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DAYDREAMING, MEASUREMENTS OF CREATIVITY AND PERCEPTUAL ISOLATION BEHAVIOR IN COLLEGE STUDENTS

by

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Abstract

DAYDREAMING, MEASUREMENTS OF CREATIVITY AND PERCEPTUAL ISOLATION BEHAVIOR IN COLLEGE STUDENTS

by

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This research was designed to explore the nature of interrelationships among measures of creativity, daydreaming, ego activity and perceptual isolation behavior.

The study was conducted in three sessions. In the first, all subjects were administered the Biographical Inventory-Creativity (Schaefer, 1970), the Alternate Uses Test, Form A (Wilson, Christensen, Merrifield and Guilford, 1960) and the Maudsley Personality Inventory (Eysenck, 1962). During the second session, all subjects were administered an inventory comprised of scales drawn from the Imaginal Processes Inventory (Singer and Antrobus, 1970), the Ego Strength Scale (Barron, 1953) and the Experience Inquiry (Fitzgerald, 1966). During the third session, the fifteen highest scoring males were compared to the fifteen lowest scoring males and the five highest scoring females were compared to the five lowest scoring females on the creativity measures and contrasted on their performances on twelve variables measured during a perceptual isolation session.

The factor analysis of the data obtained during the first two sessions provided some support for theoretical positions proposing linkages among the indices of creativity, daydreaming and ego activity thus reinforcing formulations which propose the existence of adaptive and maladaptive daydreaming patterns. Only two of the predicted twelve relationships between the measures of creativity and perceptual isolation behavior reached significance although all were in the predicted direction. Specifically, the high creative males obtained significantly higher scores on the dimensions of task irrelevance and personal material. No significant differences were found between the high and low creative females.

Reasons for the failure to achieve significance in other aspects of the work conducted during the third session are proposed and suggestions for future modifications made.

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Certain theorists and researchers working within the areas of creativity (Barron, 1955, 1967 and MacKinnon, 1962), daydreaming (Singer and Antrobus, 1963, 1970), and perceptual isolation (Goldberger and Holt, 1961) have formulated propositions and obtained results in their respective endeavors which are suggestive of interrelationships among aspects of these fields of inquiry. It seems reasonable to assume that these interrelationships are in turn affected by the operation of certain behavioral processes which are functions of personality organization.

Therefore the aim of this study is to explore the nature of these suggestive relationships and the extent to which they are a function of or related to personality processes. Specifically, this research is designed to explore the relations among measures of creativity, daydreaming, perceptual isolation behavior, ego activity and neuroticism.

Introductory Note

Productive psychological research into the nature of higher order mental processes has been largely confined to investigations of learning, psychophysics and perception since academic psychology began to make its entrance into the arena of respected science. As a result, until recently, efforts exerted in the direction of elucidating phenomena associated with daydreaming, creativity and perceptual isolation have been relatively few. However, these few have significant implications for the present study, and will therefore constitute the review of the literature with which this project must begin.

Because it forms an historical-contextual substrate for each of the areas under investigation in the present research, the topic of imagery will be considered the point of departure. Before proceeding to the description of specific work in the area of imagery, it is appropriate to note that it has its historical underpinnings in the work of the Introspectionists. In this regard it would seem sufficient to merely note that in their pursuit of scientific rigor, Titchener and his followers probably eliminated data equal to or more important than those they collected and published (Boring, 1957; Singer, 1973). What is being referred to here are the richly vivid personal attributes

of the introspectively produced image.

Early Interest in Imagery

Probably the most significant of the early pioneers in the study of imagery was Francis Galton. While most noted for his early work in the development of psychological statistics and in the area of the development of the psychological or "mental" test, Galton was also a practiced introspectionist. Consistent with his tendency to explore the contents of his own mind (Boring) no doubt was Galton's interest in the vividness of mental pictures. This latter would be appropriately exemplified in his work on what would now perhaps be considered eidetic imagery. In this particular study he noted a substantial number of his subjects demonstrated an unusual facility for constructing, maintaining and projecting through space, integrated stable and enduring images (1880). It was also in this study that Galton developed probably the first questionnaire method for the study of imagery. According to Richardson (1969) Galton also showed considerable interest in the ability to control the structure and production of images.

While Galton was perhaps unwittingly the first to discover eidetic imagery, it remained for Jaensch (1930) to define it. This particular form of imagery differed from the usual kind because of its persistence and ability to maintain its structural integrity for long temporal durations. Additionally, the eidetic image could replicate very complex patterns of stimuli.

