	2.57	7.74	2.82	7.64	2.62	8.20	2.62	8.56	2.50	8.79	2.34	L
M	11.51	3.62	11.45	4.06	10.40	3.73	9.51	3.35	9.42	3.40	9.35	3.62	M
N	10.80	2.88	10.94	3.04	10.75	2.98	10.51	2.59	10.33	2.60	11.40	2.88	N
O	13.06	4.67	11.89	4.48	12.44	4.30	12.93	4.73	13.38	4.28	12.84	4.59	O
Q1	9.16	3.29	9.37	3.50	8.56	2.69	8.04	2.81	7.92	2.63	7.86	2.56	Q1
Q2	8.27	3.32	8.24	3.49	8.08	3.19	8.29	2.98	8.78	2.87	9.58	3.31	Q2
Q3	11.96	3.12	11.70	4.06	11.50	3.82	11.04	3.38	10.38	3.35	12.93	2.71	Q3
Q4	13.94	4.60	13.50	4.87	14.13	4.71	14.66	4.43	15.35	4.29	14.16	4.76	Q4

TABLE 84

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A+B FEMALES

FACTOR	A (N = 49)		B (N = 123)		C1 (N = 215)		C2 (N = 360)		D (N = 212)		E (N = 42)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	21.10	6.07	21.41	5.00	21.90	5.40	21.61	4.90	21.86	4.74	22.17	4.14	A
B	16.08	3.06	15.98	3.46	15.09	2.93	13.93	3.21	12.62	3.30	11.67	3.54	B
C	29.14	6.15	30.38	6.99	29.34	6.59	27.60	6.59	26.16	6.17	26.74	6.66	C
E	19.41	7.72	20.22	7.80	18.88	6.32	18.85	6.78	19.02	5.83	19.45	7.02	E
F	25.16	9.18	26.45	8.94	27.85	9.48	26.67	8.02	25.72	8.09	21.95	8.35	F
G	27.29	4.65	25.07	6.42	25.13	5.70	24.18	5.15	24.30	5.14	27.14	4.60	G
H	26.98	10.87	26.66	11.02	24.96	10.94	22.49	10.08	21.02	8.87	23.26	10.25	H
I	26.65	6.02	26.93	4.44	25.91	4.79	24.17	4.38	24.05	3.81	24.76	4.44	I
L	14.90	5.16	14.70	5.32	14.78	4.45	16.23	4.96	17.09	4.86	17.52	4.11	L
M	24.69	5.86	24.76	6.84	22.64	6.08	20.75	5.29	20.31	5.26	20.62	5.54	M
N	22.27	4.78	22.47	4.79	21.97	5.24	22.34	4.58	22.26	4.29	23.98	4.49	N
O	24.37	7.31	23.03	7.55	24.38	7.52	25.81	7.66	27.13	7.12	25.57	7.74	O
Q1	16.86	5.48	17.35	5.63	16.38	4.69	16.27	4.61	16.65	4.04	15.17	4.63	Q1
Q2	19.73	5.77	19.31	6.71	19.32	5.69	19.48	5.29	20.23	5.28	21.64	5.21	Q2
Q3	24.94	5.80	24.08	6.76	23.60	6.13	22.63	5.14	21.86	5.42	25.88	4.54	Q3
Q4	28.06	7.90	26.62	9.06	28.24	8.29	29.11	7.89	30.49	7.63	28.21	7.58	Q4

TABLE 85

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A MALES

FACTOR	A (N = 45)		B (N = 129)		C1 (N = 241)		C2 (N = 420)		D (N = 235)		E (N = 29)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.49	3.09	9.84	3.21	9.22	3.31	9.05	2.96	9.47	3.02	9.55	2.41	A
B	7.49	2.05	8.46	1.96	7.63	2.19	6.95	2.01	6.59	1.99	5.52	1.84	B
C	15.98	3.97	15.53	4.11	15.49	3.81	15.35	3.71	14.44	4.00	15.62	3.89	C
E	13.42	5.11	12.43	4.17	12.19	4.59	12.35	4.13	12.19	4.13	10.31	3.37	E
F	11.91	5.46	11.25	5.11	12.81	5.61	12.56	4.72	12.65	4.89	10.03	4.43	F
G	12.98	4.39	13.16	3.86	12.19	3.75	12.51	3.59	11.98	3.71	13.90	2.94	G
H	14.64	6.38	13.84	5.40	13.17	5.84	13.25	5.31	12.84	5.30	12.28	5.26	H
I	9.84	3.77	9.43	4.07	9.23	3.51	8.80	3.26	9.37	3.14	9.59	3.22	I
L	7.67	3.75	8.44	3.44	8.51	3.48	8.71	3.47	9.10	3.25	7.69	3.12	L
M	14.38	2.92	13.73	3.24	13.22	3.52	11.78	3.39	11.60	3.17	11.14	3.08	M
N	10.49	3.42	10.58	3.16	10.08	3.12	10.50	3.08	10.83	2.82	11.83	2.96	N
O	8.20	4.34	9.36	4.21	9.87	4.09	10.33	4.30	11.54	4.12	9.55	4.19	O
Q1	9.02	3.06	9.64	3.07	10.23	3.49	10.31	3.18	10.26	3.16	9.21	2.94	Q1
Q2	11.98	3.33	11.95	3.61	11.62	3.69	11.55	3.50	11.34	3.14	12.55	3.04	Q2
Q3	12.98	3.86	13.26	3.62	12.69	3.61	12.78	3.02	12.32	3.10	15.14	2.70	Q3
Q4	11.40	4.92	11.85	5.35	11.87	5.03	11.98	4.91	12.52	4.89	10.41	4.87	Q4

TABLE 86

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM B MALES

FACTOR	A (N = 43)		B (N = 120)		C1 (N = 223)		C2 (N = 381)		D (N = 209)		E (N = 30)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	8.21	3.87	8.21	3.90	8.76	3.84	7.83	3.60	8.38	3.47	8.23	3.33	A
B	8.35	1.76	8.30	1.66	8.16	1.86	7.16	1.93	6.78	1.94	5.30	2.05	B
C	16.79	4.18	15.85	4.52	15.85	4.14	15.75	3.93	14.35	3.99	14.67	4.59	C
E	12.67	4.55	13.24	3.91	13.26	4.24	12.74	3.89	11.94	3.78	10.27	3.39	E
F	12.53	4.69	12.88	5.33	14.52	4.51	14.00	4.78	13.82	4.63	11.20	3.53	F
G	11.60	3.61	12.36	3.20	12.09	3.25	12.42	2.97	12.22	2.81	12.63	2.62	G
H	16.02	5.77	13.88	5.94	14.57	5.64	13.93	5.58	12.84	5.39	13.83	5.17	H
I	9.93	3.64	8.75	3.51	8.57	3.51	7.97	3.11	8.68	2.90	9.67	3.51	I
L	8.84	2.81	9.35	2.87	9.20	2.54	8.97	2.74	9.04	2.58	7.93	2.41	L
M	12.02	3.99	11.39	4.31	11.27	4.10	10.27	3.53	9.51	3.14	9.57	3.59	M
N	10.86	3.07	10.91	3.34	10.50	3.30	10.29	2.90	10.34	2.76	11.17	2.32	N
O	9.30	3.96	9.45	5.05	9.11	4.63	9.36	4.33	10.24	4.49	9.63	4.60	O
Q1	9.47	3.28	9.35	3.49	9.41	3.24	8.31	2.80	8.33	2.59	7.63	2.24	Q1
Q2	8.53	4.50	8.90	3.61	8.92	3.43	8.69	3.19	8.60	3.14	8.73	2.96	Q2
Q3	12.60	4.30	12.68	3.33	12.26	3.54	12.14	3.39	11.38	3.26	12.53	3.56	Q3
Q4	11.30	5.05	11.13	5.85	11.36	4.89	11.79	4.84	12.79	5.04	9.97	4.82	Q4

TABLE 87

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A+B MALES

FACTOR	A (N = 43)		B (N = 120)		C1 (N = 220)		C2 (N = 381)		D (N = 209)		E (N = 29)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	18.60	6.26	18.05	6.21	18.03	6.42	16.91	5.56	17.79	5.52	17.72	4.41	A
B	15.84	3.32	16.76	3.14	15.93	3.35	14.10	3.14	13.39	3.25	10.90	3.07	B
C	32.65	7.23	31.25	7.62	31.53	6.70	31.14	6.78	28.89	6.91	30.38	7.34	C
E	26.14	8.48	25.70	7.07	25.57	8.03	25.05	7.00	24.30	6.88	20.66	6.01	E
F	24.40	9.61	24.23	9.46	27.45	10.43	26.65	8.60	26.58	8.73	21.24	6.93	F
G	24.49	7.57	25.47	6.21	24.25	6.17	24.84	5.68	23.95	5.51	26.59	4.59	G
H	30.35	11.52	27.57	10.50	27.85	10.86	27.38	10.03	25.75	9.83	26.28	9.05	H
I	19.86	6.50	18.28	6.77	17.78	6.13	16.76	5.39	17.92	5.01	19.34	5.46	I
L	16.56	5.69	17.88	4.94	17.71	5.00	17.70	5.03	18.19	4.58	15.69	4.57	L
M	26.51	5.59	25.04	5.94	24.60	6.03	22.08	5.18	21.16	4.55	20.66	5.32	M
N	21.40	4.38	21.50	5.20	20.52	5.41	20.77	4.62	21.11	4.39	23.00	3.53	N
O	17.60	7.49	18.88	8.37	18.75	7.62	19.56	7.67	21.82	7.57	19.03	7.62	O
Q1	18.47	5.00	19.04	5.40	19.72	5.66	18.60	4.63	18.67	4.51	16.83	3.93	Q1
Q2	20.53	6.76	20.87	6.08	20.60	6.11	20.24	5.68	20.05	5.12	21.28	4.78	Q2
Q3	25.49	7.68	25.89	6.44	24.95	6.48	24.90	5.53	23.59	5.49	27.69	5.38	Q3
Q4	22.95	8.92	23.09	10.65	23.21	9.01	23.71	8.93	25.50	8.96	20.21	8.60	Q4

TABLE 88

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A BOTH SEXES

FACTOR	A (N = 97)		B (N = 261)		C1 (N = 482)		C2 (N = 812)		D (N = 479)		E (N = 79)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.82	3.22	10.45	3.18	10.23	3.25	9.92	3.00	10.37	2.91	10.66	2.55	A
B	7.65	2.02	8.09	2.08	7.48	2.09	6.84	2.00	6.37	2.00	5.58	2.04	B
C	15.25	3.66	15.30	3.98	15.05	3.96	14.57	3.86	13.84	3.78	14.46	3.76	C
E	11.53	5.37	11.13	4.61	10.71	4.47	10.83	4.31	10.92	4.11	10.19	3.80	E
F	12.13	5.34	12.01	5.15	12.90	5.47	12.43	4.70	12.35	4.81	9.91	4.51	F
G	12.93	3.70	12.64	3.88	12.10	3.65	12.20	3.42	11.93	3.44	13.66	3.13	G
H	14.04	6.01	13.38	5.53	12.63	5.81	12.31	5.31	11.87	5.08	11.84	5.18	H
I	11.84	4.06	11.78	4.18	11.40	3.90	10.87	3.70	11.25	3.38	11.72	3.35	I
L	7.54	3.57	7.71	3.47	7.90	3.25	8.35	3.54	8.90	3.36	8.34	3.24	L
M	13.78	3.34	13.43	3.67	12.71	3.65	11.50	3.38	11.20	3.23	11.23	3.32	M
N	10.98	3.31	11.04	3.20	10.70	3.25	11.21	3.22	11.44	2.97	12.48	3.03	N
O	9.98	4.38	10.25	4.19	10.94	4.20	11.55	4.30	12.63	4.13	11.58	4.21	O
Q1	8.31	3.34	8.78	3.33	9.01	3.50	9.28	3.30	9.47	3.05	8.01	3.28	Q1
Q2	11.70	3.45	11.51	3.84	11.54	3.61	11.42	3.43	11.43	3.39	12.44	3.08	Q2
Q3	12.98	3.65	12.81	3.51	12.39	3.42	12.23	3.04	11.94	3.06	13.70	2.92	Q3
Q4	12.97	4.79	12.56	5.24	12.98	4.98	13.17	4.88	13.81	4.70	12.57	4.80	Q4

TABLE 89

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM B BOTH SEXES

FACTOR	A (N = 92)		B (N = 244)		C1 (N = 442)		C2 (N = 741)		D (N = 421)		E (N = 73)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	9.22	3.71	9.30	3.66	9.64	3.77	9.23	3.63	9.55	3.51	9.77	3.18	A
B	8.26	1.66	8.27	1.82	7.90	1.80	7.15	1.90	6.62	1.96	5.85	2.09	B
C	15.54	4.03	15.50	4.29	15.23	3.93	14.81	4.07	13.63	3.88	13.64	4.27	C
E	11.08	4.35	11.79	4.32	11.49	4.28	11.22	4.15	10.65	3.85	9.56	3.85	E
F	12.87	4.72	13.32	5.02	14.47	5.25	14.10	4.60	13.67	4.42	11.49	4.13	F
G	13.11	3.35	12.64	3.30	12.60	3.12	12.38	2.92	12.41	2.93	13.15	2.59	G
H	14.78	5.94	13.79	5.98	13.64	5.82	12.56	5.81	11.51	5.35	12.60	5.63	H
I	11.66	3.76	10.74	3.77	10.31	3.62	9.52	3.34	9.83	3.00	10.96	3.32	I
L	8.18	2.74	8.57	2.98	8.43	2.69	8.59	2.71	8.80	2.55	8.44	2.39	L
M	11.75	3.78	11.46	4.22	10.85	3.95	9.90	3.46	9.46	3.27	9.44	3.58	M
N	10.83	2.95	10.91	3.19	10.62	3.15	10.39	2.75	10.34	2.68	11.30	2.65	N
O	11.30	4.72	10.68	4.90	10.79	4.79	11.09	4.86	11.82	4.65	11.52	4.83	O
Q1	9.30	3.27	9.38	3.50	9.01	3.01	8.18	2.81	8.12	2.62	7.77	2.42	Q1
Q2	8.39	3.89	8.59	3.57	8.53	3.36	8.50	3.10	8.69	3.00	9.23	3.18	Q2
Q3	12.26	3.71	12.17	3.74	11.90	3.70	11.60	3.43	10.88	3.34	12.77	3.07	Q3
Q4	12.71	4.97	12.32	5.48	12.74	4.98	13.19	4.86	14.08	4.84	12.44	5.19	Q4

TABLE 90

16 P.F. DIFFERENCES IN SOCIAL CLASS

FORM A+B BOTH SEXES

FACTOR	A (N = 92)		B (N = 244)		C1 (N = 437)		C2 (N = 741)		D (N = 421)		E (N = 71)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	19.93	6.25	19.73	5.86	19.91	6.25	19.19	5.75	19.84	5.53	20.35	4.76	A
B	15.97	3.17	16.38	3.32	15.53	3.18	14.01	3.17	13.00	3.29	11.35	3.36	B
C	30.78	6.87	30.82	7.29	30.40	6.77	29.42	6.91	27.51	6.68	28.23	7.12	C
E	22.55	8.72	23.00	7.99	22.27	7.95	22.04	7.55	21.64	6.90	19.94	6.61	E
F	24.80	9.34	25.36	9.23	27.62	9.98	26.66	8.32	26.14	8.41	21.66	7.76	F
G	25.98	6.31	25.21	6.35	24.71	5.95	24.52	5.43	24.13	5.33	26.92	4.57	G
H	28.55	11.24	27.09	10.74	26.38	10.99	25.00	10.34	23.37	9.64	24.49	9.82	H
I	23.48	7.08	22.62	7.16	21.81	6.83	20.36	6.16	21.00	5.40	22.55	5.54	I
L	15.67	5.45	16.31	5.39	16.25	4.95	16.99	5.05	17.64	4.75	16.77	4.37	L
M	25.54	5.78	24.96	6.46	23.65	6.12	21.43	5.27	20.73	4.93	20.63	5.41	M
N	21.86	4.59	21.97	5.01	21.24	5.37	21.53	4.67	21.69	4.37	23.58	4.13	N
O	21.21	8.10	20.96	8.20	21.60	8.12	22.60	8.27	24.49	7.80	22.90	8.30	O
Q1	17.61	5.30	18.21	5.57	18.09	5.45	17.47	4.76	17.65	4.39	15.85	4.41	Q1
Q2	20.11	6.23	20.11	6.45	20.01	5.96	19.87	5.51	20.14	5.19	21.49	5.01	Q2
Q3	25.20	6.71	24.95	6.66	24.31	6.33	23.80	5.46	22.72	5.52	26.62	4.94	Q3
Q4	25.67	8.73	24.86	10.00	25.72	9.01	26.33	8.86	28.01	8.67	24.94	8.88	Q4