Contemporary Distinctions in Imagery

Richardson in the above-noted review of the literature on imagery presents a strong case for eidetic imagery as a phenomenon separate from other types. In so doing, he effectively dismisses a challenge from Morsh and Abbott (1945) who claim that there is no essential difference between eidetic imagery and the after image.

Distinguishable from both of these kinds of images is the memory image which Richardson seems to equate with visual and auditory complexes of stimuli patterned after events already past or partially constructive of events yet to occur. Importantly, however, is the qualification that this type of image is very unstable and lacking in integrity.

The three above-discussed classes of imagery are to be contrasted with imagination imagery, which seems most to resemble the type which is relevant in terms of the present study.

Briefly, there are six discernible types of imagination imagery. According to McKellar and Simpson (1954) the hypnagogic type occurs between wakefulness and sleep and is defined chiefly by its clarity or autonomy (McKellar, 1957). The hypnagogic image is distinguishable from the hypnopompic image in that the latter occurs between sleep and the onset of wakefulness. The third type mentioned by Richardson is the perceptual isolation image which differs from the above two because of its realism. Another type of imagination imagery is that sort which eventuates under the influence of ingested drugs and which may vary from perceived streaking colors and distorted faces to geometrical forms (Ardis and McKellar, 1956). The fifth and sixth types are pulse current imagery (resulting from specifically applied electrical current) and photic stimulation imagery (resulting from stroboscopically presented light stimuli).

Imagery and Creativity

As regards correlates of creativity, it would seem that certain types of imagination imagery as well as the memory image described by Richardson would be appropriate examples. The following quotation of Stephen Spender might be taken as illustrative of this association:

"...the writing of poetry is an activity which requires that he should have certain qualifications of ear, vision, imagination, memory and so on. He should be able to think in images..." (Ghiselin, 1952, P. 112) (italics mine).

A significant study establishing the relationship between creativity and visual imagery was done by Schmeidler (1965). In this study, Galton's imagery vividness test was administered to over three hundred college students along with an independence of judgment test (Barron, 1958). This latter test had been established as a reliable instrument for discriminating between creative and non-creative individuals. The resulting correlations were low but positive and significant.

Moving beyond the specific issue of imagery as a correlate of creativity and into the area of more general internal phenomenological

correlates of such behavior, it would be appropriate to consider next the work done in the area of projective materials. This appears indicated on the basis of the proposition that internal cognitive activity of a more general type, exclusive of directed thinking, would of necessity be composed of imagery of various kinds.

Creativity as Related to the Rorschach M Determinant

Rorschach (1942) in the pursuit of his studies of personality and psychopathology found a good deal of evidence for the existence of an inverse relationship between the extent to which people saw motion in response to his inkblot stimuli and their overt motoric behavior. More specifically people who characteristically saw human figures in motion when looking at the blots tended to demonstrate inhibited motion themselves. It was upon these observations that Rorschach based his conclusion that motorically inhibited people tend to project motion internally. This conclusion is the basis for further work in the Rorschach method which eventuated in the conceptual connection between the tendency to produce M and imaginational proclivities. Studies yielding results consistent with Rorschach's observation were performed by Meltzoff, Singer, and Korchin (1953) and Singer, Meltzoff, and Goldman (1952).

Several studies indicate that there is indeed a positive relationship between creativity and human movement Rorschach responses. Anderson and Munroe (1948) studying the personality correlates of creative painting activity found such a relationship as did Rawls and Slack (1968) when comparing artists and non artists. However, no significant relationship was found between the same variables by Roe (1946). Bonifacio and Schaefer (1969) studying artistic and scientific creativity as these relate to Rorschach M production do find such a positive relationship (reaching significance only for artistic creativity) and conclude that previous contradictory findings are chiefly due to failure to achieve control over the stimulus properties of the projective instruments utilized.

Creativity and Studies of Eminence

Approaching the issue of creativity from another position is Roe (1952). This author with the assistance of recognized experts in the areas of biology, physics, psychology, and anthropology, chose

twenty-two physicists, twenty-two social scientists (psychologists and anthropologists) and twenty biologists for an intensive and extensive study of correlates associated with success in scientific research.

Utilizing, among other tools of personality assessment, detailed personal interviews, (which focused upon family history, personal interests, hobbies), intelligence tests, the Rorschach and Thematic Apperception Test, Roe proposed certain attributes she considers typical of the total group studied.