APPENDIX 8

DESCRIPTIVE STATISTICS: PRIMARY SOURCE TRAITS BY AGE

TABLE 91

16 P.F. AGE TRENDS IN PERSONALITY

FORM A FEMALES

FACTOR	AGES 15–19 (N = 151)		AGES 20–24 (N = 116)		AGES 25–34 (N = 293)		AGES 35–44 (N = 198)		AGES 45–54 (N = 150)		AGES 55–64 (N = 114)		AGES 65+ (N = 89)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	11.24	2.98	11.00	2.57	11.34	2.84	11.11	2.59	10.94	2.84	10.84	2.65	10.74	2.89	A
B	7.21	2.18	6.93	1.83	7.06	2.01	7.05	1.95	6.96	2.15	6.09	2.03	5.67	2.31	B
C	13.54	3.67	14.52	3.97	14.27	3.86	14.16	4.04	13.54	4.01	13.90	3.56	14.21	3.35	C
E	10.89	3.85	10.33	3.26	9.28	4.05	9.11	4.26	8.79	4.12	8.93	3.68	8.89	3.85	E
F	15.79	4.38	14.66	4.94	13.06	4.67	11.39	4.80	10.63	4.20	9.88	3.71	9.21	4.06	F
G	9.99	3.45	11.02	3.25	11.71	3.16	12.11	3.14	13.00	2.77	13.84	3.28	13.91	2.86	G
H	11.90	5.32	12.22	5.51	12.04	5.19	11.74	5.59	11.58	5.27	10.73	4.82	11.00	5.30	H
I	13.36	2.90	13.18	2.59	13.37	2.72	13.58	2.78	13.39	2.98	13.22	2.75	12.94	2.83	I
L	8.91	3.68	8.32	3.23	7.56	3.34	7.52	3.39	7.26	3.56	8.01	2.89	8.16	3.48	L
M	11.38	3.82	11.22	3.29	11.68	3.60	12.11	3.97	11.74	3.35	11.54	3.37	11.53	3.48	M
N	10.56	3.22	11.55	3.10	11.38	3.08	11.84	3.13	12.57	3.18	12.83	2.90	12.96	2.89	N
O	13.38	3.78	12.57	4.13	12.39	3.81	12.65	4.17	12.62	3.90	12.54	4.38	11.69	4.04	O
Q1	9.58	3.01	9.40	3.32	8.27	3.12	7.47	2.70	7.69	2.62	7.39	3.04	6.49	2.65	Q1
Q2	10.49	3.56	10.59	3.65	11.31	3.48	11.66	3.57	11.52	3.44	11.82	3.16	13.00	3.35	Q2
Q3	10.13	3.27	10.76	3.21	11.86	2.91	11.99	2.99	12.95	2.78	13.18	2.77	13.33	2.44	Q3
Q4	15.37	4.33	14.78	4.48	14.37	4.18	14.18	5.00	13.79	4.82	14.46	4.49	12.67	4.40	Q4

TABLE 92

16 P.F. AGE TRENDS IN PERSONALITY

FORM B FEMALES

FACTOR	AGES 15–19 (N = 147)		AGES 20–24 (N = 108)		AGES 25–34 (N = 275)		AGES 35–44 (N = 180)		AGES 45–54 (N = 129)		AGES 55–64 (N = 95)		AGES 65+ (N = 72)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.73	3.29	10.73	3.29	10.97	3.17	10.67	3.15	10.19	2.91	10.28	3.10	10.13	3.01	A
B	7.50	1.95	7.74	1.70	7.44	1.87	7.40	1.85	7.10	1.87	6.42	2.08	6.21	2.16	B
C	13.76	3.93	13.99	4.02	14.31	3.46	14.21	4.00	13.40	4.06	13.71	4.19	13.96	3.75	C
E	10.61	3.86	9.73	3.56	9.54	3.88	9.78	3.74	9.20	3.55	9.23	3.40	8.88	3.55	E
F	16.06	4.38	15.36	4.30	14.55	4.45	13.71	4.58	12.61	4.03	11.31	3.84	11.18	4.01	F
G	11.44	3.08	11.52	2.82	12.76	2.88	13.23	2.64	13.80	3.00	13.75	2.97	13.26	2.36	G
H	10.97	5.73	11.42	5.99	11.69	5.70	12.44	5.90	11.69	5.89	12.22	5.42	12.00	5.76	H
I	10.83	2.89	10.93	2.47	11.64	3.06	11.83	2.60	11.99	2.96	12.02	2.88	12.60	2.35	I
L	8.73	2.75	8.56	2.62	8.01	2.48	7.79	2.68	7.72	2.67	7.73	2.68	8.28	2.37	L
M	10.30	3.88	9.65	3.59	9.89	3.59	10.12	3.65	10.10	3.78	10.25	3.50	9.50	3.12	M
N	9.57	2.95	9.77	2.67	10.50	2.59	10.75	2.74	11.15	2.58	11.71	2.63	12.01	2.50	N
O	13.52	4.28	12.93	4.15	12.55	4.63	12.56	4.41	13.06	4.52	12.82	4.60	11.93	5.02	O
Q1	8.74	2.99	8.44	3.12	8.71	2.99	7.98	2.76	8.21	2.97	7.98	2.40	7.43	2.51	Q1
Q2	8.30	3.22	8.72	2.61	8.38	3.14	8.26	3.33	8.17	3.20	8.17	2.84	9.13	3.08	Q2
Q3	9.39	3.65	10.10	3.35	10.96	3.32	11.69	3.62	12.17	3.32	12.40	3.44	13.17	2.80	Q3
Q4	15.75	3.99	15.23	4.43	14.69	4.45	14.44	4.68	14.16	4.69	13.34	4.47	11.94	4.87	Q4

TABLE 93

16 P.F. AGE TRENDS IN PERSONALITY

FORM A+B FEMALES

FACTOR	AGES 15–19 (N = 147)		AGES 20–24 (N = 108)		AGES 25–34 (N = 274)		AGES 35–44 (N = 178)		AGES 45–54 (N = 129)		AGES 55–64 (N = 95)		AGES 65+ (N = 72)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	21.95	5.26	21.79	4.99	22.35	4.95	21.72	4.93	20.98	5.03	21.04	4.84	21.04	5.09	A
B	14.67	3.51	14.69	2.88	14.56	3.34	14.51	3.22	14.12	3.45	12.59	3.39	12.06	3.70	B
C	27.36	6.55	28.44	6.74	28.64	6.11	28.45	6.88	26.98	7.44	27.83	7.03	28.28	6.29	C
E	21.52	6.90	19.98	5.78	18.81	6.92	18.79	6.66	18.00	6.56	18.21	5.92	17.82	6.72	E
F	31.88	7.83	29.96	8.52	27.65	8.16	25.28	8.40	23.31	7.03	21.07	6.46	20.72	7.35	F
G	21.46	5.71	22.48	5.06	24.48	5.12	25.38	4.89	26.84	4.85	27.66	5.26	27.22	4.22	G
H	22.89	10.35	23.49	10.68	23.81	10.33	24.14	10.73	23.22	10.41	22.99	9.51	23.10	10.39	H
I	24.20	4.65	24.06	4.24	25.12	4.69	25.50	4.46	25.39	4.79	25.15	4.61	25.61	4.06	I
L	17.64	5.36	16.82	4.72	15.50	4.69	15.17	4.99	15.05	5.17	15.52	4.37	16.18	4.59	L
M	21.73	6.46	20.81	5.38	21.65	6.01	22.29	6.38	22.19	5.69	21.97	5.41	21.01	4.76	M
N	20.14	4.85	21.44	4.28	21.78	4.53	22.51	4.43	23.65	4.76	24.39	4.25	24.82	4.00	N
O	26.93	7.05	25.54	7.08	24.91	7.66	25.18	7.67	25.72	7.33	25.01	8.00	23.61	8.34	O
Q1	18.31	4.78	17.88	4.84	16.94	4.96	15.35	4.21	16.05	4.35	15.32	3.81	14.08	3.99	Q1
Q2	18.74	5.48	19.27	5.30	19.71	5.65	19.74	6.02	19.66	5.63	19.73	4.82	21.96	5.31	Q2
Q3	19.52	5.81	20.69	5.41	22.82	5.24	23.75	5.69	25.26	4.85	25.69	5.23	26.46	4.49	Q3
Q4	31.10	7.30	30.18	7.44	29.08	7.76	28.53	8.65	27.94	8.70	27.47	7.98	24.53	8.48	Q4

TABLE 94

16 P.F. AGE TRENDS IN PERSONALITY

FORM A MALES

FACTOR	AGES 15–19 (N = 94)		AGES 20–24 (N = 151)		AGES 25–34 (N = 246)		AGES 35–44 (N = 191)		AGES 45–54 (N = 182)		AGES 55–64 (N = 127)		AGES 65+ (N = 113)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	9.93	2.72	9.19	2.98	9.15	3.29	9.17	2.90	9.46	3.09	9.58	3.18	9.35	3.25	A
B	7.01	1.89	7.58	1.98	7.56	2.05	7.41	2.16	7.07	2.22	6.64	2.22	6.26	2.12	B
C	15.47	3.86	14.96	3.93	15.45	3.75	15.37	4.04	14.97	3.86	14.99	4.14	15.54	3.54	C
E	13.20	4.35	13.69	4.13	13.20	4.18	12.19	4.23	11.67	3.97	10.91	4.11	10.34	4.18	E
F	16.63	4.51	15.60	4.76	13.13	4.89	11.65	4.35	10.81	4.28	9.84	4.22	9.59	4.46	F
G	9.73	3.59	10.36	4.12	12.02	3.38	13.03	3.41	13.65	3.19	14.08	3.18	13.86	3.23	G
H	14.18	5.65	14.44	5.30	12.94	5.50	13.63	5.31	12.87	5.53	12.42	5.65	12.44	5.50	H
I	8.84	3.49	9.28	3.84	9.01	3.56	9.32	3.46	9.01	3.22	9.28	3.17	9.42	2.95	I
L	9.53	3.78	9.34	3.61	8.74	3.54	8.16	3.19	8.05	3.31	8.88	3.40	8.23	2.93	L
M	11.62	3.19	12.46	3.54	12.64	3.26	12.85	3.41	12.06	3.61	12.08	3.61	12.33	3.49	M
N	9.64	2.95	9.30	2.88	9.96	2.89	10.73	3.26	11.15	2.94	11.34	2.87	11.81	2.82	N
O	10.86	4.54	10.40	4.45	10.33	3.99	10.17	4.53	10.70	4.50	9.86	3.79	9.45	4.00	O
Q1	11.95	3.22	11.62	3.13	10.61	3.44	9.77	2.77	9.41	2.81	9.12	3.05	8.40	2.73	Q1
Q2	9.59	3.72	11.10	3.55	11.70	3.33	11.85	3.52	11.60	3.26	12.15	3.30	12.64	3.32	Q2
Q3	11.11	3.13	11.11	3.50	12.04	3.18	13.48	2.95	13.42	3.05	13.99	2.84	14.50	2.87	Q3
Q4	12.69	4.91	12.19	5.30	12.24	4.80	11.77	5.16	12.48	4.74	11.29	5.08	10.99	4.90	Q4

TABLE 95

16 P.F. AGE TRENDS IN PERSONALITY

FORM B MALES

FACTOR	AGES 15–19 (N = 89)		AGES 20–24 (N = 145)		AGES 25–34 (N = 227)		AGES 35–44 (N = 175)		AGES 45–54 (N = 153)		AGES 55–64 (N = 114)		AGES 65+ (N = 104)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	8.88	3.71	8.44	3.63	8.39	3.81	8.03	3.46	7.87	3.79	8.11	3.51	7.97	3.79	A
B	7.44	1.66	7.86	1.91	7.77	2.05	7.52	1.84	7.36	1.90	6.84	2.11	6.73	2.29	B
C	15.44	4.05	15.21	4.36	15.78	4.06	15.65	4.09	15.16	3.95	15.25	4.50	15.89	4.00	C
E	12.73	4.05	13.55	3.99	13.41	3.91	13.03	3.81	12.42	3.89	11.34	3.93	10.98	3.96	E
F	17.08	4.37	16.46	4.54	14.68	4.72	13.66	4.47	12.63	5.10	10.75	4.13	10.62	3.81	F
G	10.84	3.00	11.19	3.15	11.64	2.86	12.74	2.90	13.34	2.88	13.27	2.72	12.93	3.01	G
H	14.40	5.74	14.12	5.58	13.33	5.44	13.90	5.65	14.19	5.71	13.91	5.38	14.21	6.14	H
I	7.71	3.32	8.09	3.31	8.11	3.28	8.38	3.09	8.60	3.18	9.24	3.28	9.68	3.31	I
L	9.28	2.87	9.53	2.66	9.29	2.83	9.03	2.65	8.90	2.55	8.52	2.37	8.47	2.62	L
M	10.87	3.46	11.39	4.02	10.67	3.95	10.28	3.87	10.22	3.56	10.01	3.61	10.13	3.49	M
N	9.64	2.94	9.18	2.93	10.04	2.79	10.45	2.92	11.08	3.09	11.51	2.69	11.92	2.91	N
O	9.78	4.95	9.93	4.82	9.33	4.53	9.38	4.35	9.73	4.59	9.33	3.88	9.20	4.64	O
Q1	9.39	2.95	9.96	3.37	9.20	2.96	8.51	2.94	7.88	2.71	7.80	2.64	7.93	2.62	Q1
Q2	8.01	2.92	8.50	3.21	8.79	3.41	8.93	3.30	7.86	3.15	9.75	3.64	9.55	3.38	Q2
Q3	10.72	3.23	10.45	3.81	11.79	3.33	12.72	3.10	12.73	3.35	12.93	3.19	13.37	3.16	Q3
Q4	12.63	5.19	13.27	4.89	12.06	4.69	11.43	5.21	11.84	5.15	10.34	5.14	10.12	4.65	Q4

TABLE 96

16 P.F. AGE TRENDS IN PERSONALITY

FORM A+B MALES

FACTOR	AGES 15–19 (N = 89)		AGES 20–24 (N = 145)		AGES 25–34 (N = 227)		AGES 35–44 (N = 174)		AGES 45–54 (N = 152)		AGES 55–64 (N = 114)		AGES 65+ (N = 103)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	18.80	5.65	17.57	5.68	17.58	6.10	17.20	5.45	17.55	5.95	17.64	5.77	17.12	6.24	A
B	14.36	2.56	15.42	3.20	15.32	3.34	15.03	3.46	14.51	3.55	13.52	3.67	13.17	3.76	B
C	30.90	7.04	30.22	7.18	31.28	6.80	31.10	7.15	30.22	6.78	30.19	7.57	31.53	6.42	C
E	25.94	7.69	27.28	7.08	26.67	6.98	25.34	6.95	24.14	6.63	21.97	7.10	21.30	7.22	E
F	33.81	8.30	31.97	8.43	27.87	8.64	25.26	7.99	23.64	8.42	20.46	7.35	20.17	7.07	F
G	20.39	5.42	21.48	6.50	23.50	5.28	25.87	5.35	26.98	5.07	27.23	4.86	26.82	5.15	G
H	28.75	10.43	28.43	10.07	26.27	10.10	27.57	10.45	27.48	10.29	26.28	10.39	26.65	10.48	H
I	16.57	5.72	17.30	6.33	17.10	5.86	17.70	5.73	17.60	5.21	18.46	5.52	19.15	5.60	I
L	18.82	5.55	18.93	5.17	18.05	5.18	17.20	4.47	16.88	4.86	17.42	4.57	16.75	4.34	L
M	22.39	5.26	23.89	6.09	23.39	5.77	23.21	5.63	22.29	5.09	22.10	5.76	22.56	5.36	M
N	19.28	4.52	18.48	4.67	19.99	4.50	21.11	4.52	22.26	4.55	22.90	4.58	23.72	4.20	N
O	20.67	8.27	20.34	8.35	19.58	7.50	19.31	7.99	20.23	8.01	19.02	6.61	18.72	7.72	O
Q1	21.43	4.80	21.66	5.16	19.86	5.09	18.20	4.38	17.17	3.98	16.78	4.26	16.40	4.05	Q1
Q2	17.54	5.90	19.66	5.67	20.55	5.69	20.92	5.70	19.43	5.41	22.05	5.61	22.27	5.40	Q2
Q3	21.73	5.36	21.47	6.50	23.79	5.72	26.26	5.30	26.16	5.75	27.10	4.92	27.94	4.98	Q3
Q4	25.39	9.29	25.63	9.22	24.26	8.74	23.15	9.69	24.34	9.08	21.56	9.12	21.30	8.61	Q4

TABLE 97

16 P.F. AGE TRENDS IN PERSONALITY

FORM A BOTH SEXES

FACTOR	AGES 15-19 (N = 245)		AGES 20-24 (N = 268)		AGES 25-34 (N = 540)		AGES 35-44 (N = 389)		AGES 45-54 (N = 333)		AGES 55-64 (N = 241)		AGES 65+ (N = 202)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.73	2.95	9.97	2.94	10.34	3.24	10.16	2.91	10.12	3.07	10.18	3.00	9.97	3.17	A
B	7.13	2.07	7.31	1.95	7.29	2.04	7.23	2.06	7.02	2.18	6.38	2.15	6.00	2.22	B
C	14.28	3.85	14.76	3.94	14.81	3.85	14.75	4.08	14.32	3.99	14.48	3.91	14.96	3.51	C
E	11.78	4.20	12.22	4.12	11.09	4.56	10.62	4.51	10.38	4.28	9.98	4.03	9.70	4.09	E
F	16.11	4.44	15.16	4.87	13.09	4.76	11.52	4.58	10.74	4.25	9.86	3.98	9.43	4.28	F
G	9.89	3.50	10.65	3.76	11.84	3.26	12.56	3.30	13.37	3.03	13.97	3.22	13.88	3.07	G
H	12.78	5.55	13.45	5.51	12.45	5.34	12.67	5.53	12.30	5.44	11.62	5.33	11.81	5.45	H
I	11.62	3.83	10.97	3.86	11.37	3.81	11.49	3.79	10.98	3.79	11.14	3.57	10.97	3.38	I
L	9.15	3.73	8.89	3.48	8.10	3.48	7.83	3.30	7.68	3.44	8.47	3.19	8.20	3.17	L
M	11.47	3.59	11.92	3.47	12.13	3.49	12.47	3.72	11.94	3.51	11.82	3.50	11.98	3.50	M
N	10.21	3.14	10.29	3.17	10.73	3.07	11.29	3.24	11.78	3.13	12.05	2.97	12.31	2.90	N
O	12.42	4.26	11.36	4.44	11.44	4.03	11.43	4.52	11.59	4.35	11.13	4.29	10.44	4.16	O
Q1	10.49	3.29	10.65	3.39	9.34	3.47	8.60	2.97	8.64	2.85	8.30	3.16	7.56	2.85	Q1
Q2	10.14	3.64	10.90	3.60	11.49	3.41	11.76	3.54	11.57	3.34	11.99	3.23	12.80	3.33	Q2
Q3	10.51	3.24	10.96	3.37	11.94	3.03	12.72	3.06	13.21	2.93	13.61	2.83	13.99	2.75	Q3
Q4	14.34	4.73	13.31	5.11	13.39	4.59	13.00	5.21	13.09	4.82	12.79	5.06	11.73	4.75	Q4