Briefly, the members of this group emerged as most often the son (first born) of a middle class familial context within which the father belonged to one of the recognized professions. His childhood measured intelligence was usually significantly higher than that of his peers and he demonstrated an early and noticeable proclivity towards reading and the enjoyment of other solitary activities. Compared to his college age peers, his interest in women emerged rather late and therefore he tended to marry at a later age. Roe also notes that what spurred him on into his career was not the usual college curriculum but rather some independent research study.

Particularly relevant in terms of the purposes of the present study is Roe's finding that all the scientists studied (while there were some intergroup differences) tended to demonstrate a considerable amount of imageless thinking. Roe notes that the theoretical physicists, psychologists, and anthropologists relied heavily on verbalization in their cognitive processes and that the biologists and experimental physicists relied more on concrete images.

Roe's study while certainly a milestone in modern psychological investigations of eminence in research scientists is not without historical precedent. Cattell (1906), utilizing a method he developed four years earlier in connection with color intensity orderings, ranked eminent men of American science into positions relative to their intradisciplinary peers. More specifically, by determining, via a large number of rankings, the central positional tendency (a statistic resembling a mean) for each individual scientist, Cattell was able to present a statistical distribution of eminent scientific achievers within each field. This distribution reflected a level of eminence for each individual within his area of endeavor.

Preceding Cattell's work, but undoubtedly influencing it, was the original work of Galton (1870) exploring the hereditary transmission of genius. In his "Hereditary Genius", Galton studies the ancestral lineages of differing sized groups of individuals who have achieved stature among their less eminent peers. These groups included judges, statesmen, commanders, painters, poets, writers, scientists, musicians and clergy. Galton's studies, again making substantial use of statistics, led him to conclude among other things, that the closer a relative is to an eminent individual, the higher theprobability that that relative will likewise achieve distinction.

The work of Terman (1947) addresses itself to the issue of eminenc e in a manner different from the approaches noted above. This was a long term study of the lives of subjects identified as exceptional academically. Terman found evidence of continued success and distinction among these subjects relative to the rest of the subjects in the initial sample. Terman also notes the importance of time and place, chance factors, childhood interests, independence, versatility, unconscious motivation, superior intellectual endowment and physical health.

Creativity and Cognitive Psychology

Cropley (1967) in yet another approach to the study of creativity, examines various stimulus-response theories which address themselves to the problem. He first mentions Mednick's (1962) theory which postulates that the basis of creativity lies in the extent to which people tend to make relatively infrequent or unusually observed responses to stimuli occurring in the environment. According to Cropley, what Mednick is really postulating is that the extent to which a person is "creative" is in reality the extent to which that person possesses "divergent thinking" ability.

The original source of speculation in connection with the role of divergent thinking in creativity, however, was not Mednick. Guilford (1959) discusses his own research into the behavioral correlates of creativity and notes that his factor analytic approach has uncovered a type of thinking characterized by an attitude of searching on the one hand, and on the other, by a willingness to consider several possible answers to a problem as essentially correct. It should be noted that

in Guilford's research, divergent thinking emerges as a distinct factor in the statistical sense.

While not dismissing the role of divergent thinking as part of the creative process, Cropley (1966) citing his own work presents evidence that the Remote Associates Test, Mednick's chief tool for the assessment of creativity, is really measuring verbal skills rather than divergent thinking.

In the later of the two above-mentioned publications, Cropley touches upon the idea of divergent thinking being primarily a function of the degree to which people are rewarded during childhood for making unconventional responses to particular stimuli. Eventually Cropley dismisses this along with the other S-R approaches; primarily because S-R models do not address themselves to processes occurring within the creative person.

Instead, Cropley prefers to envision the creative person via cognitive theory. He therefore views him as differing from the non creative primarily in terms of how he tends to organize the information he incorporates from the external world.

The cognitive position, therefore, prefers to focus on the "styles" of incorporation of data from the surround. Thus the creative person is seen as different from the non creative in that he apparently utilizes different strategies or skills in the manipulation, storage and eventually, the utilization of the information he cognitively assimilates.

Cropley notes that creative persons therefore tend to take in larger "chunks" of data from the world, develop highly individualized ways of dealing with it, and are disposed towards risk-taking in their cognitive operations.

Utilizing cognitive style language, Cropley (1970) presents the creative person as one who codes his incorporated information into wide and flexible categories (thus the term "wide categories"), as willing to incorporate large bits of information, and thus as a natural "cognitive risk-taker".

The above discussed topics of imagery and creativity may be considered germane to the issue of daydreaming or fantasy. Singer (1966) alludes to daydreaming as a potentially creative skill. Barron (1967) in relation to the attributes of the creative writer, as well as

MacKinnon (1962) in realtion to creative architects both seem to conceptually converge upon a hypothesized relationship between creativity and access to inner fantasy. Additionally above-noted studies demonstrating a relationship between creativity and the perception of the Rorschach M determinant seem to resemble certain studies demonstrating a positive relation between daydream frequency and perceived human movement responses on the Rorschach.

Upon these bases then, the next topic to be considered will be daydreaming.

Early Studies of Daydreaming and Fantasy

Until recently daydreaming suffered much the same fate as did creativity and perceptual isolation as regards research interest and productivity. Along with these other topics it has emerged as part of the Zeitgeist only within the last fifteen years in terms of being a subject of systematic scientific inquiry. However, there was some early investigatory work conducted and these studies will now be considered.

Already noted was the work of Galton in connection with his study of the hereditary basis of genius. In another publication, Galton (1883), the focus was upon the study of individual differences in imagery. Also approaching the issue of cognitive processes from another direction was William James (1890). Although James approached the topic globally, that is, mostly in terms of the characteristics of the stream of consciousness, there was a significant interest in the ongoing sense of self and in the relationship between cognitive activity and imagery which might be characterized as either normal or abnormal.

Studying aspects of children's imaginal experience, a few years before the turn of the century, was Hall (1891) in his work on children's so-termed "lies". Vostrovsky (1894) approached the topic via the imaginary companion phenomenon so often observed in children. Another avenue of broaching the topic more in terms of actual daydream content was Green (1922). This author related the spontaneous daydream content verbalized by children to psychoanalytic theory.

Approaching the issue of the "imaginary playmate" as a distinctive kind of imaging process in young children were Hurlock and Burstein (1932), Jersild, Markey, and Jersild (1933) and Ames and Learned (1946).

Studying the daydreaming process in adults over several generations via an investigation of often encountered content was Shaffer (1936). Shaffer's investigatory tool was a questionnaire geared towards classifying daydreaming phenomena into broad general types. Influenced by Shaffer's studies is the work of Seeman (1951). Seeman found that daydreams do reflect a kind of wish fulfillment of hidden desires as suggested by Freud as cited by Jones(1959).

Especially interesting, both for its consistency with Shaffer's work and for its own results, is a study by Page (1957). Page constructed a questionnaire tapping the frequencies of various specific kinds of daydreams and related these to various Rorschach scoring categories. Page found a very clear positive relationship between frequency of daydreaming and the number of M responses observed in that projective protocol. These results are rather consistent with the theoretical and observational points made by Rorschach noted above in connection with creativity as well as with the research already cited which links creativity with perceived M.

Other early investigations of fantasy have been via the Thematic Apperception Test developed by Murray (1938) and his students. However it should be noted that the TAT measure probably does not tap the same kind of fantasy as the sort under investigation in the present research. That is, the TAT, as is the case possibly with the Rorschach, appears to measure the fantasy it generates rather than any ongoing spontaneous mentation.

However, even with the above-discussed research, no systematic inquiry of a broad-based or multifaceted nature was forthcoming in American psychology until the approximate middle of the present century.

Resistance to Daydreaming Research

The reluctance of psychiatry and psychology to study fantasy processes was very likely the result of at least two separate but equally powerful forces. In the case of psychiatry, it was almost completely dominated by psychoanalytic thinking since the nineteen twenties. Freud cited by Strachey (1962), for example, regarded fantasy as the result of unsatisfied drive tensions and thus conceived of its primary function as a vehicle of partial drive discharge. Most psychoanalysts focused on the content of fantasy as a sign of conflict rather than upon its

structure.

In Freud's own words, again cited by Jones: "let us try to learn some of the characteristics. We can begin by saying that happy people never make phantasies, only unsatisfied ones. Unsatisfied wishes are the driving power behind phantasies; every separate phantasy contains the fulfillment of a wish, and improves on unsatisfactory reality..." (P. 176).

Further on in the same paper Freud notes: "I cannot pass over the relation of phantasies to dreams. Our nocturnal dreams are nothing but such phantasies, as we can make clear by interpreting them.... If the meaning of our dreams usually remains obscure..., it is because of the circumstance that at night wishes of which we are ashamed also become active in us, wishes which we have to hide from ourselves, which were consequently repressed and pushed back into the unconscious" (P. 178).

Scientific psychology on the other hand, with the exception of the work already discussed, had been within the firm grip of behaviorism for approximately the same period of time. Any undergraduate course in the history of psychology reveals clearly the attitude taken by behaviorism towards introspection in any form. At best, interior cognitive processes were considered merely mediators between impinging stimuli and emerging responses.