TABLE 98

16 P.F. AGE TRENDS IN PERSONALITY

FORM B BOTH SEXES

FACTOR	AGES 15–19 (N = 236)		AGES 20–24 (N = 254)		AGES 25–34 (N = 503)		AGES 35–44 (N = 356)		AGES 45–54 (N = 283)		AGES 55–64 (N = 209)		AGES 65+ (N = 176)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	10.03	3.57	9.39	3.68	9.80	3.70	9.37	3.56	8.93	3.59	9.10	3.49	8.85	3.64	A
B	7.47	1.84	7.81	1.82	7.59	1.96	7.46	1.84	7.25	1.89	6.65	2.10	6.52	2.25	B
C	14.39	4.05	14.67	4.26	14.98	3.81	14.92	4.10	14.31	4.13	14.55	4.42	15.10	4.00	C
E	11.41	4.06	11.91	4.24	11.31	4.36	11.38	4.11	10.95	4.05	10.38	3.84	10.12	3.93	E
F	16.44	4.39	15.94	4.52	14.61	4.56	13.69	4.52	12.64	4.63	11.00	4.00	10.85	3.89	F
G	11.22	3.06	11.35	3.02	12.24	2.94	12.99	2.78	13.56	2.94	13.49	2.84	13.07	2.76	G
H	12.27	5.96	12.93	5.92	12.43	5.64	13.16	5.81	13.04	5.91	13.14	5.45	13.31	6.07	H
I	9.65	3.41	9.32	3.30	10.04	3.61	10.12	3.33	10.15	3.50	10.50	3.39	10.88	3.28	I
L	8.94	2.80	9.10	2.69	8.60	2.73	8.40	2.73	8.36	2.66	8.16	2.54	8.39	2.52	L
M	10.51	3.73	10.68	3.95	10.26	3.80	10.20	3.76	10.16	3.65	10.12	3.55	9.88	3.35	M
N	9.60	2.94	9.45	2.85	10.29	2.69	10.60	2.83	11.10	2.87	11.60	2.66	11.96	2.74	N
O	12.11	4.89	11.24	4.79	11.09	4.85	10.99	4.65	11.29	4.86	10.92	4.56	10.32	4.97	O
Q1	8.99	2.98	9.33	3.35	8.94	2.99	8.24	2.86	8.04	2.83	7.88	2.53	7.73	2.58	Q1
Q2	8.19	3.11	8.63	3.01	8.57	3.27	8.59	3.32	8.01	3.17	9.03	3.39	9.38	3.26	Q2
Q3	9.89	3.55	10.33	3.63	11.33	3.34	12.20	3.41	12.48	3.34	12.69	3.31	13.28	3.01	Q3
Q4	14.57	4.72	14.10	4.78	13.50	4.74	12.96	5.17	12.91	5.06	11.70	5.06	10.86	4.81	Q4

TABLE 99

16 P.F. AGE TRENDS IN PERSONALITY

FORM A+B BOTH SEXES

FACTOR	AGES 15–19 (N = 236)		AGES 20–24 (N = 254)		AGES 25–34 (N = 502)		AGES 35–44 (N = 352)		AGES 45–54 (N = 282)		AGES 55–64 (N = 209)		AGES 65+ (N = 175)		FACTOR
	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	MEAN	S.D.	
A	20.76	5.61	19.33	5.80	20.18	5.98	19.49	5.66	19.11	5.79	19.19	5.62	18.73	6.10	A
B	14.55	3.19	15.13	3.10	14.91	3.36	14.76	3.34	14.34	3.50	13.10	3.57	12.71	3.76	B
C	28.69	6.94	29.43	7.04	29.84	6.55	29.76	7.13	28.68	7.29	29.12	7.41	30.19	6.55	C
E	23.19	7.50	24.15	7.47	22.41	8.00	22.03	7.55	21.34	7.26	20.26	6.84	19.87	7.20	E
F	32.61	8.05	31.04	8.59	27.75	8.37	25.27	8.19	23.53	7.82	20.74	6.95	20.40	7.17	F
G	21.06	5.61	21.93	5.94	24.01	5.23	25.62	5.12	26.94	4.97	27.43	5.04	26.98	4.78	G
H	25.10	10.74	26.26	10.63	24.92	10.28	25.84	10.72	25.53	10.53	24.78	10.11	25.19	10.56	H
I	21.33	6.28	20.21	6.46	21.47	6.60	21.64	6.44	21.17	6.34	21.50	6.11	21.81	5.94	I
L	18.08	5.45	18.01	5.09	16.68	5.09	16.17	4.84	16.03	5.07	16.56	4.57	16.51	4.44	L
M	21.98	6.03	22.60	5.98	22.48	6.00	22.74	6.03	22.26	5.36	22.04	5.59	21.93	5.16	M
N	19.82	4.74	19.78	4.75	20.96	4.60	21.82	4.52	22.88	4.69	23.58	4.49	24.17	4.14	N
O	24.57	8.11	22.61	8.25	22.48	8.03	22.28	8.36	22.81	8.21	21.74	7.85	20.73	8.32	O
Q1	19.48	5.01	20.06	5.35	18.27	5.22	16.76	4.52	16.68	4.19	16.11	4.12	15.45	4.17	Q1
Q2	18.29	5.66	19.55	5.56	20.11	5.69	20.32	5.88	19.55	5.50	21.00	5.38	22.14	5.35	Q2
Q3	20.36	5.73	21.16	6.06	23.25	5.48	24.99	5.63	25.77	5.37	26.46	5.10	27.33	4.83	Q3
Q4	28.94	8.55	27.56	8.77	26.89	8.55	25.87	9.56	26.03	9.08	24.25	9.09	22.63	8.68	Q4

TABLE 100

16 P.F. AGE DIFFERENCES IN PERSONALITY

FORM A BRITISH FEMALES

GROUP SCORES AGAINST MALE AND FEMALE NORMS

FACTOR	AGES 15-19	AGES 20-24	AGES 25-34	AGES 35-44	AGES 45-54	AGES 55-64	AGES 65+	FACTOR
A	0.33	0.25	0.36	0.29	0.23	0.20	0.16	A
B	0.09	-0.03	0.02	0.01	-0.02	-0.43	-0.62	B
C	-0.28	-0.03	-0.09	-0.12	-0.28	-0.18	-0.11	C
E	0.01	-0.12	-0.36	-0.39	-0.47	-0.44	-0.44	E
F	0.68	0.46	0.14	-0.19	-0.34	-0.49	-0.63	F
G	-0.63	-0.34	-0.15	-0.04	0.20	0.44	0.46	G
H	-0.10	-0.04	-0.07	-0.13	-0.16	-0.31	-0.26	H
I	0.56	0.51	0.56	0.62	0.57	0.52	0.45	I
L	0.19	0.02	-0.20	-0.21	-0.28	-0.06	-0.02	L
M	-0.18	-0.22	-0.09	0.02	-0.07	-0.13	-0.13	M
N	-0.18	0.12	0.06	0.21	0.44	0.52	0.56	N
O	0.45	0.26	0.22	0.28	0.27	0.25	0.05	O
Q1	0.14	0.08	-0.25	-0.49	-0.42	-0.51	-0.79	Q1
Q2	-0.28	-0.25	-0.05	0.04	0.01	0.09	0.42	Q2
Q3	-0.69	-0.49	-0.15	-0.11	0.18	0.25	0.30	Q3
Q4	0.44	0.32	0.24	0.20	0.12	0.26	-0.09	Q4

TABLE 101

16 P.F. AGE DIFFERENCES IN PERSONALITY

FORM B BRITISH FEMALES

GROUP SCORES AGAINST MALE AND FEMALE NORMS

FACTOR	AGES 15–19	AGES 20–24	AGES 25–34	AGES 35–44	AGES 45–54	AGES 55–64	AGES 65+	FACTOR
A	0.36	0.36	0.42	0.34	0.21	0.23	0.19	A
B	0.08	0.20	0.05	0.03	-0.12	-0.46	-0.57	B
C	-0.23	-0.18	-0.10	-0.12	-0.32	-0.25	-0.18	C
E	-0.13	-0.34	-0.38	-0.33	-0.47	-0.46	-0.55	E
F	0.46	0.31	0.14	-0.02	-0.25	-0.53	-0.55	F
G	-0.35	-0.33	0.07	0.23	0.41	0.40	0.24	G
H	-0.32	-0.24	-0.19	-0.06	-0.19	-0.10	-0.14	H
I	0.22	0.25	0.45	0.51	0.55	0.56	0.73	I
L	0.05	-0.00	-0.20	-0.28	-0.31	-0.31	-0.10	L
M	0.00	-0.16	-0.10	-0.04	-0.04	0.00	-0.20	M
N	-0.33	-0.26	-0.01	0.06	0.20	0.40	0.50	N
O	0.49	0.36	0.28	0.29	0.39	0.34	0.16	O
Q1	0.07	-0.03	0.06	-0.18	-0.10	-0.18	-0.37	Q1
Q2	-0.08	0.04	-0.06	-0.09	-0.12	-0.12	0.16	Q2
Q3	-0.64	-0.44	-0.19	0.01	0.14	0.20	0.42	Q3
Q4	0.52	0.42	0.31	0.26	0.20	0.04	-0.23	Q4

TABLE 102

16 P.R. AGE DIFFERENCES IN PERSONALITY

FORM A BRITISH MALES

GROUP SCORES AGAINST MALE AND FEMALE NORMS

FACTOR	AGES 15–19	AGES 20–24	AGES 25–34	AGES 35–44	AGES 45–54	AGES 55–64	AGES 65+	FACTOR
A	-0.09	-0.33	-0.34	-0.34	-0.24	-0.20	-0.28	A
B	0.00	0.26	0.25	0.18	0.02	-0.17	-0.35	B
C	0.21	0.08	0.20	0.18	0.08	0.08	0.23	C
E	0.53	0.64	0.53	0.30	0.18	0.01	-0.11	E
F	0.85	0.64	0.15	-0.14	-0.31	-0.50	-0.55	F
G	-0.71	-0.53	-0.06	0.21	0.39	0.51	0.44	G
H	0.31	0.36	0.08	0.21	0.07	-0.01	-0.01	H
I	-0.64	-0.52	-0.59	-0.51	-0.59	-0.52	-0.48	I
L	0.37	0.31	0.14	-0.02	-0.05	0.18	-0.01	L
M	-0.11	0.12	0.17	0.23	0.01	0.01	0.08	M
N	-0.47	-0.58	-0.37	-0.13	-0.00	0.05	0.20	N
O	-0.13	-0.24	-0.25	-0.29	-0.17	-0.36	-0.46	O
Q1	0.85	0.75	0.45	0.19	0.09	0.00	-0.21	Q1
Q2	-0.54	-0.11	0.05	0.09	0.02	0.18	0.32	Q2
Q3	-0.38	-0.38	-0.09	0.34	0.32	0.50	0.66	Q3
Q4	-0.10	-0.19	-0.18	-0.28	-0.13	-0.38	-0.44	Q4

TABLE 103

16 P.F. AGE DIFFERENCES IN PERSONALITY

FORM B BRITISH MALES

GROUP SCORES AGAINST MALE AND FEMALE NORMS

FACTOR	AGES 15–19	AGES 20–24	AGES 25–34	AGES 35–44	AGES 45–54	AGES 55–64	AGES 65+	FACTOR
A	-0.14	-0.26	-0.28	-0.38	-0.42	-0.36	-0.39	A
B	0.05	0.26	0.22	0.09	0.01	-0.25	-0.30	B
C	0.17	0.11	0.25	0.22	0.10	0.12	0.28	C
E	0.37	0.57	0.54	0.44	0.30	0.04	-0.04	E
F	0.67	0.54	0.17	-0.03	-0.25	-0.64	-0.67	F
G	-0.55	-0.44	-0.29	0.06	0.26	0.24	0.13	G
H	0.27	0.22	0.08	0.18	0.23	0.18	0.23	H
I	-0.68	-0.57	-0.56	-0.48	-0.42	-0.23	-0.11	I
L	0.26	0.35	0.26	0.17	0.12	-0.01	-0.03	L
M	0.16	0.30	0.10	0.00	-0.01	-0.06	-0.03	M
N	-0.31	-0.47	-0.17	-0.03	0.18	0.33	0.47	N
O	-0.28	-0.25	-0.38	-0.37	-0.29	-0.38	-0.40	O
Q1	0.29	0.48	0.22	-0.01	-0.21	-0.24	-0.20	Q1
Q2	-0.17	-0.02	0.06	0.10	-0.22	0.36	0.29	Q2
Q3	-0.26	-0.34	0.03	0.29	0.30	0.35	0.48	Q3
Q4	-0.09	0.03	-0.20	-0.33	-0.25	-0.55	-0.59	Q4

APPENDIX 10

ALTERNATE FORM RELIABILITIES OF THE PRIMARY SOURCE TRAITS BY SEX AGE AND SOCIAL CLASS

TABLE 104

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR A

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.498	234	9.43	2.90	8.61	3.66	.412	255	11.15	2.83	10.73	3.29	.501	489	10.33	2.99	9.71	3.62
25-44 Years	.473	401	9.20	3.11	8.22	3.66	.383	452	11.23	2.78	10.87	3.16	.498	853	10.28	3.11	9.62	3.65
45-64 Years	.491	266	9.61	3.11	7.98	3.67	.477	224	10.77	2.76	10.23	2.99	.513	490	10.14	3.01	9.01	3.55
65+ Years	.603	103	9.17	3.16	7.95	3.80	.496	72	10.92	2.88	10.13	3.01	.601	175	9.89	3.16	8.85	3.65
SOCIAL CLASS																		
AB	.562	163	9.99	3.13	8.21	3.88	.432	172	11.03	3.12	10.29	3.16	.519	335	10.53	3.16	9.28	3.67
C1	.605	220	9.29	3.31	8.75	3.86	.460	215	11.28	2.85	10.62	3.46	.576	435	10.27	3.24	9.67	3.78
C2	.429	381	9.08	2.96	7.83	3.60	.421	360	10.90	2.81	10.72	3.01	.492	741	9.96	3.03	9.23	3.63
DE	.427	238	9.43	2.92	8.35	3.45	.385	254	11.19	2.49	10.72	3.07	.470	942	10.34	2.85	9.58	3.47
TIME TAKEN																		
1-60 mins	.479	135	8.79	2.88	7.90	3.60	.442	124	10.77	2.81	10.59	3.41	.525	259	9.73	3.01	9.19	3.75
61-80 mins	.507	354	9.40	3.23	8.18	3.61	.458	316	11.13	2.83	10.67	3.06	.535	670	10.22	3.16	9.35	3.58
81+ mins	.453	346	9.40	2.95	8.20	3.76	.441	279	11.19	2.76	10.48	3.14	.498	625	10.20	3.00	9.22	3.67

TABLE 105

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR B

CLASSIFYING VARIABLE	MALES r	MALES N	MALES FORM A Mean	MALES FORM A S.D.	MALES FORM B Mean	MALES FORM B S.D.	FEMALES r	FEMALES N	FEMALES FORM A Mean	FEMALES FORM A S.D.	FEMALES FORM B Mean	FEMALES FORM B S.D.	BOTH SEXES r	BOTH SEXES N	BOTH SEXES FORM A Mean	BOTH SEXES FORM A S.D.	BOTH SEXES FORM B Mean	BOTH SEXES FORM B S.D.
AGE																		
15-24 Years	.260	234	7.32	1.97	7.70	1.83	.419	255	7.08	2.02	7.60	1.85	.345	489	7.19	2.00	7.65	1.84
25-44 Years	.408	401	7.54	2.08	7.65	1.96	.448	452	7.11	2.01	7.43	1.86	.431	853	7.31	2.05	7.53	1.91
45-64 Years	.490	266	6.95	2.20	7.14	2.01	.441	224	6.66	2.14	6.81	1.98	.471	490	6.82	2.17	6.99	2.00
65+ Years	.467	103	6.40	2.12	6.77	2.28	.361	72	5.85	2.32	6.21	2.16	.430	175	6.17	2.21	6.54	2.24
SOCIAL CLASS																		
AB	.495	163	8.20	2.02	8.31	1.68	.445	172	7.80	2.06	8.22	1.87	.468	335	7.99	2.05	8.26	1.78
C1	.409	220	7.77	2.13	8.16	1.86	.335	215	7.47	1.89	7.62	1.69	.382	435	7.62	2.02	7.89	1.80
C2	.274	381	6.94	2.00	7.16	1.93	.390	360	6.79	1.98	7.14	1.87	.329	741	6.86	1.99	7.15	1.90
DE	.388	238	6.48	1.98	6.61	2.01	.384	254	6.04	2.06	6.43	1.97	.388	492	6.25	2.03	6.51	1.99
TIME TAKEN																		
1-60 mins	.482	135	7.21	2.23	7.50	1.93	.450	124	6.62	2.06	7.22	1.88	.472	259	6.93	2.17	7.37	1.91
61-80 mins	.421	354	7.28	2.15	7.48	2.03	.416	316	7.00	2.11	7.41	2.01	.419	670	7.14	2.14	7.45	2.02
81+ mins	.394	346	7.13	2.09	7.32	2.02	.452	279	6.68	2.09	7.01	1.90	.423	625	6.93	2.10	7.18	1.97