Note the following quotation from Boring (1957, P. 637) as he writes about the Russian reflexological basis of behaviorism:

"Every student of psychology now knows the nature of 'classical conditioning', in which a second stimulus which occurs with or just before the stimulus of an unconditioned reflex, comes with repetition, to elicit the reflex movement alone. Conditioning is an objective substitute for introspection, (italics mine) a form of language which enables an experimenter to know what discrimination an animal can make, what it does and does not perceive. Conditioning is, in fact, a kind of language, which the experimenter provides so as to enable an animal to communicate with him, but the phenomena of communication occur entirely on the objective levels of stimuli, nerve-action and secretion, without any need for assuming consciousness as an entity." (italics mine)

Fantasy Reconsidered

From nineteen thirty to the early nineteen fifties significant changes occurred in the orientations of psychology and psychiatry in the forms of focal theoretical shifts particular to each discipline.

Psychoanalysis emerged from the constraints of orthodox Freudianism and began moving in the direction of ego psychology. More specifically, the sequence of theoretical developments in this connection went from the Freudian drive or instinct theory to the conceptual formulations of Kris, Rapaport and Hartmann. The classical position, prominent until the mid-nineteen twenties, envisioned fantasy as the vehicle of partial drive discharge and thus proposed that all fantasy was inextricably rooted in instinctual activity.

This view of fantasy was of course a function of the then prevalent Freudian topographic model of ego, superego, and id. Fantasy would result when the id discharged certain drive rooted tensions, the expressions of which were modified by the ego and superego. By the nineteen thirties, however, psychoanalysis began to focus more upon the ego as independent of the id-based drive or instinctual processes. Hartmann (1939) theorized that the ego was not in fact subservient to the id but rather developed in conjunction with it and as a result contained and utilized energies more properly its own. Certain of the functions now thought to be within the exclusive domain of the ego were thinking, grasping, the learning and use of language, planning and perception, to name but a few.

Logically following from this expanded psychoanalytic conception of the ego would be a quotation of Hartmann which links up the ego concept with reality. "But one cannot under any circumstances ignore or neglect the part played by the economic or social structure as partially independent factors. In applied psychoanalysis they take the place of 'reality' in the sense which I have outlined, and it would be completely senseless to deny their autonomy. This would be as if we were to overlook in our analytic practice the fact that the patient orients his specific behavior around his particular environment" (1939). Thus the significance of the external environment as a factor in the content of a fantasy was noted by analysts reconstructing and readdressing Freudian theory to accommodate developments in the study of cognition.

The direction taken by ego psychology thus deemphasized the topographical model and proposed that cognitive activities such as directed thinking and fantasy were in fact ego operations and more oriented

towards adapting the organism to the external world. Thus the emphasis upon the unconscious and its drive determinants was shifted to the ego and its autonomous or conflict-free spheres.

A somewhat parallel development saw the psychological Zeitgeist shift from behaviorism and begin to focus upon cognitive psychology and its interests in measurable cognitive and perceptual processes as well as cognitive styles.

Systematic Investigation of Daydreaming

The work of Jerome Singer (1966) shows the influence of these focal theoretical shifts in psychoanalytic psychiatry and psychology. Singer, a psychologist as well as a psychoanalyst, has devised a program of research into the daydreaming process which embodies features of both of these focal shifts. It would be appropriate to consider that work in some detail.

One key result of Singer's early work was a change from emphasis upon the psychopathological aspects of daydreaming to an emphasis upon its potentially creative or cognitively skillful aspects. This concentration upon the more positive or ego syntonic aspects of daydreaming derives initially from the findings of Singer and Antrobus (1963). One clear result of this factor analytic study was that all fantasy activity was definitely not pathological. Two broad patterns of daydreaming emerged, one evidently rooted in maladjustive personality organization and the other apparently consistent with generally wishful and varied cognitive activity of a pleasurable and non-conflictual sort.

Much the same result was found in a later study by Tomanelli (1970) attempting to explore relationships between daydreaming patterns and the cognitive style variable of internal versus external control. In this study there again appeared two different patterns of fantasy activity, one evidently pathological and the other a product of healthy personality organization.

Daydreaming and Creativity

Singer's work to some extent chronologically parallels work done in the area of creativity. Relationships between altered states of consciousness (an example of which would be fantasy or daydreaming) and creativity were discussed by Kris (1950) in connection with his

concept of regression in the service of the ego. Kris took the position that the creative process is initiated by the extremely rapid invasion of preconscious ideation by an unconscious ideational element.

Kris (1952) elaborates further on this notion in his speculations dealing with the psychoanalytic exploration of art. He notes that the artist's repressions are looser or more flexible than those of most persons. Presumably this would eventuate in easier retrieval of unconscious imagery, memories and ideation. Secondly, he suggests that art develops from "magic action" into some form of communication. The implication herein is developmental in that the transition from "magic action" to communication reflects the more general shift from primary process to secondary process mentation. Thirdly, he postulates that the process of artistic creation is actually a temporary regression in the service of the ego. That is, it is a regression which is controlled and directed by the artist's ego. Lastly, Kris conceptualizes the process of artistic creativity as fundamentally a passive state which eventually becomes more active as the ego's synthetic elaborational functions begin to attend to the regressively attained unconscious materials.

Consistent with Kris' position and also deriving from the psychoanalytic ego psychology viewpoint is the thinking of Rapaport (1951). He views the initial phases of creativity as emerging from primary process activity. The thrust of both positions therefore implies that conscious controls are for an instant minimized resulting in the entrance into consciousness of an unconscious ideational element.

A more recent case for the possible relation between creativity and interior cognitive-affective constellations was made by Barron (1955). According to Barron people who are considered highly original (certainly one criterion of creativity) would be characterized as rejective of suppression as a mechanism of defense, be open towards and accepting of more thoughts, and disposed towards ideas and values commonly taboo within their cultures.

Barron (1967) is more specific in a later publication in which he discusses personological characteristics which distinguish the creative writer. Regarding verbal intelligence for example, the creative writers studied at the Institute for Personality Assessment and Research

scored significantly higher than the gifted Stanford normative sample. The instrument upon which this difference is based is the Terman Concept Mastery Test. Another distinction between these creative writers and all the other creative groups studied is that they earned the highest scores on the Symbol Equivalence Test. In this latter test, the subject is given a verbally presented stimulus image and asked to respond with an equivalent symbolic image. Barron writes:

"The really striking differences between writers and other groups, however, lies in the general area of fantasy and originality of perception. One of our interviews was devoted especially towards the fantasy life, from daydreams and night dreams and hypnagogic experiences to transcendental experiences in full and acute consciousness" (Pps. 72-73).

MacKinnon (1962) makes essentially the same point as regards openness to inner experience in his discussion of psychological aspects of the creative architect. This would appear to derive from the fact that he and Barron were chief figures in the assessment of creative personality correlates at the Institute for Personality Assessment and Research in Berkeley. Getzels and Jackson (1961) note a similar distinction between their high creative and high intelligence groups. That is, their high creative adolescent subjects produced significantly more stimulus free themes, original endings, humor and playfulness in response to several TAT type tasks, than did their high intelligence subjects.

The topics of initial research in daydreaming, the early resistances to more experimental research in the area, the emerging trends of acceptance of and interest in daydreaming, possible theoretical linkages between creativity and daydreaming now having been considered, the focus will turn to contemporary research in the area.

Daydreaming as a Wide Spread Phenomenon

The preliminary systematic investigation of daydreaming established the universality of the phenomenon. Singer and McCraven (1961) noted that ninety-six percent of their subjects reported some form of daydreaming activity on a daily basis. This same study revealed that the primary expressional mode was visual imagery; that most of this activity was future oriented, and that increasing age is associated with a decline in daydreaming. These researchers also found that the

overall general frequency of daydreaming was positively and significantly related to the spontaneity of written stories and that high frequency daydreamers reported more similarity to their mothers than to their fathers.

Another area under scrutiny in this study was the extent to which cultural background might account for some of the variance in daydreaming. The results of this questionnaire-based inquiry indicate that Black and Jewish subjects daydream most frequently while Anglo-Saxons do so least frequently. In a second questionnaire study, Singer and McCraven (1962) found Italian American subjects reporting the highest frequency of daydreaming followed in decreasing order by Black Americans, and Americans of Jewish, Irish, German and Anglo-Saxon extraction.

Daydreaming and Personality Correlates

The following two studies have special relevance for this research. In the first, Singer and Schonbar (1961) found positive intercorrelations among daydream frequency, frequency of recall of night dreams, thematic creativity, need achievement, anxiety, and identification with the mother. This last noted result is consistent with the findings of the above-mentioned Singer-McCraven study (1961). Scores on the MMPI Lie Scale and Welsh's Repression Scale correlated negatively with the above variables.

In the second study, Singer and Rowe (1962) again found a positive relationship between frequency of general daydreaming and anxiety. However, this relationship between frequency of daydreaming and anxiety is, according to Singer, not to be considered as evidence supporting an hypothesis linking daydreaming and neuroticism. It is Singer's view that people who freely experience their own inner feelings are generally more open to experience and are thus psychologically healthy. This position is very similar to the ones proposed by Barron (1953), Clarkin (1970) and Richardson (1969) with respect to creativity.