TABLE 106

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR C

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.543	234	15.18	3.86	15.30	4.24	.478	255	13.96	3.76	13.86	3.96	.524	489	14.54	3.86	14.55	4.15
25-44 Years	.518	401	15.48	3.90	15.73	4.07	.400	452	14.29	3.93	14.28	3.69	.471	853	14.85	3.98	14.96	3.94
45-64 Years	.495	266	15.00	4.04	15.20	4.19	.638	224	13.81	3.92	13.53	4.11	.571	490	14.46	4.03	14.44	4.23
65+ Years	.447	103	15.60	3.55	15.93	4.00	.507	72	14.32	3.50	13.96	3.75	.492	175	15.07	3.57	15.12	4.01
SOCIAL CLASS																		
AB	.554	163	15.52	4.09	16.10	4.44	.565	172	15.09	3.72	14.94	3.92	.560	335	15.30	3.91	15.50	4.22
C1	.442	220	15.65	3.74	15.88	4.15	.481	215	14.66	4.11	14.68	3.54	.467	435	15.16	3.95	15.29	3.90
C2	.541	381	15.39	3.79	15.75	3.93	.423	360	13.78	3.84	13.82	3.97	.507	741	14.61	3.90	14.81	4.07
DE	.479	238	14.66	4.03	14.40	4.07	.466	254	13.34	3.60	12.92	3.69	.490	492	13.98	3.86	13.64	3.95
TIME TAKEN																		
1-60 mins	.345	135	15.16	3.68	15.61	4.25	.488	124	14.46	4.17	14.21	3.89	.420	259	14.82	3.93	14.94	4.13
61-80 mins	.533	354	15.34	3.94	15.52	4.20	.470	316	13.90	3.78	13.97	3.97	.522	670	14.66	3.93	14.79	4.16
81+ mins	.546	346	15.25	3.97	15.34	4.00	.436	279	14.13	4.01	13.82	3.84	.510	625	14.75	4.03	14.66	4.00

TABLE 107

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR E

CLASSIFYING VARIABLE	r	MALES N	MALES FORM A Mean	MALES FORM A S.D.	MALES FORM B Mean	MALES FORM B S.D.	r	FEMALES N	FEMALES FORM A Mean	FEMALES FORM A S.D.	FEMALES FORM B Mean	FEMALES FORM B S.D.	r	BOTH SEXES N	BOTH SEXES FORM A Mean	BOTH SEXES FORM A S.D.	BOTH SEXES FORM B Mean	BOTH SEXES FORM B S.D.
AGE																		
15-24 Years	.571	234	13.53	4.25	13.24	4.02	.528	255	10.63	3.66	10.24	3.76	.606	489	12.02	4.21	11.67	4.16
25-44 Years	.491	401	12.84	4.22	13.26	3.87	.461	452	9.16	4.13	9.64	3.84	.565	853	10.89	4.56	11.34	4.25
45-64 Years	.505	266	11.26	4.02	11.95	3.94	.410	224	8.88	4.00	9.21	3.48	.515	490	10.17	4.18	10.70	3.97
65+ Years	.550	103	10.29	4.23	11.01	3.97	.601	72	8.94	3.95	8.88	3.55	.584	175	9.74	4.16	10.13	3.93
SOCIAL CLASS																		
AB	.532	163	12.72	4.42	13.09	4.08	.575	172	9.87	4.72	10.12	4.03	.600	335	11.26	4.79	11.57	4.31
C1	.612	220	12.31	4.68	13.26	4.26	.473	215	9.18	3.83	9.70	3.53	.618	435	10.76	4.55	11.50	4.30
C2	.518	381	12.31	4.14	12.74	3.89	.529	360	9.24	3.95	9.62	3.80	.587	741	10.82	4.33	11.22	4.15
DE	.513	238	12.11	4.13	11.75	3.77	.337	254	9.78	3.78	9.31	3.60	.489	492	10.91	4.12	10.49	3.87
TIME TAKEN																		
1-60 mins	.605	135	12.08	4.28	12.49	3.88	.556	124	9.98	4.33	9.41	3.80	.613	259	11.07	4.42	11.02	4.13
61-80 mins	.561	354	12.72	4.47	13.00	4.23	.477	316	9.63	3.99	9.88	3.66	.586	670	11.26	4.52	11.53	4.26
81+ mins	.475	346	11.86	3.99	12.27	3.90	.466	279	9.29	3.94	9.51	3.81	.526	625	10.71	4.17	11.03	4.09

TABLE 108

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR F

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.672	234	15.97	4.72	16.70	4.48	.632	255	15.31	4.69	15.76	4.35	.654	489	15.63	4.71	16.21	4.43
25-44 Years	.588	401	12.50	4.85	14.24	4.64	.620	452	12.47	4.75	14.24	4.50	.604	853	12.49	4.79	14.24	4.57
45-64 Years	.572	266	10.45	4.36	11.83	4.80	.450	224	10.30	4.08	12.06	3.99	.522	490	10.38	4.23	11.93	4.45
65+ Years	.437	103	9.56	4.51	10.61	3.83	.642	72	9.54	4.10	11.18	4.01	.516	175	9.55	4.33	10.85	3.90
SOCIAL CLASS																		
AB	.639	163	11.48	5.31	12.79	5.15	.663	172	12.50	5.15	13.58	4.72	.653	335	12.01	5.25	13.20	4.94
C1	.725	220	12.90	5.69	14.54	5.54	.704	215	13.32	5.35	14.53	4.92	.715	435	13.11	5.52	14.54	5.24
C2	.616	381	12.65	4.79	14.00	4.78	.592	360	12.46	4.59	14.21	4.40	.604	741	12.56	4.69	14.10	4.60
DE	.641	238	12.42	5.01	13.50	4.59	.612	254	11.89	4.85	13.20	4.32	.628	492	12.15	4.93	13.35	4.45
TIME TAKEN																		
1-60 mins	.684	135	11.77	5.34	13.64	5.07	.646	124	13.18	4.67	14.65	4.70	.672	259	12.44	5.07	14.12	4.91
61-80 mins	.653	354	12.86	5.01	14.12	4.98	.638	316	12.66	5.16	14.08	4.77	.646	670	12.77	5.08	14.10	4.87
81+ mins	.633	346	12.19	4.76	13.35	4.77	.601	279	11.91	4.72	13.46	4.25	.618	625	12.07	4.74	13.40	4.54

TABLE 109

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR G.

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.516	234	10.01	3.93	11.06	3.09	.464	255	10.42	3.40	11.47	2.97	.493	489	10.22	3.66	11.28	3.03
25-44 Years	.451	401	12.42	3.45	12.10	2.92	.422	452	11.88	3.18	12.96	2.80	.418	853	12.13	3.32	12.55	2.89
45-64 Years	.357	266	13.79	3.23	13.30	2.81	.384	224	13.41	3.07	13.78	2.98	.362	490	13.61	3.16	13.52	2.89
65+ Years	.334	103	13.86	3.28	12.95	3.02	.377	72	13.96	2.72	13.26	2.36	.347	175	13.90	3.06	13.08	2.76
SOCIAL CLASS																		
AB	.583	163	13.05	4.08	12.16	3.32	.581	172	12.31	3.64	13.39	3.14	.551	335	12.67	3.87	12.79	3.28
C1	.532	220	12.20	3.80	12.04	3.24	.535	215	12.04	3.60	13.09	2.89	.522	435	12.12	3.70	12.56	3.11
C2	.471	381	12.42	3.63	12.42	2.97	.433	360	11.85	3.21	12.33	2.87	.454	741	12.14	3.44	12.38	2.92
DE	.402	238	12.00	3.71	12.27	2.79	.367	254	12.01	3.26	12.76	2.97	.381	492	12.00	3.48	12.53	2.98
TIME TAKEN																		
1-60 mins	.451	135	11.99	3.85	12.51	3.06	.530	124	11.73	3.59	12.55	3.48	.487	259	11.86	3.72	12.53	3.26
61-80 mins	.550	354	12.13	3.78	12.05	3.16	.406	316	11.81	3.29	12.83	2.96	.479	670	11.98	3.56	12.42	3.09
81+ mins	.425	346	12.71	3.72	12.45	2.89	.452	279	12.68	3.39	13.10	2.80	.433	625	12.70	3.57	12.74	2.66

TABLE 110

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR H

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.694	234	14.33	5.44	14.23	5.63	.731	255	11.98	5.42	11.16	5.83	.728	489	13.11	5.55	12.63	5.93
25-44 Years	.733	401	13.27	5.48	13.57	5.54	.766	452	11.95	5.36	11.98	5.79	.754	853	12.57	5.45	12.73	5.73
45-64 Years	.744	266	12.91	5.49	14.06	5.57	.723	224	11.21	5.10	11.92	5.69	.741	490	12.13	5.38	13.08	5.72
65+ Years	.629	103	12.39	5.47	14.26	6.15	.665	72	11.10	5.63	12.00	5.76	.648	175	11.86	5.56	13.33	6.08
SOCIAL CLASS																		
AB	.752	163	13.87	5.60	14.44	5.95	.777	172	13.01	5.61	13.74	6.00	.766	335	13.43	5.62	14.08	5.98
C1	.758	220	13.31	5.91	14.54	5.67	.760	215	12.18	5.78	12.78	5.88	.761	435	12.75	5.87	13.67	5.84
C2	.689	381	13.44	5.33	13.93	5.58	.726	360	11.38	5.15	11.11	5.69	.720	741	12.44	5.34	12.56	5.81
DE	.662	238	12.84	5.29	12.98	5.37	.664	254	10.97	4.86	10.42	5.15	.676	492	11.87	5.16	11.66	5.40
TIME TAKEN																		
1-60 mins	.731	135	12.87	6.28	13.56	5.85	.738	124	11.61	5.45	11.90	6.27	.734	259	12.27	5.92	12.76	[illegible]
61-80 mins	.741	354	13.49	5.55	13.99	5.77	.729	316	12.21	5.62	11.91	5.90	.739	670	12.89	5.62	13.01	5.92
81+ mins	.674	346	13.18	5.07	13.88	5.44	.734	279	11.45	5.32	11.63	5.77	.712	625	12.41	5.25	12.88	5.70

TABLE 111

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR I

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.497	234	9.08	3.74	7.94	3.31	.323	255	13.27	2.79	10.87	2.72	.559	489	11.27	3.89	9.47	3.35
25-44 Years	.485	401	9.14	3.54	8.22	3.19	.347	452	13.55	2.71	11.72	2.89	.587	853	11.47	3.82	10.08	3.50
45-64 Years	.391	266	9.09	3.19	8.88	3.23	.317	224	13.28	2.89	12.00	2.92	.520	490	11.00	3.70	10.31	3.46
65+ Years	.572	103	9.44	3.00	9.71	3.32	.221	72	13.01	2.83	12.60	2.35	.577	175	10.91	3.41	10.90	3.28
SOCIAL CLASS																		
AB	.578	163	9.64	3.98	9.06	3.57	.364	172	14.01	2.97	12.84	3.00	.626	335	11.88	4.12	11.00	3.79
C1	.507	220	9.22	3.56	8.56	3.51	.397	215	13.83	2.94	12.08	2.79	.611	435	11.50	3.99	10.30	3.63
C2	.407	381	8.79	3.31	7.97	3.11	.285	360	13.01	2.73	11.16	2.73	.531	741	10.84	3.70	9.52	3.34
DE	.384	238	9.28	3.10	8.82	3.00	.140	254	13.05	2.48	11.11	2.71	.423	492	11.23	3.37	10.00	3.08
TIME TAKEN																		
1-60 mins	.497	135	9.22	3.31	8.90	3.54	.295	124	13.56	2.65	11.87	3.08	.548	259	11.30	3.71	10.32	3.64
61-80 mins	.478	354	9.07	3.39	8.38	3.23	.303	316	13.57	2.88	11.53	2.78	.563	670	11.19	3.87	9.87	3.41
81+ mins	.421	346	9.19	3.42	8.46	3.21	.308	279	13.09	2.75	11.82	2.84	.536	625	10.93	3.69	9.96	3.40

TABLE 112

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR L

CLASSIFYING VARIABLE	MALES						FEMALES						BOTH SEXES					
	r	N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.	r	N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.	r	N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.340	234	9.45	3.71	9.44	2.74	.343	255	8.63	3.51	8.66	2.69	.352	489	9.02	3.63	9.03	2.74
25-44 Years	.251	401	8.50	3.42	9.18	2.75	.314	452	7.45	3.34	7.92	2.57	.308	853	7.94	3.42	8.52	2.73
45-64 Years	.260	266	8.38	3.44	8.73	2.48	.270	224	7.52	3.39	7.72	2.67	.281	490	7.99	3.44	8.27	2.61
65+ Years	.188	103	8.25	3.00	8.50	2.62	.212	72	7.90	3.46	8.28	2.37	.199	175	8.11	3.19	8.41	2.52
SOCIAL CLASS																		
AB	.284	163	8.31	3.57	9.21	2.85	.448	172	7.05	3.43	7.70	2.74	.393	335	7.67	3.55	8.44	2.89
C1	.305	220	8.50	3.59	9.22	2.55	.328	215	7.14	2.83	7.64	2.63	.352	435	7.83	3.31	8.44	2.70
C2	.293	381	8.73	3.49	8.97	2.74	.238	360	8.03	3.63	8.20	2.62	.276	741	8.39	3.57	8.59	2.71
DE	.243	238	8.97	3.28	8.91	2.58	.273	254	8.56	3.43	8.60	2.47	.261	492	8.76	3.36	8.75	2.53
TIME TAKEN																		
1-60 mins	.215	135	8.76	3.70	9.29	2.78	.314	124	7.62	3.42	8.29	2.63	.281	259	8.22	3.60	8.81	2.75
61-80 mins	.290	354	8.71	3.51	9.08	2.77	.304	316	7.93	3.16	8.13	2.66	.308	670	8.37	3.37	8.63	2.76
81+ mins	.295	346	8.59	3.32	8.84	2.58	.252	279	7.90	3.52	8.11	2.68	.285	625	8.28	3.43	8.51	2.65

TABLE 113

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR M

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.281	234	12.13	3.45	11.19	3.82	.344	255	11.32	3.60	10.02	3.76	.326	489	11.71	3.55	10.58	3.8[illegible]
25-44 Years	.233	401	12.83	3.34	10.49	3.91	.383	452	11.94	3.79	9.96	3.61	.318	853	12.36	3.61	10.21	3.7[illegible]
45-64 Years	.121	266	12.09	3.60	10.12	3.58	.281	224	11.93	3.29	10.17	3.66	.190	490	12.01	3.46	10.14	3.6[illegible]
65+ Years	.211	103	12.44	3.38	10.13	3.51	.024	72	11.51	3.53	9.50	3.12	.147	175	12.06	3.46	9.87	3.3[illegible]
SOCIAL CLASS																		
AB	.239	163	13.87	3.19	11.56	4.22	.406	172	13.27	3.89	11.47	3.93	.327	335	13.56	3.58	11.51	4.07
C1	.278	220	13.35	3.43	11.25	4.10	.357	215	12.28	3.66	10.36	3.72	.327	435	12.82	3.58	10.81	3.94
C2	.119	381	11.81	3.39	10.27	3.53	.231	360	11.24	3.39	9.51	3.35	.179	741	11.53	3.40	9.90	3.4[illegible]
DE	.052	238	11.59	3.20	9.51	3.20	.234	254	10.96	3.31	9.41	3.44	.151	492	11.26	3.27	9.46	3.3[illegible]
TIME TAKEN																		
1-60 mins	.170	135	12.80	3.50	10.28	3.76	.337	124	11.82	3.27	10.01	3.36	.245	259	12.33	3.42	10.15	3.5[illegible]
61-80 mins	.268	354	12.62	3.47	10.78	3.84	.373	316	11.87	3.57	10.28	3.60	.321	670	12.27	3.54	10.54	3.74
81+ mins	.213	346	12.14	3.33	10.21	3.77	.306	279	11.46	3.79	9.84	3.79	.260	625	11.84	3.55	10.04	[illegible]

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR N.

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.240	234	9.43	2.93	9.35	2.94	.200	255	11.04	3.17	9.65	2.83	.224	489	10.27	3.16	9.51	2.88
25-44 Years	.165	401	10.28	3.09	10.20	2.84	.238	452	11.47	3.06	10.60	2.65	.212	853	10.91	3.13	10.41	2.75
45-64 Years	.201	266	11.26	2.96	11.27	2.93	.272	224	12.58	3.09	11.38	2.61	.230	490	11.86	3.09	11.32	2.78
65+ Years	.055	103	11.79	2.86	11.93	2.92	.113	72	12.81	2.85	12.01	2.50	.078	175	12.21	2.89	11.97	2.75
SOCIAL CLASS																		
AB	.165	163	10.58	3.27	10.90	3.26	.225	172	11.51	3.11	10.90	2.99	.192	335	11.06	3.22	10.90	3.12
C1	.400	220	10.05	3.17	10.48	3.30	.396	215	11.23	3.29	10.74	2.98	.398	435	10.63	3.28	10.61	3.14
C2	.185	381	10.48	3.11	10.29	2.90	.262	360	11.84	3.15	10.51	2.59	.223	741	11.14	3.20	10.39	2.75
DE	.219	238	10.89	2.83	10.45	2.72	.177	254	12.03	2.99	10.52	2.68	.196	492	11.48	2.97	10.48	2.70
TIME TAKEN																		
1-60 mins	.198	135	10.50	2.83	10.47	3.34	.256	124	11.27	3.19	10.14	3.02	.216	259	10.86	3.03	10.31	3.19
61-80 mins	.235	354	10.40	3.06	10.17	3.00	.371	316	11.64	3.11	10.53	2.75	.302	670	10.98	3.14	10.34	2.88
81+ mins	.235	346	10.66	3.09	10.83	2.86	.192	279	11.98	3.19	11.06	2.68	.219	625	11.25	3.20	10.93	2.79

TABLE 114

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR N.

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.240	234	9.43	2.93	9.35	2.94	.200	255	11.04	3.17	9.65	2.83	.224	489	10.27	3.16	9.51	2.88
25-44 Years	.165	401	10.28	3.09	10.20	2.84	.238	452	11.47	3.06	10.60	2.65	.212	853	10.91	3.13	10.41	2.75
45-64 Years	.201	266	11.26	2.96	11.27	2.93	.272	224	12.58	3.09	11.38	2.61	.230	490	11.86	3.09	11.32	2.78
65+ Years	.055	103	11.79	2.86	11.93	2.92	.113	72	12.81	2.85	12.01	2.50	.078	175	12.21	2.89	11.97	2.75
SOCIAL CLASS																		
AB	.165	163	10.58	3.27	10.90	3.26	.225	172	11.51	3.11	10.90	2.99	.192	335	11.06	3.22	10.90	3.12
C1	.400	220	10.05	3.17	10.48	3.30	.396	215	11.23	3.29	10.74	2.98	.398	435	10.63	3.28	10.61	3.14
C2	.185	381	10.48	3.11	10.29	2.90	.262	360	11.84	3.15	10.51	2.59	.223	741	11.14	3.20	10.39	2.75
DE	.219	238	10.89	2.83	10.45	2.72	.177	254	12.03	2.99	10.52	2.68	.196	492	11.48	2.97	10.48	2.70
TIME TAKEN																		
1-60 mins	.198	135	10.50	2.83	10.47	3.34	.256	124	11.27	3.19	10.14	3.02	.216	259	10.86	3.03	10.31	3.19
61-80 mins	.235	354	10.40	3.06	10.17	3.00	.371	316	11.64	3.11	10.53	2.75	.302	670	10.98	3.14	10.34	2.88
81+ mins	.235	346	10.66	3.09	10.83	2.86	.192	279	11.98	3.19	11.06	2.68	.219	625	11.25	3.20	10.93	2.79

TABLE 115

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR O

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.598	234	10.60	4.43	9.87	4.86	.505	255	13.07	3.93	13.27	4.23	.598	489	11.89	4.35	11.64	4.85
25-44 Years	.554	401	10.12	4.30	9.34	4.45	.602	452	12.47	4.00	12.55	4.55	.616	853	11.37	4.30	11.04	4.78
45-64 Years	.526	266	10.14	4.23	9.57	4.30	.539	224	12.46	4.13	12.96	4.54	.574	490	11.20	4.34	11.12	4.72
65+ Years	.558	103	9.56	4.11	9.16	4.64	.672	72	11.68	4.09	11.93	5.02	.633	175	10.43	4.22	10.30	4.98
SOCIAL CLASS																		
AB	.599	163	9.13	4.33	9.41	4.77	.553	172	11.19	3.94	12.23	4.55	.606	335	10.19	4.25	10.86	4.86
C1	.522	220	9.65	4.08	9.10	4.64	.607	215	11.95	4.08	12.42	4,31	.602	435	10.79	4,24	10.74	4.78
C2	.569	381	10.20	4.33	9.36	4.33	.570	360	12.88	3.90	12.93	4.73	.615	741	11.50	4.34	11.09	4.86
DE	.542	238	11.33	4.17	10.15	4.50	.549	254	13.57	3.88	13.30	4.34	.585	492	12.49	4.17	11.77	4.69
TIME TAKEN																		
1-60 mins	.484	135	10.50	3.94	9.67	4.57	.636	124	12.39	3.88	12.71	4.86	.588	259	11.41	4.02	11.13	4.94
61-80 mins	.591	354	9.94	4.37	9.49	4.59	.546	316	12.91	4.03	13.16	4.36	.625	670	11.34	4.46	11.22	4.84
81+ mins	.545	346	10.35	4.15	9.43	4.47	.539	279	12.48	4.05	12.58	4.60	.578	625	11.30	4.24	10.84	4.79

TABLE 116

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR Q1

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.		N	FORM A Mean	FORM A S.D.	FORM B Mean	FORM B S.D.
AGE																		
15-24 Years	.241	234	11.83	3.15	9.74	3,22	.205	255	9.51	3.14	8.62	3.04	.267	489	10.62	3.35	9.16	3.1
25-44 Years	.223	401	10.24	3.23	8.90	2.98	.285	452	7.90	2.99	8.41	2.91	.267	853	9.00	3.32	8.64	2.9
45-64 Years	.070	266	9.17	2.92	7.84	2.68	.135	224	7.63	2.75	8.11	2.74	.082	490	8.46	2.95	7.96	2.7
65+ Years	.103	103	8.47	2.82	7.93	2.64	.212	72	6.65	2.61	7.43	2.51	.167	175	7.72	2.87	7.73	2.5
SOCIAL CLASS																		
AB	.295	163	9.51	3.14	9.38	3.43	.343	172	7.90	3.37	9.31	3.44	.314	335	8.68	3.36	9.34	3.4
C1	.385	220	10.30	3.54	9.42	3.26	.338	215	7.85	3.05	8.53	2,68	.390	435	9.09	3.52	8.98	3.0
C2	.166	381	10.29	3.24	8.31	2.80	.225	360	8.22	3.08	8.04	2.81	.199	741	9.29	3.33	8.18	2.8
DE	.221	238	10.20	3.15	8.25	2.56	.167	254	8.51	2.84	7.90	2.62	.205	492	9.33	3.11	8.07	2.5
TIME TAKEN																		
1-60 mins	.192	135	10.53	3.19	8.53	3.12	.091	124	8.06	3.30	7.81	3.04	.175	259	9.35	3.46	8.19	3.0
61-80 mins	.219	354	10.15	3.44	8.86	3.00	.245	316	8.32	3.12	8.41	2.89	.241	670	9.29	3.41	8.65	2.9
81+ mins	.251	346	9.99	3.09	8.46	3.04	.279	279	8.01	3.07	8.28	2.90	.260	625	9.10	3.24	8.38	2.3

TABLE 117

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR Q2

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
			FORM A		FORM B				FORM A		FORM B				FORM A		FORM B	
		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.
AGE																		
15-24 Years	.465	234	10.54	3.70	8.31	3.11	.323	255	10.49	3.64	8.48	2.98	.393	489	10.51	3.67	8.40	3.04
25-44 Years	.426	401	11.87	3.38	8.84	3.36	.488	452	11.40	3.50	8.32	3.22	.461	853	11.62	3.45	8.56	3.29
45-64 Years	.393	266	11.87	3.26	8.68	3.49	.388	224	11.52	3,30	8.17	3.05	.393	490	11.71	3.28	8.45	3.30
65+ Years	.265	103	12.72	3.39	9.55	3.40	.307	72	12.83	3.48	9.13	3.08	.280	175	12.77	3.42	9.38	3.27
SOCIAL CLASS																		
AB	.418	163	11.98	3.56	8.80	3.86	.514	172	11.18	3.97	8.25	3.43	.468	335	11.57	3.79	8.52	3.65
C1	.483	220	11.68	3.67	8.92	3.42	.436	215	11.25	3.52	8.07	3.20	.464	435	11.47	3.60	8.50	3.34
C2	.432	381	11.55	3.52	8.69	3.19	.411	360	11.19	3.31	8.29	2.98	.425	741	11.37	3.42	8.50	3.10
DE	.304	238	11.58	3.18	8.61	3.12	.294	254	11.56	3.59	8.91	2.96	.297	492	11.57	3.40	8.76	3.04
TIME TAKEN																		
1-60 mins	.498	135	12.39	3.59	9.19	3.76	.504	124	11.62	3.86	8.88	3.11	.498	259	12.02	3.74	9.40	3.46
61-80 mins	.395	354	11.75	3.65	8.82	3.26	.440	316	11.16	3.40	8.36	3.20	.418	670	11.47	3.54	8.60	3.22
81+ mins	.459	346	11.56	3.31	8.70	3.26	.363	279	11.06	3.47	8.26	3.05	.419	625	11.34	3.39	8.50	3.17

TABLE 118

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR Q3

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
			FORM A		FORM B				FORM A		FORM B				FORM A		FORM B	
		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.
AGE																		
15-24 Years	.537	234	11.02	3.34	10.55	3.59	.387	255	10.33	3.26	9.69	3.53	.467	489	10.66	3.31	10.10	3.59
25-44 Years	.527	401	12.68	3.22	12.19	3.27	.422	452	11.92	2.97	11.26	3.46	.479	853	12.28	3.11	11.70	3.40
45-64 Years	.478	266	13.75	3.02	12.82	3.29	.322	224	13.18	2.78	12.27	3.37	.413	490	13.49	2.92	12.57	3.33
65+ Years	.330	103	14.56	2.93	13.38	3.17	.442	72	13.29	2.49	13.17	2.80	.367	175	14.04	2.82	13.29	3.02
SOCIAL CLASS																		
AB	.700	163	13.13	3.74	12.66	3.60	.597	172	12.55	3.46	11.77	3.81	.649	335	12.83	3.61	12.20	3.73
C1	.605	220	12.70	3.67	12,25	3.56	.506	215	12.08	3.22	11.52	3.83	.559	435	12.40	3.47	11.89	3.71
C2	.454	381	12.77	3.08	12.14	3.39	.300	360	11.59	2.98	11.04	3.38	.399	741	12.20	3.09	11.60	3.43
DE	.475	238	12.57	3.23	11.52	3.32	.448	254	11.71	3.06	10.82	3.39	.469	492	12.13	3.17	11.16	3.37
TIME TAKEN																		
1-60 mins	.563	135	12.33	3.13	12.01	3.30	.477	124	11.49	3.36	11.10	3.90	.524	259	11.93	3.26	11.57	3.62
61-80 mins	.537	354	12.70	3.41	12.26	3.45	.399	316	11.80	3.22	11.02	3.42	.486	670	12.27	3.35	11.67	3.49
81+ mins	.544	346	12.99	3.36	12.10	3.47	.498	279	12.40	3.00	11.48	3.51	.527	625	12.72	3.21	11.83	3.50

TABLE 119

THE SIXTEEN PERSONALITY FACTOR QUESTIONNAIRE (16PF)

COEFFICIENTS OF EQUIVALENCE BETWEEN FORMS A AND B FOR BRITISH ADULTS

FACTOR Q4

CLASSIFYING VARIABLE	r	MALES					r	FEMALES					r	BOTH SEXES				
			FORM A		FORM B				FORM A		FORM B				FORM A		FORM B	
		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.		N	Mean	S.D.	Mean	S.D.
AGE																		
15-24 Years	.665	234	12.51	5.10	13.03	5.01	.487	255	15.18	4.36	15.53	4.18	.616	489	13.90	4.91	14.33	4.76
25-44 Years	.701	401	11.98	5.01	11.80	4.93	.600	452	14,26	4.54	14.60	4.54	.674	853	13.19	4.90	13.28	4.93
45-64 Years	.667	266	11.95	4.86	11.20	5.20	.633	224	13.93	4.67	13.81	4.61	.670	490	12.86	4.87	12.39	5.10
65+ Years	.605	103	11.23	4.96	10.07	4.64	.568	72	12.58	4.71	11.94	4.87	.599	175	11.79	4.89	10.84	4.81
SOCIAL CLASS																		
AB	.745	163	11.88	5.28	11.17	5.63	.625	172	13.40	4.92	13.63	4.79	.697	335	12.66	5.15	12.43	5.35
C1	.649	220	11.82	5.01	11.39	4.91	.598	215	14.07	4.58	14.16	4.70	.649	435	12.94	4.93	12.76	5.00
C2	.674	381	11.92	4.93	11.79	4.84	.567	360	14.44	4.49	14.66	4.43	.655	741	13.14	4.88	13.19	4.36
DE	.642	238	12.42	4.90	12.43	5.10	.554	254	14.98	4.29	15.14	4.39	.632	492	13.74	4.77	13.83	4.93
TIME TAKEN																		
1-60 mins	.654	135	12.53	4.81	11.44	5.02	.690	124	15.01	5.10	14.65	4.86	.694	259	13.72	5.09	12.98	5.19
61-80 mins	.694	354	11.90	5.33	12.00	5.14	.570	316	14.44	4.45	14.77	4.54	.668	670	13.09	5.09	13.30	5.09
81+ mins	.671	346	12.05	4.84	11.58	5.04	.562	279	13.92	4.45	13.88	4.46	.644	625	12.89	4.76	12.61	4.93

APPENDIX 12

ITEM ANALYSIS DATA ON THE HSPQ

TABLE 120

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
2	58	257	326		099	$\overline{085}$	132	052	099	$\overline{153}$	013	$\overline{104}$	$\overline{313}$	033	$\overline{283}$	$\overline{194}$	087	0
3	58	174	220		185	009	148	$\overline{044}$	153	221	207	066	$\overline{057}$	$\overline{054}$	$\overline{165}$	048	094	1
4	34	116	150	$\overline{022}$	$\overline{048}$		$\overline{090}$	217	003	$\overline{040}$	145	$\overline{155}$	$\overline{029}$	$\overline{113}$	113	$\overline{018}$	$\overline{198}$	3
5	45	314	396	025	$\overline{042}$		$\overline{233}$	168	$\overline{134}$	188	149	$\overline{025}$	000	$\overline{245}$	174	272	$\overline{300}$	0
6	48	205	258	$\overline{031}$	$\overline{031}$		$\overline{140}$	045	110	132	301	$\overline{025}$	$\overline{121}$	$\overline{224}$	068	112	$\overline{227}$	1
7	54	080	101	$\overline{055}$	046	$\overline{235}$		$\overline{024}$	$\overline{084}$	$\overline{075}$	$\overline{251}$	129	$\overline{032}$	173	$\overline{016}$	$\overline{090}$	330	5
8	53	202	254	020	051	$\overline{057}$	275		206	$\overline{202}$	046	$\overline{320}$	087	069	$\overline{008}$	$\overline{178}$	077	2
9	59	089	113	$\overline{109}$	048	306	$\overline{245}$		$\overline{128}$	037	161	$\overline{147}$	043	$\overline{187}$	170	113	$\overline{272}$	8
10	49	239	300	117	071	$\overline{161}$	279	107		$\overline{355}$	023	$\overline{169}$	016	055	$\overline{181}$	$\overline{219}$	135	1
11	30	148	196	135	074	082	$\overline{025}$	051	089		183	$\overline{014}$	074	$\overline{134}$	$\overline{050}$	227	$\overline{037}$	1
12	48	112	141	$\overline{021}$	$\overline{070}$	305	$\overline{141}$	014	$\overline{053}$	155		143	$\overline{028}$	$\overline{156}$	$\overline{109}$	133	$\overline{224}$	5
13	55	146	183	$\overline{084}$	008	238	$\overline{278}$	$\overline{068}$	$\overline{198}$	086	180		$\overline{035}$	$\overline{106}$	127	255	$\overline{194}$	5
14	40	170	216	$\overline{325}$	$\overline{052}$	$\overline{150}$	269	080	$\overline{041}$	$\overline{129}$	$\overline{243}$	$\overline{009}$		196	267	$\overline{088}$	131	4
15	58	027	034	$\overline{035}$	$\overline{093}$	$\overline{145}$	021	$\overline{068}$	042	063	029	003		$\overline{079}$	118	$\overline{023}$	064	9
16	42	182	231	$\overline{082}$	010	$\overline{412}$	293	$\overline{026}$	$\overline{052}$	$\overline{166}$	$\overline{375}$	011	019		$\overline{037}$	$\overline{279}$	376	5
17	55	170	214	$\overline{218}$	065	173	$\overline{108}$	187	$\overline{195}$	233	092	146	131	$\overline{050}$		203	$\overline{077}$	2
18	45	149	187	$\overline{402}$	$\overline{186}$	$\overline{006}$	036	057	$\overline{096}$	$\overline{171}$	$\overline{123}$	$\overline{060}$	166	176		$\overline{149}$	$\overline{018}$	1
19	48	203	254	$\overline{240}$	$\overline{124}$	140	$\overline{137}$	$\overline{012}$	$\overline{245}$	080	$\overline{006}$	076	122	$\overline{004}$	179		$\overline{059}$	0
20	46	126	159	030	006	$\overline{298}$	127	042	039	$\overline{100}$	$\overline{253}$	$\overline{061}$	$\overline{031}$	252	$\overline{103}$	$\overline{219}$		4
21	46	053	066	$\overline{013}$	$\overline{091}$	$\overline{226}$	143	$\overline{122}$	$\overline{021}$	$\overline{008}$	$\overline{176}$	078	150	175	001	$\overline{016}$		8
22	60	115	146		134	$\overline{078}$	107	$\overline{122}$	125	148	116	109	$\overline{128}$	$\overline{098}$	$\overline{114}$	$\overline{026}$	108	1