Daydreaming and Drive Reduction

The traditional psychoanalytic view of fantasy conceived of the phenomenon as essentially the vehicle of partial drive reduction. Cited often as evidence of the validity of the drive reduction position is a study conducted by Feshbach (1955). In this study, Feshbach

claims to demonstrate that the aggressive drive was reduced following the written expression of fantasy elicited via a Thematic Apperception Test type method. Additional support for the drive reductionist position is derived from a second study also performed by Feshbach (1961) in which movies of boxers in competition were used as the fantasy vehicle. Following exposure to the movies was a reduction in hostility towards a provoking experimenter.

Interestingly, another study by Feshbach (1956) seems to contradict the findings of the above-mentioned work. In this study aggression in children showed an increase following the manipulation of toys. Consistent with these latter results is the work of Bandura and Walters (1963). These authors indicate that by and large the effect upon children of viewing aggressive materials on television and in the movies is an actual increase in overt aggression.

Singer (1966) challenges the Feshbach (1955) study's interpretation by noting that once something is written in anger there is little need for it to be expressed again. Presumably the same line of argument could be used in response to the second Feshbach (1961) study.

In response to the suggested drive reduction evidence derived from the first Feshbach study, Singer cites the work of Kagan (1956) which indicated that the fantasy story telling of aggressive themes is positively associated with the overt expression of aggression.

The argument could be raised as to the position the drive reductionists would take relative to emotive states other than aggression. In this regard it is proposed that the adherents of the drive reduction position would be hard put indeed to explain the results of engaging in prolonged sexual fantasy.

Also, the adequacy of this orthodox view in regard to the effects of fantasy upon anxiety is questionable. For example, Singer and Rowe (1962) found an increase in anxiety following fantasy in response to a surprise midterm examination.

A study conducted by Pytkowicz, Wagner and Sarason (1967) did show a reduction in aggression following insult and subsequent exposure to both an opportunity to daydream and the writing of TAT stories. However, this effect was more pronounced in the sample of subjects high in predisposition towards fantasy (assessed via an early

Singer-Antrobus questionnaire). Those subjects who showed the decrease in hostility following the daydreaming were also found to be oriented towards turning aggression inwards. Thus the reduced anger really constituted a more complicated intrapsychic phenomenon than merely reduced drive pressure.

Thus far, a central question regarding the validity of the drive reduction hypothesis arises in connection with the above-noted inconsistent and at times contradictory findings. It appears that while some emotional arousal states decline in intensity following exposure to fantasy, others do not, and might very well show an increase. Singer (1966, 1973) suggests that Tomkins' affect-theory (1962) which postulates different activation and reduction patterns for different affective states might more adequately explain the above-noted divergency in research findings.

More specifically, there appears to be a clouding or merging of two related phenomena which are sufficiently different to produce differential research results and a resulting conceptual confusion. Apparently the problem is a function of a confounding of drives and affects, the former being more general and biological in nature and the latter more specific and "feeling-oriented" or emotionally toned in quality.

Thus affects seem more related to "mood" states which would appear different from biologically rooted drive innervations. Tomkins postulates different neurophysiological correlates substrating drives and affects and these could conceivably account for differential results observed in the daydreaming research oriented in these directions.

The daydreaming process would seem to be a considerable extent influenced by creative dispositions. As already noted, both creativity and daydreaming have been found to relate to amount of perceived M on the Rorschach. Additionally, imagery has been seen to constitute a vital portion of the creative endeavor. Also the disposition towards a rich and prolific inner imaginal style was hinted at by Rorschach himself in his initial observation of high M producers. Singer's initial research and subsequent theoretical formulations have further advanced the hypothesis of a linkage between creative behavior and daydreaming. This is underscored by the research of Barron, MacKinnon,

Getzels and Jackson, and the theoretical contributions of Kris, Hartmann and others writing in the tradition of the psychoanalytic ego psychology.

Relations Among Creativity, Daydreaming, and Perceptual Isolation

Research will now be considered which has more of a direct bearing on the areas of imagery, fantasy and creativity. This research is in the area of perceptual isolation and will conclude the review of the literature because it seems to involve aspects of all the interrelated phenomena under study in the present investigation.