TABLE 121

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
23	97	073	184	152		192	092	$\overline{129}$	$\overline{076}$	137	$\overline{136}$	231	$\overline{131}$	027	$\overline{144}$	$\overline{006}$	056	2
24	72	143	190	$\overline{047}$		$\overline{041}$	012	$\overline{054}$	042	020	006	005	107	077	027	$\overline{095}$	$\overline{022}$	0
25	80	138	197	$\overline{099}$	137		015	138	023	185	198	022	139	$\overline{196}$	081	088	$\overline{042}$	1
26	27	072	097	038	011		$\overline{097}$	138	047	089	227	$\overline{128}$	037	$\overline{167}$	052	060	$\overline{202}$	5
27	64	295	379	043	$\overline{098}$	$\overline{301}$		146	123	$\overline{237}$	$\overline{113}$	$\overline{211}$	030	300	$\overline{065}$	$\overline{215}$	405	1
28	58	068	087	$\overline{077}$	$\overline{055}$	$\overline{063}$	292		053	$\overline{147}$	027	$\overline{047}$	007	$\overline{063}$	030	$\overline{202}$	098	4
29	48	134	168	181	$\overline{079}$	066	$\overline{017}$	058		001	260	$\overline{156}$	$\overline{113}$	$\overline{028}$	$\overline{163}$	$\overline{066}$	$\overline{123}$	2
30	28	135	181	$\overline{017}$	$\overline{038}$	068	205	121		002	071	$\overline{030}$	225	$\overline{107}$	056	$\overline{052}$	096	2
31	42	257	325	138	025	124	$\overline{091}$	$\overline{194}$	$\overline{126}$		052	093	$\overline{011}$	$\overline{185}$	$\overline{143}$	289	006	0
32	56	277	348	075	$\overline{137}$	250	$\overline{047}$	113	137	038		$\overline{189}$	001	$\overline{140}$	$\overline{094}$	172	$\overline{161}$	0
33	75	119	163	074	$\overline{018}$	$\overline{161}$	023	$\overline{300}$	$\overline{151}$	008	$\overline{253}$		024	275	$\overline{062}$	$\overline{040}$	267	4
34	67	321	416	$\overline{125}$	104	$\overline{007}$	$\overline{035}$	$\overline{168}$	$\overline{195}$	308	$\overline{131}$		135	$\overline{014}$	137	133	$\overline{014}$	0
35	35	046	059	$\overline{184}$	081	$\overline{020}$	178	183	026	$\overline{118}$	$\overline{052}$	$\overline{132}$		118	094	$\overline{104}$	144	10
36	65	202	260	073	075	$\overline{377}$	049	$\overline{248}$	$\overline{019}$	$\overline{037}$	$\overline{193}$	123	$\overline{011}$		$\overline{062}$	$\overline{056}$	248	1
37	49	235	295	$\overline{454}$	$\overline{131}$	$\overline{025}$	$\overline{039}$	017	$\overline{279}$	$\overline{241}$	$\overline{317}$	033	207	121		$\overline{045}$	013	2
38	45	277	349	$\overline{471}$	$\overline{136}$	017	$\overline{210}$	$\overline{091}$	$\overline{445}$	047	$\overline{336}$	114	284	122		266	$\overline{054}$	2
39	34	225	292	103	013	166	$\overline{164}$	$\overline{173}$	$\overline{084}$	341	161	063	043	$\overline{264}$	$\overline{059}$		$\overline{037}$	1
40	32	171	224	005	$\overline{003}$	$\overline{214}$	283	$\overline{088}$	063	$\overline{170}$	$\overline{131}$	039	132	175	$\overline{160}$	$\overline{171}$		1
41	54	214	270	110	027	$\overline{399}$	434	$\overline{004}$	278	$\overline{255}$	$\overline{127}$	$\overline{144}$	$\overline{065}$	222	$\overline{186}$	$\overline{395}$		4
42	35	-050	-064		063	220	$\overline{271}$	046	$\overline{018}$	019	190	$\overline{001}$	$\overline{042}$	$\overline{077}$	048	047	$\overline{268}$	5
43	75	168	229	099		010	$\overline{016}$	$\overline{024}$	035	114	103	050	053	014	016	$\overline{080}$	009	0

TABLE 122

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
44	87	074	119	003		151	060	112	004	085	107	$\overline{050}$	084	$\overline{094}$	063	$\overline{099}$	$\overline{026}$	1
45	52	117	147	041	$\overline{048}$		$\overline{246}$	$\overline{205}$	$\overline{266}$	349	071	166	$\overline{034}$	$\overline{202}$	$\overline{062}$	313	$\overline{048}$	7
46	62	165	210	$\overline{073}$	085	$\overline{061}$		016	217	$\overline{186}$	$\overline{075}$	$\overline{054}$	129	000	$\overline{019}$	$\overline{232}$	259	3
47	45	133	167	218	199	$\overline{214}$		$\overline{036}$	241	$\overline{148}$	071	011	$\overline{010}$	141	$\overline{094}$	$\overline{121}$	154	4
48	61	086	110	227	115	132	$\overline{089}$		202	$\overline{079}$	170	$\overline{139}$	$\overline{065}$	$\overline{145}$	$\overline{150}$	$\overline{068}$	$\overline{147}$	9
49	52	203	254	252	317	$\overline{204}$	178	$\overline{044}$		$\overline{100}$	052	005	040	081	$\overline{285}$	226	055	2
50	40	274	348	305	043	014	190	$\overline{022}$		$\overline{077}$	247	$\overline{057}$	$\overline{159}$	$\overline{120}$	$\overline{300}$	$\overline{168}$	004	0
51	34	166	215	$\overline{028}$	033	224	076	$\overline{006}$	$\overline{083}$		179	$\overline{009}$	033	$\overline{076}$	010	191	$\overline{005}$	1
52	47	237	297	072	094	384	$\overline{258}$	180	045	003		$\overline{157}$	$\overline{062}$	$\overline{254}$	057	091	$\overline{357}$	2
53	55	198	249	$\overline{175}$	$\overline{053}$	117	$\overline{060}$	$\overline{126}$	$\overline{253}$	237	$\overline{114}$		052	044	100	119	$\overline{019}$	1
54	63	084	108	220	223	$\overline{052}$	080	$\overline{110}$	190	$\overline{053}$	032		$\overline{080}$	$\overline{027}$	$\overline{019}$	$\overline{117}$	098	5
55	46	115	145	$\overline{309}$	037	036	$\overline{043}$	029	$\overline{155}$	021	$\overline{144}$	133		096	359	041	032	3
56	53	166	208	$\overline{143}$	$\overline{043}$	$\overline{214}$	149	117	114	$\overline{275}$	$\overline{092}$	$\overline{014}$	098		104	$\overline{245}$	042	3
57	51	255	320	$\overline{293}$	$\overline{059}$	$\overline{206}$	124	006	$\overline{033}$	$\overline{216}$	$\overline{153}$	010	193		222	$\overline{142}$	108	0
58	48	213	268	$\overline{245}$	$\overline{014}$	082	$\overline{126}$	$\overline{061}$	$\overline{280}$	151	$\overline{154}$	134	218	101		218	022	1
59	57	195	246	$\overline{164}$	$\overline{038}$	276	$\overline{303}$	022	$\overline{328}$	190	016	155	$\overline{062}$	$\overline{077}$	290		$\overline{152}$	4
60	59	251	318	$\overline{063}$	$\overline{054}$	$\overline{251}$	212	$\overline{167}$	$\overline{080}$	$\overline{003}$	$\overline{434}$	078	$\overline{033}$	326	011	$\overline{148}$		2
61	50	156	196	$\overline{132}$	$\overline{029}$	$\overline{178}$	263	$\overline{200}$	$\overline{134}$	146	$\overline{299}$	310	086	089	$\overline{085}$	062		4
62	67	115	150		149	028	025	$\overline{032}$	187	146	030	042	$\overline{115}$	$\overline{174}$	$\overline{204}$	$\overline{035}$	$\overline{028}$	3
63	80	201	287	048		034	200	075	$\overline{002}$	049	069	056	052	$\overline{001}$	117	003	066	0
64	84	133	201	158		$\overline{017}$	$\overline{094}$	069	$\overline{085}$	132	$\overline{104}$	158	$\overline{128}$	$\overline{138}$	$\overline{023}$	$\overline{003}$	026	0

TABLE 123

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
65	54	291	366	$\overline{105}$	050		$\overline{370}$	108	$\overline{252}$	223	235	012	$\overline{056}$	$\overline{236}$	128	195	$\overline{300}$	1
66	42	232	294	$\overline{070}$	085	$\overline{169}$		275	152	$\overline{193}$	$\overline{040}$	$\overline{100}$	069	248	074	$\overline{219}$	190	0
67	51	252	316	039	205	$\overline{333}$		$\overline{001}$	284	$\overline{113}$	$\overline{138}$	$\overline{007}$	125	262	003	$\overline{164}$	276	1
68	24	015	021	$\overline{257}$	$\overline{131}$	094	$\overline{211}$		$\overline{257}$	$\overline{102}$	$\overline{125}$	$\overline{106}$	062	011	215	$\overline{023}$	034	12
69	59	216	274	323	101	$\overline{064}$	177	$\overline{083}$		083	232	$\overline{114}$	$\overline{036}$	$\overline{142}$	$\overline{215}$	$\overline{186}$	031	1
70	30	396	522	263	065	$\overline{168}$	312	$\overline{004}$		$\overline{265}$	027	$\overline{142}$	$\overline{188}$	059	$\overline{276}$	$\overline{398}$	180	0
71	74	213	288	012	037	153	$\overline{136}$	$\overline{132}$	$\overline{105}$		099	264	004	$\overline{134}$	059	253	$\overline{101}$	0
72	30	231	304	056	$\overline{157}$	261	$\overline{167}$	165	144	$\overline{040}$		$\overline{151}$	048	$\overline{228}$	044	153	$\overline{331}$	1
73	68	334	436	$\overline{059}$	120	$\overline{016}$	$\overline{055}$	$\overline{224}$	$\overline{212}$	257	150		$\overline{013}$	$\overline{060}$	094	210	041	0
74	69	178	234	$\overline{281}$	$\overline{125}$	060	$\overline{036}$	$\overline{223}$	$\overline{184}$	115	$\overline{001}$		087	046	112	269	040	2
75	23	110	152	$\overline{332}$	$\overline{094}$	$\overline{144}$	045	082	$\overline{115}$	$\overline{202}$	$\overline{156}$	$\overline{076}$		138	195	037	092	4
76	38	035	045	$\overline{147}$	$\overline{018}$	$\overline{102}$	036	$\overline{073}$	$\overline{100}$	005	$\overline{041}$	098	054		070	$\overline{059}$	162	9
77	42	-056	-070	126	151	$\overline{152}$	276	$\overline{013}$	221	$\overline{001}$	063	$\overline{075}$	$\overline{026}$		$\overline{149}$	$\overline{091}$	202	9
78	27	173	233	$\overline{246}$	142	129	006	225	$\overline{103}$	109	$\overline{016}$	029	174	024		120	$\overline{101}$	1
79	63	155	198	$\overline{091}$	$\overline{136}$	163	$\overline{299}$	$\overline{113}$	$\overline{207}$	180	103	229	$\overline{094}$	$\overline{180}$	126		$\overline{224}$	4
80	53	199	250	$\overline{159}$	$\overline{075}$	263	$\overline{348}$	152	$\overline{383}$	280	057	082	026	$\overline{219}$	147		$\overline{213}$	4
81	45	078	099	$\overline{038}$	065	$\overline{054}$	219	126	151	$\overline{020}$	055	$\overline{135}$	035	097	$\overline{002}$	$\overline{057}$		4
82	64	293	376		091	072	$\overline{080}$	014	197	$\overline{043}$	160	$\overline{071}$	$\overline{211}$	$\overline{099}$	$\overline{284}$	$\overline{144}$	$\overline{007}$	0
83	74	246	333	126		$\overline{009}$	021	093	135	187	$\overline{037}$	033	103	$\overline{085}$	012	052	086	0
84	67	268	349	135		$\overline{039}$	025	073	185	126	063	050	118	004	$\overline{027}$	$\overline{118}$	073	0
85	61	156	198	$\overline{070}$	$\overline{130}$		$\overline{207}$	$\overline{042}$	$\overline{234}$	251	159	022	$\overline{056}$	$\overline{233}$	051	261	$\overline{286}$	6

TABLE 124

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
86	56	277	349	072	110	$\overline{277}$		$\overline{005}$	134	$\overline{165}$	$\overline{249}$	$\overline{081}$	048	255	$\overline{078}$	$\overline{302}$	335	0
87	49	205	258	190	091	$\overline{214}$		061	404	$\overline{090}$	104	$\overline{160}$	125	138	$\overline{149}$	$\overline{291}$	156	2
88	42	-039	-049	$\overline{254}$	120	044	$\overline{138}$		$\overline{402}$	157	$\overline{227}$	049	132	043	377	321	$\overline{024}$	9
89	40	307	390	167	035	031	072	045		$\overline{040}$	248	$\overline{155}$	$\overline{065}$	$\overline{048}$	$\overline{138}$	$\overline{165}$	$\overline{077}$	0
90	43	315	398	$\overline{082}$	007	187	$\overline{313}$	$\overline{084}$	$\overline{294}$		$\overline{068}$	231	068	$\overline{209}$	170	354	$\overline{083}$	0
91	47	338	425	092	137	101	$\overline{095}$	$\overline{228}$	$\overline{146}$		072	155	$\overline{066}$	$\overline{128}$	$\overline{098}$	215	049	0
92	28	211	283	288	168	$\overline{024}$	196	014	394	193		013	062	083	$\overline{186}$	060	$\overline{053}$	2
93	39	291	371	253	$\overline{027}$	160	069	042	192	060		$\overline{075}$	063	$\overline{235}$	$\overline{108}$	146	$\overline{203}$	0
94	61	328	417	$\overline{127}$	047	000	$\overline{087}$	$\overline{242}$	$\overline{160}$	278	$\overline{101}$		082	$\overline{028}$	154	174	$\overline{077}$	0
95	40	082	103	$\overline{065}$	$\overline{005}$	067	144	$\overline{013}$	204	$\overline{004}$	201	024		$\overline{007}$	053	$\overline{056}$	007	3
96	26	167	226	$\overline{247}$	089	$\overline{229}$	223	$\overline{046}$	$\overline{141}$	$\overline{196}$	$\overline{175}$	034	210		205	$\overline{126}$	211	2
97	55	035	045	$\overline{121}$	$\overline{273}$	$\overline{007}$	036	$\overline{138}$	$\overline{123}$	$\overline{113}$	$\overline{105}$	$\overline{039}$	102		034	$\overline{145}$	077	9
98	51	-001	-001	$\overline{116}$	055	194	$\overline{051}$	247	107	008	219	$\overline{166}$	083	$\overline{051}$		017	$\overline{203}$	13
99	44	-037	-046	089	091	$\overline{047}$	165	087	241	046	293	$\overline{044}$	085	$\overline{138}$	$\overline{087}$		$\overline{066}$	11
100	58	008	010	$\overline{208}$	$\overline{143}$	$\overline{016}$	$\overline{036}$	$\overline{174}$	$\overline{250}$	016	$\overline{095}$	204	041	097	147		$\overline{014}$	13
101	84	228	345	051	$\overline{117}$	$\overline{261}$	194	$\overline{201}$	$\overline{100}$	037	$\overline{260}$	118	$\overline{000}$	200	$\overline{070}$	$\overline{087}$		0
102	52	031	039		$\overline{017}$	096	046	189	138	$\overline{069}$	161	$\overline{248}$	$\overline{156}$	$\overline{074}$	$\overline{215}$	$\overline{042}$	$\overline{067}$	12
103	41	249	315		125	041	$\overline{020}$	090	365	037	388	$\overline{150}$	$\overline{164}$	$\overline{190}$	$\overline{334}$	023	$\overline{134}$	3
104	63	246	315	084		$\overline{092}$	151	048	116	105	024	011	033	$\overline{006}$	$\overline{041}$	108	$\overline{006}$	0
105	27	265	357	$\overline{082}$	$\overline{157}$		$\overline{181}$	138	$\overline{085}$	010	201	$\overline{055}$	$\overline{097}$	$\overline{272}$	047	174	$\overline{277}$	0
106	67	191	248	009	$\overline{045}$	$\overline{144}$		$\overline{077}$	100	$\overline{033}$	$\overline{181}$	066	$\overline{003}$	076	$\overline{082}$	$\overline{158}$	370	1

TABLE 125

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
107	41	113	144	161	$\overline{043}$	373	$\overline{151}$		176	$\overline{048}$	372	$\overline{212}$	$\overline{120}$	$\overline{274}$	$\overline{113}$	099	$\overline{306}$	8
108	36	141	181	$\overline{105}$	$\overline{134}$	030	001		048	$\overline{116}$	055	$\overline{340}$	086	$\overline{088}$	162	$\overline{049}$	$\overline{008}$	1
109	58	102	129	071	$\overline{101}$	$\overline{118}$	203	$\overline{025}$		$\overline{171}$	128	$\overline{124}$	$\overline{077}$	147	$\overline{117}$	$\overline{188}$	096	4
110	47	252	316	$\overline{217}$	063	288	$\overline{305}$	$\overline{084}$	$\overline{338}$		$\overline{102}$	236	175	$\overline{136}$	255	336	$\overline{128}$	2
111	46	129	162	027	107	289	$\overline{276}$	023	$\overline{106}$		144	050	$\overline{072}$	$\overline{169}$	$\overline{008}$	146	$\overline{171}$	4
112	51	226	283	$\overline{041}$	$\overline{081}$	358	$\overline{293}$	$\overline{007}$	$\overline{001}$	122		$\overline{025}$	$\overline{100}$	$\overline{323}$	013	244	$\overline{334}$	4
113	49	116	146	399	026	$\overline{053}$	088	$\overline{137}$	317	$\overline{011}$		$\overline{089}$	$\overline{272}$	$\overline{101}$	$\overline{472}$	$\overline{160}$	$\overline{005}$	5
114	58	264	334	018	053	$\overline{018}$	$\overline{044}$	$\overline{266}$	$\overline{055}$	077	$\overline{049}$		004	$\overline{005}$	$\overline{086}$	047	032	0
115	37	083	106	$\overline{203}$	007	$\overline{009}$	$\overline{032}$	$\overline{074}$	$\overline{194}$	102	$\overline{193}$	084		038	149	121	068	5
116	45	145	183	017	121	$\overline{177}$	082	$\overline{047}$	$\overline{068}$	126	$\overline{111}$	088		170	052	$\overline{088}$	113	0
117	64	151	194	$\overline{133}$	040	$\overline{202}$	089	$\overline{027}$	$\overline{177}$	$\overline{041}$	$\overline{368}$	027	$\overline{001}$		141	$\overline{184}$	187	2
118	45	-093	-117	084	012	$\overline{127}$	194	$\overline{083}$	074	$\overline{001}$	023	120	128	$\overline{057}$		$\overline{024}$	189	5
119	61	161	205	076	128	040	123	$\overline{116}$	$\overline{021}$	363	052	063	$\overline{069}$	$\overline{220}$	$\overline{139}$		$\overline{022}$	2
120	32	093	121	$\overline{084}$	024	420	$\overline{140}$	166	030	144	325	$\overline{063}$	004	$\overline{285}$	103		$\overline{308}$	7
121	52	171	214	081	120	$\overline{284}$	357	076	172	$\overline{188}$	$\overline{147}$	$\overline{102}$	109	235	083	$\overline{271}$		4
122	49	229	288		$\overline{009}$	$\overline{203}$	061	$\overline{040}$	189	$\overline{271}$	010	$\overline{168}$	$\overline{261}$	$\overline{048}$	$\overline{330}$	$\overline{235}$	030	1
123	67	312	406		014	$\overline{073}$	085	$\overline{178}$	221	$\overline{040}$	057	058	$\overline{314}$	$\overline{005}$	$\overline{461}$	$\overline{085}$	063	1
124	58	082	104	047		$\overline{114}$	048	048	051	$\overline{094}$	008	064	036	069	$\overline{130}$	$\overline{035}$	$\overline{059}$	2
125	52	129	162	218	038		$\overline{195}$	012	137	326	303	$\overline{027}$	$\overline{029}$	$\overline{374}$	$\overline{067}$	174	$\overline{239}$	7

TABLE 126

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (BISERIALS)

ITEM NO.	ITEM MEAN	CORRECTED DICHOTOMISED POINT BISERIAL r WITH OWN SCALE	CORRECTED DICHOTOMISED BISERIAL r WITH OWN SCALE	DICHOTOMISED BISERIAL r WITH REMAINING SCALES														NO HIGHER* EXTRA THAN INTRA BISERIAL r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
126	49	198	249	$\overline{008}$	$\overline{108}$	$\overline{030}$		$\overline{146}$	$\overline{006}$	024	$\overline{009}$	063	108	118	003	$\overline{005}$	173	0
127	37	177	226	$\overline{090}$	$\overline{054}$	$\overline{041}$	080		106	$\overline{195}$	122	$\overline{279}$	138	$\overline{066}$	088	$\overline{088}$	$\overline{042}$	1
128	42	037	047	036	090	$\overline{124}$	130		155	$\overline{125}$	$\overline{080}$	$\overline{146}$	$\overline{022}$	014	$\overline{016}$	$\overline{076}$	065	9
129	51	093	117	004	151	$\overline{029}$	102	205		$\overline{147}$	082	$\overline{229}$	$\overline{012}$	096	$\overline{038}$	$\overline{213}$	077	5
130	40	205	261	125	155	136	027	058	092		140	015	030	$\overline{089}$	$\overline{003}$	164	$\overline{026}$	0
131	32	052	068	$\overline{092}$	$\overline{040}$	020	074	$\overline{253}$	$\overline{068}$		$\overline{095}$	161	023	036	004	050	087	6
132	70	160	212	137	178	291	$\overline{135}$	226	178	196		052	018	$\overline{121}$	052	182	$\overline{154}$	2
133	52	199	250	$\overline{009}$	$\overline{020}$	225	$\overline{123}$	161	203	$\overline{134}$		$\overline{295}$	$\overline{048}$	$\overline{236}$	033	066	$\overline{273}$	2
134	58	138	174	068	015	$\overline{312}$	212	$\overline{243}$	054	$\overline{076}$	$\overline{145}$		033	173	$\overline{102}$	$\overline{148}$	286	4
135	39	097	124	$\overline{272}$	057	155	$\overline{156}$	104	$\overline{244}$	139	041	066		$\overline{004}$	298	230	$\overline{049}$	7
136	41	094	119	$\overline{094}$	160	002	179	179	188	013	283	022		069	213	032	009	6
137	40	216	275	$\overline{033}$	006	$\overline{415}$	361	$\overline{159}$	092	$\overline{142}$	$\overline{317}$	$\overline{030}$	133		$\overline{035}$	$\overline{243}$	309	4
138	52	259	325	$\overline{253}$	$\overline{025}$	231	$\overline{164}$	048	$\overline{391}$	217	$\overline{079}$	196	172	$\overline{076}$		228	$\overline{115}$	1
139	58	068	086	$\overline{092}$	003	054	040	136	079	$\overline{133}$	$\overline{018}$	$\overline{188}$	179	011		$\overline{062}$	$\overline{055}$	5
140	43	321	405	023	$\overline{047}$	187	$\overline{243}$	098	$\overline{290}$	366	066	157	030	$\overline{236}$	123		$\overline{178}$	0
141	69	166	218	046	056	$\overline{347}$	275	216	$\overline{008}$	$\overline{044}$	$\overline{341}$	116	082	301	064	$\overline{130}$		4

TABLE 127

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMEN r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
2	1.20	493	243		067	$\overline{059}$	118	056	073	$\overline{134}$	005	$\overline{100}$	$\overline{248}$	040	$\overline{222}$	$\overline{149}$	086	1
3	1.45	370	175		123	049	086	$\overline{022}$	145	171	227	041	$\overline{032}$	$\overline{079}$	$\overline{109}$	063	024	1
4	.54	365	138	000	$\overline{019}$		$\overline{107}$	144	017	$\overline{022}$	112	$\overline{096}$	$\overline{062}$	$\overline{123}$	078	011	$\overline{197}$	2
5	.75	520	291	008	$\overline{028}$		$\overline{215}$	111	$\overline{117}$	176	112	$\overline{029}$	$\overline{014}$	$\overline{212}$	144	229	$\overline{264}$	0
6	.88	456	197	$\overline{004}$	$\overline{024}$		$\overline{114}$	026	097	118	240	$\overline{012}$	$\overline{099}$	$\overline{185}$	039	093	$\overline{177}$	1
7	1.18	334	086	$\overline{068}$	018	$\overline{148}$		$\overline{011}$	$\overline{083}$	$\overline{069}$	$\overline{168}$	091	$\overline{014}$	122	022	$\overline{063}$	242	5
8	.78	443	184	077	056	$\overline{061}$	249		165	$\overline{173}$	$\overline{003}$	$\overline{266}$	069	047	$\overline{042}$	$\overline{123}$	069	2
9	.83	322	059	$\overline{053}$	044	192	$\overline{161}$		$\overline{071}$	007	102	$\overline{098}$	014	$\overline{139}$	154	072	$\overline{223}$	9
10	.88	483	254	121	108	$\overline{149}$	236	088		$\overline{284}$	019	$\overline{116}$	039	041	$\overline{155}$	$\overline{190}$	123	1
11	1.19	331	159	044	110	045	$\overline{030}$	024	016		076	$\overline{009}$	054	$\overline{036}$	$\overline{001}$	145	$\overline{008}$	0
12	.89	367	110	019	$\overline{043}$	233	$\overline{129}$	017	$\overline{023}$	144		120	$\overline{029}$	$\overline{124}$	$\overline{096}$	091	$\overline{186}$	6
13	.91	435	206	$\overline{036}$	047	153	$\overline{246}$	$\overline{077}$	$\overline{172}$	069	108		$\overline{007}$	$\overline{058}$	106	229	$\overline{161}$	2
14	.61	408	157	$\overline{248}$	$\overline{053}$	$\overline{156}$	203	044	$\overline{049}$	$\overline{107}$	$\overline{208}$	$\overline{014}$		145	196	$\overline{063}$	147	4
15	1.31	323	043	$\overline{063}$	$\overline{090}$	$\overline{124}$	042	$\overline{018}$	039	000	027	$\overline{028}$		$\overline{030}$	109	$\overline{053}$	066	6
16	1.01	447	193	$\overline{113}$	$\overline{014}$	$\overline{320}$	226	$\overline{005}$	$\overline{054}$	$\overline{149}$	$\overline{304}$	$\overline{027}$	056		$\overline{010}$	$\overline{224}$	311	5
17	.83	378	141	$\overline{127}$	071	122	$\overline{099}$	154	$\overline{155}$	193	049	112	135	$\overline{044}$		154	$\overline{043}$	4
18	.67	396	166	$\overline{297}$	$\overline{150}$	$\overline{049}$	031	014	$\overline{089}$	$\overline{126}$	$\overline{151}$	$\overline{017}$	169	171		$\overline{113}$	000	3
19	.87	465	216	$\overline{151}$	$\overline{046}$	105	$\overline{124}$	$\overline{019}$	$\overline{204}$	113	$\overline{004}$	076	096	$\overline{025}$	115		$\overline{059}$	0
20	1.09	353	097	005	004	$\overline{189}$	136	085	022	$\overline{107}$	$\overline{185}$	$\overline{063}$	$\overline{033}$	208	$\overline{077}$	195		6
21	1.17	276	028	$\overline{080}$	$\overline{068}$	$\overline{137}$	068	$\overline{086}$	$\overline{067}$	$\overline{025}$	$\overline{124}$	074	133	143	036	030		12

TABLE 128

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
22	1.29	368	115		085	$\overline{046}$	094	$\overline{084}$	104	121	101	105	$\overline{087}$	$\overline{084}$	$\overline{094}$	003	088	1
23	.97	175	073	061		076	037	$\overline{051}$	$\overline{030}$	054	$\overline{054}$	092	$\overline{052}$	011	$\overline{057}$	$\overline{002}$	022	2
24	.72	403	143	$\overline{035}$		$\overline{031}$	009	$\overline{041}$	031	015	004	004	080	057	020	$\overline{071}$	$\overline{017}$	0
25	.97	312	141	062	075		$\overline{030}$	073	083	167	157	021	017	$\overline{198}$	011	084	$\overline{094}$	3
26	.49	301	059	021	002		$\overline{091}$	081	016	067	158	$\overline{086}$	006	$\overline{120}$	048	049	$\overline{150}$	7
27	.96	532	342	058	$\overline{076}$	$\overline{297}$		066	153	$\overline{233}$	$\overline{132}$	$\overline{171}$	042	280	$\overline{087}$	$\overline{255}$	352	1
28	.98	321	019	016	$\overline{030}$	$\overline{091}$	279		061	$\overline{084}$	044	$\overline{022}$	$\overline{002}$	$\overline{027}$	$\overline{013}$	$\overline{176}$	094	10
29	1.09	375	134	122	$\overline{055}$	078	$\overline{024}$	078		$\overline{023}$	243	$\overline{123}$	$\overline{082}$	$\overline{022}$	$\overline{114}$	$\overline{062}$	$\overline{127}$	1
30	.43	340	151	014	$\overline{023}$	009	136	065		$\overline{003}$	036	$\overline{012}$	202	$\overline{075}$	044	$\overline{054}$	070	1
31	1.14	532	330	088	070	146	$\overline{104}$	$\overline{139}$	$\overline{124}$		107	068	$\overline{013}$	$\overline{172}$	$\overline{130}$	263	$\overline{043}$	0
32	.96	495	269	100	$\overline{048}$	175	$\overline{028}$	067	133	039		$\overline{128}$	008	$\overline{106}$	$\overline{092}$	139	$\overline{118}$	0
33	1.56	334	122	040	$\overline{011}$	$\overline{117}$	033	$\overline{237}$	$\overline{100}$	$\overline{014}$	$\overline{181}$		023	216	$\overline{044}$	$\overline{037}$	189	4
34	1.44	527	332	$\overline{128}$	084	010	$\overline{070}$	$\overline{124}$	$\overline{171}$	224	$\overline{061}$		103	$\overline{015}$	128	140	$\overline{040}$	0
35	.49	278	042	$\overline{099}$	085	$\overline{041}$	126	099	032	$\overline{111}$	$\overline{022}$	$\overline{090}$		102	054	$\overline{093}$	106	10
36	1.45	457	238	055	032	$\overline{287}$	040	$\overline{189}$	$\overline{017}$	$\overline{062}$	$\overline{156}$	098	$\overline{007}$		$\overline{037}$	$\overline{048}$	196	1
37	.82	492	251	$\overline{369}$	$\overline{144}$	$\overline{089}$	$\overline{024}$	$\overline{022}$	$\overline{251}$	$\overline{202}$	$\overline{314}$	062	180	147		$\overline{045}$	042	2
38	.69	493	273	$\overline{358}$	$\overline{067}$	005	$\overline{195}$	$\overline{092}$	$\overline{376}$	069	$\overline{299}$	120	212	072		238	$\overline{028}$	3
39	1.07	477	278	$\overline{019}$	$\overline{027}$	239	$\overline{176}$	$\overline{101}$	$\overline{105}$	285	176	040	041	$\overline{222}$	026		$\overline{082}$	1
40	.61	420	172	001	010	$\overline{178}$	210	$\overline{082}$	031	$\overline{116}$	$\overline{112}$	052	095	132	$\overline{123}$	$\overline{128}$		2

TABLE 129

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
41	1.19	465	217	072	023	$\overline{301}$	363	032	220	$\overline{206}$	$\overline{086}$	$\overline{141}$	$\overline{033}$	183	$\overline{125}$	$\overline{340}$		4
42	.57	238	-001		071	129	$\overline{214}$	014	010	005	133	047	$\overline{035}$	$\overline{043}$	026	$\overline{002}$	$\overline{185}$	13
43	.75	416	168	073		008	$\overline{012}$	$\overline{018}$	026	084	076	036	039	010	012	$\overline{058}$	007	0
44	.87	272	074	002		095	037	070	002	053	067	$\overline{031}$	053	$\overline{059}$	039	$\overline{062}$	$\overline{016}$	1
45	1.22	398	152	$\overline{002}$	$\overline{044}$		$\overline{191}$	$\overline{148}$	$\overline{244}$	264	076	135	$\overline{039}$	$\overline{188}$	$\overline{021}$	262	$\overline{049}$	5
46	.99	435	217	$\overline{027}$	035	$\overline{142}$		$\overline{040}$	181	$\overline{145}$	$\overline{135}$	$\overline{003}$	119	016	$\overline{028}$	$\overline{193}$	280	1
47	1.12	342	110	164	116	$\overline{146}$		$\overline{027}$	211	$\overline{108}$	069	$\overline{020}$	$\overline{027}$	136	$\overline{093}$	$\overline{103}$	107	5
48	1.28	404	101	168	087	120	$\overline{064}$		158	$\overline{055}$	159	$\overline{122}$	$\overline{042}$	$\overline{119}$	$\overline{104}$	$\overline{037}$	$\overline{119}$	8
49	1.29	386	179	149	220	$\overline{141}$	096	$\overline{004}$		$\overline{117}$	048	$\overline{037}$	$\overline{052}$	020	$\overline{234}$	$\overline{167}$	000	2
50	1.00	500	289	255	$\overline{005}$	032	177	022		$\overline{078}$	267	$\overline{112}$	$\overline{135}$	$\overline{111}$	$\overline{262}$	$\overline{130}$	$\overline{003}$	0
51	.46	361	166	002	019	147	060	$\overline{026}$	$\overline{051}$		092	019	030	$\overline{050}$	000	124	029	0
52	.78	459	233	088	069	309	$\overline{243}$	111	037	016		$\overline{143}$	$\overline{060}$	$\overline{236}$	006	086	$\overline{274}$	4
53	.93	455	227	$\overline{108}$	$\overline{021}$	097	$\overline{076}$	$\overline{109}$	$\overline{219}$	222	$\overline{077}$		060	019	086	114	$\overline{027}$	0
54	1.36	276	040	159	137	$\overline{045}$	085	$\overline{061}$	151	$\overline{084}$	040		$\overline{056}$	$\overline{003}$	001	$\overline{130}$	092	10
55	.79	391	106	$\overline{232}$	054	030	$\overline{078}$	001	$\overline{140}$	081	$\overline{119}$	105		056	306	051	013	4
56	.86	421	172	047	$\overline{002}$	$\overline{207}$	121	060	117	$\overline{205}$	$\overline{087}$	020	046		056	$\overline{205}$	055	3
57	.83	515	283	$\overline{200}$	$\overline{031}$	$\overline{193}$	129	$\overline{044}$	$\overline{023}$	$\overline{179}$	$\overline{148}$	041	158		148	$\overline{152}$	090	0
58	.88	483	222	$\overline{189}$	004	072	$\overline{120}$	$\overline{069}$	$\overline{239}$	150	$\overline{125}$	131	177	064		180	007	1

TABLE 130

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)
ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
59	.94	420	177	$\overline{121}$	$\overline{033}$	166	$\overline{239}$	011	$\overline{266}$	149	$\overline{014}$	125	$\overline{027}$	$\overline{026}$	220		$\overline{109}$	3
60	1.37	453	234	$\overline{098}$	$\overline{005}$	$\overline{174}$	181	$\overline{126}$	$\overline{094}$	025	$\overline{342}$	068	047	287	056	$\overline{107}$		2
61	1.14	422	171	$\overline{147}$	$\overline{027}$	$\overline{121}$	217	$\overline{103}$	$\overline{138}$	120	$\overline{220}$	261	113	072	$\overline{010}$	080		3
62	1.54	321	120		116	084	004	004	140	089	077	032	$\overline{108}$	$\overline{177}$	$\overline{139}$	$\overline{002}$	$\overline{075}$	3
63	.80	428	201	033		024	141	052	$\overline{001}$	035	048	039	036	$\overline{001}$	083	002	046	0
64	.84	345	133	105		$\overline{011}$	$\overline{062}$	045	$\overline{056}$	087	$\overline{069}$	104	$\overline{085}$	$\overline{091}$	$\overline{015}$	$\overline{002}$	017	0
65	.73	464	265	$\overline{053}$	051		$\overline{350}$	139	$\overline{184}$	179	193	012	000	$\overline{239}$	091	177	$\overline{294}$	2
66	.55	457	287	$\overline{017}$	082	$\overline{210}$		192	160	$\overline{156}$	$\overline{072}$	$\overline{045}$	104	232	032	$\overline{223}$	216	0
67	1.17	493	274	$\overline{002}$	135	$\overline{249}$		005	196	$\overline{097}$	$\overline{087}$	$\overline{008}$	096	222	019	$\overline{117}$	234	0
68	.37	244	009	$\overline{184}$	$\overline{071}$	023	$\overline{162}$		$\overline{220}$	$\overline{068}$	$\overline{151}$	$\overline{052}$	065	039	151	$\overline{008}$	049	12
69	1.22	451	213	243	067	$\overline{045}$	149	$\overline{055}$		$\overline{073}$	191	$\overline{100}$	$\overline{012}$	$\overline{104}$	$\overline{155}$	$\overline{152}$	027	1
70	1.08	573	422	195	063	$\overline{080}$	232	$\overline{018}$		$\overline{179}$	106	$\overline{107}$	$\overline{129}$	$\overline{042}$	$\overline{197}$	$\overline{278}$	073	0
71	1.62	392	204	$\overline{042}$	041	127	$\overline{118}$	$\overline{085}$	$\overline{091}$		081	214	013	$\overline{094}$	059	215	$\overline{093}$	2
72	.50	439	234	079	$\overline{077}$	181	$\overline{130}$	110	125	$\overline{025}$		$\overline{078}$	018	$\overline{179}$	019	117	$\overline{243}$	1
73	1.55	489	320	$\overline{079}$	083	$\overline{012}$	$\overline{029}$	$\overline{135}$	$\overline{191}$	152	$\overline{126}$		$\overline{038}$	$\overline{056}$	079	168	035	0
74	1.42	408	177	$\overline{238}$	$\overline{097}$	039	$\overline{030}$	$\overline{164}$	$\overline{161}$	078	$\overline{013}$		071	050	100	207	030	2
75	.42	363	117	$\overline{240}$	$\overline{082}$	$\overline{103}$	019	042	$\overline{093}$	$\overline{140}$	$\overline{126}$	$\overline{033}$		109	155	040	080	4
76	.64	308	050	$\overline{100}$	017	$\overline{118}$	032	$\overline{087}$	$\overline{066}$	011	$\overline{061}$	094	039		028	$\overline{055}$	157	8
77	.79	215	-071	138	143	$\overline{128}$	229	$\overline{037}$	200	018	033	$\overline{048}$	$\overline{025}$		$\overline{133}$	$\overline{077}$	174	8

TABLE 131

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
78	.37	366	177	$\overline{166}$	119	102	009	216	$\overline{046}$	120	031	$\overline{009}$	172	001		100	$\overline{096}$	1
79	1.32	412	162	$\overline{082}$	$\overline{125}$	148	$\overline{243}$	$\overline{061}$	$\overline{185}$	154	090	170	$\overline{084}$	$\overline{153}$	093		$\overline{188}$	4
80	.93	455	206	$\overline{080}$	$\overline{039}$	221	$\overline{286}$	134	$\overline{319}$	230	047	062	$\overline{009}$	$\overline{190}$	093		$\overline{182}$	4
81	.78	367	108	007	096	$\overline{076}$	181	056	132	$\overline{007}$	022	$\overline{071}$	020	080	$\overline{034}$	$\overline{046}$		2
82	1.37	489	265		070	063	$\overline{055}$	034	162	$\overline{051}$	131	$\overline{055}$	$\overline{171}$	$\overline{061}$	$\overline{204}$	$\overline{124}$	$\overline{002}$	0
83	.74	485	246	093		$\overline{007}$	016	069	100	138	$\overline{027}$	024	076	$\overline{063}$	009	038	063	0
84	.67	520	268	103		$\overline{030}$	019	056	142	097	049	039	090	003	$\overline{021}$	$\overline{090}$	056	0
85	.97	405	163	$\overline{007}$	$\overline{076}$		$\overline{198}$	$\overline{075}$	$\overline{151}$	223	154	039	$\overline{066}$	$\overline{231}$	024	216	$\overline{242}$	5
86	1.28	504	296	023	064	$\overline{221}$		036	104	$\overline{154}$	$\overline{176}$	$\overline{101}$	041	210	$\overline{048}$	$\overline{252}$	249	0
87	1.11	443	210	129	053	$\overline{152}$		073	328	$\overline{081}$	105	$\overline{158}$	092	116	$\overline{112}$	$\overline{215}$	132	2
88	.72	223	-081	$\overline{156}$	134	035	$\overline{104}$		$\overline{319}$	170	$\overline{198}$	048	100	025	272	246	$\overline{003}$	9
89	1.08	485	283	103	013	073	038	081		$\overline{058}$	241	$\overline{166}$	$\overline{053}$	$\overline{048}$	$\overline{083}$	$\overline{076}$	$\overline{101}$	0
90	1.20	526	331	$\overline{078}$	047	212	$\overline{281}$	$\overline{026}$	$\overline{241}$		028	176	039	$\overline{204}$	172	310	$\overline{128}$	0
91	1.25	570	382	023	110	129	$\overline{052}$	$\overline{176}$	$\overline{157}$		079	108	$\overline{034}$	$\overline{075}$	$\overline{061}$	184	029	0
92	1.06	468	297	204	193	034	133	028	294	169		$\overline{006}$	048	081	$\overline{128}$	073	$\overline{093}$	0
93	.66	499	285	246	003	102	045	$\overline{001}$	187	069		$\overline{036}$	036	$\overline{214}$	$\overline{096}$	110	$\overline{158}$	0
94	1.07	565	356	$\overline{074}$	068	$\overline{011}$	$\overline{068}$	$\overline{224}$	$\overline{113}$	258	$\overline{091}$		065	$\overline{038}$	113	138	$\overline{053}$	0
95	.73	373	079	$\overline{016}$	051	035	122	$\overline{008}$	178	004	137	023		006	024	$\overline{057}$	002	3
96	.35	384	204	$\overline{163}$	051	$\overline{218}$	142	$\overline{049}$	$\overline{124}$	$\overline{157}$	$\overline{175}$	063	175		145	$\overline{092}$	206	2

TABLE 132

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
97	.98	335	061	$\overline{081}$	$\overline{215}$	$\overline{035}$	048	$\overline{162}$	$\overline{104}$	$\overline{069}$	$\overline{090}$	004	083		024	$\overline{110}$	078	9
98	.97	289	-001	$\overline{090}$	057	147	$\overline{047}$	189	088	014	153	$\overline{122}$	064	$\overline{044}$		011	$\overline{157}$	13
99	.73	223	-032	107	082	$\overline{046}$	119	068	221	031	248	$\overline{050}$	070	$\overline{118}$	$\overline{082}$		$\overline{056}$	12
100	.95	289	038	$\overline{089}$	$\overline{071}$	020	$\overline{067}$	$\overline{130}$	$\overline{188}$	094	$\overline{036}$	179	037	014	070		$\overline{033}$	8
101	1.75	413	249	013	$\overline{097}$	$\overline{178}$	158	$\overline{127}$	$\overline{074}$	$\overline{003}$	$\overline{182}$	070	012	161	$\overline{025}$	$\overline{081}$		0
102	.85	344	097		001	078	026	131	124	$\overline{077}$	128	$\overline{200}$	$\overline{165}$	$\overline{068}$	$\overline{205}$	$\overline{077}$	$\overline{050}$	6
103	1.08	466	242		112	100	$\overline{009}$	100	281	056	367	$\overline{151}$	$\overline{144}$	$\overline{195}$	$\overline{273}$	058	$\overline{136}$	3
104	.63	508	246	066		$\overline{072}$	118	038	090	082	019	008	026	$\overline{005}$	$\overline{032}$	084	$\overline{004}$	0
105	.43	441	240	$\overline{055}$	$\overline{079}$		$\overline{136}$	083	$\overline{071}$	019	119	$\overline{017}$	$\overline{066}$	$\overline{205}$	041	139	$\overline{189}$	0
106	1.50	359	160	$\overline{074}$	$\overline{023}$	$\overline{087}$		$\overline{037}$	068	$\overline{040}$	$\overline{145}$	019	010	084	$\overline{024}$	$\overline{141}$	274	1
107	.67	367	082	179	017	244	$\overline{118}$		183	$\overline{031}$	278	$\overline{142}$	$\overline{108}$	$\overline{202}$	$\overline{146}$	066	$\overline{225}$	10
108	.56	377	113	$\overline{046}$	$\overline{084}$	037	009		058	$\overline{065}$	051	$\overline{253}$	056	$\overline{091}$	098	$\overline{031}$	003	1
109	.87	426	221	135	$\overline{060}$	$\overline{150}$	208	$\overline{029}$		$\overline{137}$	141	$\overline{079}$	$\overline{051}$	120	$\overline{143}$	$\overline{171}$	092	0
110	1.02	499	248	$\overline{206}$	023	262	$\overline{261}$	$\overline{034}$	$\overline{292}$		$\overline{036}$	165	135	$\overline{130}$	224	283	$\overline{138}$	4
111	.78	376	124	038	090	227	$\overline{243}$	$\overline{028}$	$\overline{071}$		101	059	$\overline{087}$	$\overline{148}$	$\overline{028}$	118	$\overline{159}$	4
112	.70	417	220	022	$\overline{077}$	311	$\overline{258}$	$\overline{052}$	$\overline{009}$	133		031	$\overline{064}$	$\overline{286}$	$\overline{026}$	195	$\overline{296}$	4
113	1.24	375	160	329	053	$\overline{029}$	076	$\overline{112}$	243	$\overline{015}$		$\overline{043}$	$\overline{251}$	$\overline{085}$	$\overline{436}$	$\overline{111}$	$\overline{016}$	4
114	1.31	491	280	$\overline{001}$	026	$\overline{020}$	$\overline{048}$	$\overline{216}$	$\overline{065}$	048	$\overline{032}$		002	001	$\overline{056}$	062	029	0
115	1.04	328	062	$\overline{236}$	012	025	$\overline{041}$	$\overline{043}$	$\overline{174}$	059	$\overline{162}$	056		025	149	103	036	5

TABLE 133
HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)
ITEM-SCALE CORRELATIONS (PRODUCT-MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
116	1.11	412	138	$\overline{041}$	058	$\overline{125}$	070	$\overline{022}$	$\overline{067}$	068	$\overline{093}$	053		145	057	$\overline{090}$	084	1
117	1.36	391	135	$\overline{117}$	003	$\overline{139}$	074	013	$\overline{150}$	$\overline{044}$	$\overline{279}$	006	$\overline{004}$		120	$\overline{135}$	130	3
118	1.11	199	-061	008	$\overline{033}$	$\overline{122}$	201	$\overline{018}$	042	$\overline{043}$	001	052	119	006		$\overline{069}$	185	5
119	1.38	405	176	022	059	080	$\overline{131}$	$\overline{056}$	$\overline{038}$	288	072	025	$\overline{075}$	$\overline{217}$	$\overline{105}$		$\overline{072}$	2
120	.52	323	099	$\overline{015}$	043	315	$\overline{118}$	091	033	141	235	$\overline{026}$	$\overline{010}$	$\overline{231}$	059		$\overline{239}$	6
121	.98	449	183	090	128	$\overline{237}$	312	054	164	$\overline{129}$	$\overline{128}$	$\overline{080}$	097	183	045	$\overline{231}$		3
122	1.10	453	205		$\overline{049}$	$\overline{140}$	098	$\overline{019}$	160	$\overline{243}$	041	147	$\overline{220}$	$\overline{037}$	$\overline{271}$	$\overline{202}$	029	3
123	1.40	505	283		$\overline{034}$	$\overline{069}$	074	$\overline{134}$	172	$\overline{062}$	047	053	$\overline{247}$	014	$\overline{349}$	$\overline{069}$	046	1
124	.58	372	082	037		$\overline{090}$	038	038	040	$\overline{074}$	006	051	029	055	$\overline{103}$	$\overline{028}$	$\overline{046}$	2
125	1.14	435	177	162	027		$\overline{173}$	037	128	268	288	$\overline{052}$	$\overline{016}$	$\overline{323}$	$\overline{030}$	167	$\overline{250}$	4
126	.81	424	200	051	$\overline{040}$	$\overline{055}$		$\overline{103}$	037	002	$\overline{038}$	044	073	104	$\overline{032}$	$\overline{051}$	170	0
127	.58	426	166	$\overline{039}$	$\overline{008}$	$\overline{035}$	041		092	$\overline{078}$	104	$\overline{222}$	106	$\overline{076}$	080	$\overline{033}$	$\overline{034}$	1
128	.81	368	046	053	072	$\overline{082}$	089		118	$\overline{087}$	$\overline{053}$	$\overline{122}$	$\overline{025}$	003	$\overline{021}$	$\overline{045}$	046	8
129	.78	362	143	106	128	$\overline{086}$	146	112		$\overline{135}$	033	$\overline{168}$	$\overline{044}$	084	$\overline{099}$	$\overline{207}$	124	3
130	1.04	428	191	054	067	161	$\overline{018}$	110	040		137	$\overline{033}$	$\overline{015}$	$\overline{080}$	058	149	$\overline{069}$	0
131	1.09	319	112	$\overline{113}$	019	059	048	$\overline{201}$	$\overline{069}$		$\overline{026}$	151	044	$\overline{023}$	045	095	044	3
132	.97	407	214	169	135	220	$\overline{115}$	146	217	216		021	030	$\overline{105}$	$\overline{020}$	148	$\overline{148}$	3
133	.85	413	181	073	007	151	$\overline{092}$	114	187	$\overline{086}$		$\overline{227}$	$\overline{048}$	$\overline{206}$	020	040	$\overline{187}$	4
134	1.45	352	166	052	047	$\overline{253}$	151	$\overline{194}$	027	$\overline{071}$	$\overline{117}$		044	132	$\overline{080}$	$\overline{122}$	213	3
135	.65	377	102	$\overline{177}$	082	139	$\overline{147}$	031	$\overline{208}$	190	045	087		$\overline{038}$	224	227	$\overline{052}$	7

TABLE 134

HIGH SCHOOL PERSONALITY QUESTIONNAIRE FORM A: GIRLS (N = 366)

ITEM-SCALE CORRELATIONS (PRODUCT MOMENT)

ITEM NO.	ITEM MEAN	UNCORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	CORRECTED TRICHOTOMISED PRODUCT-MOMENT r WITH OWN SCALE	TRICHOTOMISED PRODUCT-MOMENT r WITH REMAINING SCALES														NO HIGHER EXTRA THAN INTRA PRODUCT-MOMENT r's
				A	B	C	D	E	F	G	H	I	J	O	Q2	Q3	Q4	
136	.64	391	129	$\overline{013}$	200	$\overline{019}$	155	110	202	048	226	048		052	138	003	026	5
137	1.11	461	237	$\overline{027}$	$\overline{018}$	$\overline{318}$	325	$\overline{121}$	058	$\overline{125}$	$\overline{227}$	$\overline{026}$	$\overline{106}$		$\overline{019}$	$\overline{174}$	273	3
138	.89	493	248	$\overline{196}$	013	174	$\overline{119}$	023	$\overline{338}$	204	$\overline{112}$	191	137	$\overline{080}$		190	$\overline{077}$	1
139	.95	305	043	$\overline{023}$	081	029	033	066	104	$\overline{038}$	011	$\overline{107}$	162	$\overline{001}$		$\overline{023}$	$\overline{035}$	5
140	1.17	552	357	$\overline{097}$	$\overline{014}$	192	$\overline{209}$	$\overline{026}$	$\overline{265}$	294	033	132	049	$\overline{186}$	133		$\overline{149}$	0
141	1.52	395	188	$\overline{019}$	$\overline{001}$	$\overline{287}$	224	$\overline{162}$	$\overline{031}$	$\overline{059}$	$\overline{295}$	102	078	269	071	$\overline{116}$		4