The prototypical experimental perceptual isolation technique was developed by Bexton, Heron and Scott (1954) in their sensory deprivation studies and later adapted for less stimulus depleted environments by Witkin and Lewis (1967). The intent of Witkin and Lewis' work was to uncover the nature of any relationships between experiences prior to the onset of sleep and dream mentation. Subjects were in a reclined attitude, had a hissing or "white noise" effect fed into their ears via earphones. Also, their eyes were covered by sections of ping pong balls designed to produce a uniform visual sensation of "redness". The authors claim that this uniformity of stimulation via the visual and auditory receptor systems produced an hypnagogic state at the ordinary hours of sleep but additionally at any other time during the day. In these periods, logical, ordinary cognition and verbalization characteristically deteriorated into auditory and visual experiences which were dream-like in quality accompanied by a noted sluggishness of speech.

Richardson, after reviewing research in the area of perceptual isolation, concludes that the phenomena studied therein are not unlike those emerging in studies of hypnagogic imagery. Richardson; and Zuckerman and Cohen (1964) both independently conc[illegible]e that probably the most definitive research in the area of percept[illegible]al isolation has been conducted by Goldberger and Holt. These st[illegible]dies all utilize the technique designed by Witkin and Lewis although the latter were primarily concerned with hypnagogic imagery.

In the second of two major studies, Goldberger and Holt (1961) selected sixteen male subjects out of a subject pool of fifty who responded to an ad. Each subject underwent the Witkin and Lewis

procedure described above for an eight hour period. Besides a ninety minute test battery following this eight hour perceptual isolation session, each subject was interviewed regarding his experiences during the isolation session. A primary finding in this study was the observation of two rather distinctive patterns in the subjects. One, according to the authors, was decidedly adaptive and the other maladaptive. Referring to these patterns as "syndromes" the authors note that the adaptive one was characterized by pleasant affect, unthreatening and accepted imagery of a primary process quality, functional secondary process type mentation, self stimulation, curiosity, and verbalization. The maladaptive syndrome included disruptive primary process activity, dysfunctional secondary process mentation, a need to terminate the experiment, negative affect, and general discomfort. Results from the battery of psychological tests indicated that the adaptive behavior was correlated with freedom from emotional disturbance, flexible cognitive processes and interest patterns which were feminine in nature.

Foulkes, Spear, and Symonds (1966) studying hypnagogic phenomena uncovered personality correlates similar to those noted by Goldberger and Holt, these being conceptually subsumable under or characteristic of creative potential. Both of these studies bear out the hypothesis that imagery has the highest probability of occurrence in those subjects with a potential for a creative personality style.

Specifically consistent with the above is a study by Kubzansky (1961). In this research, positive correlations were found between the degree of complexity, clarity and frequency of visual imagery experienced during a two and a half hour perceptual isolation period and scores obtained on several of Guilford's indices of creativity.

Again relevant for the present study is the research done by Solomon and Mendelson (1962). This work is particularly interesting in that a negative association was found between daydreaming and amount of experienced perceptual isolation imagery. However, it should be noted as it is by Richardson, that these authors define daydreaming in terms of past or future orientations. It seems likely then that the reason for this inverse relationship is the fact that the total daydreaming activity measured in this study really represents

only a portion of the ongoing mentation of the sort noted by Singer and McCraven (1961). More specifically, mentation concerned with specifically past and future events constitutes only certain aspects of the ongoing cognitional stream. Other measurable aspects of this stream would include present-oriented mentation, considerations of alternatives related to present problem solving strategies, interpersonal concerns and the like.

It would appear that daydreaming experienced under normal everyday conditions (Singer, 1966) and the imagery and other hallucinatory phenomena experienced under conditions of perceptual isolation as well as the more stimulus-depleted sensory deprivation conditions have a common source of origin. More specifically, it would seem that when sensory input is reduced markedly (sensory deprivation) or less so but still considerably (perceptual isolation) the subject has a pronounced need to create stimulation of an internal kind to replace that withdrawn from the external field.

Consistent with this reasoning would be the proposition that creative individuals tend to be less ill-affected (Goldberger and Holt) by reductions in stimulus input because they have a greater facility towards producing internally satisfying substitutes. It would again be reasonable then to hypothesize a positive relationship between creativity and daydreaming in that the latter seems to occur maximally when a person is subjected to fairly boring, routine, or simple repetitive motor tasks. Thus daydreaming would be the logical consequence of boring stimulation and imagery of a potentially creative sort the logical outgrowth of a severely deprived sensorium.

However it should be noted that creative imaginal productions are not the only results emerging from sensory and perceptually deprived situations. In this connection the reader will recall the already noted work of Goldberger and Holt in which a maladaptive syndrome was observed. Clarkin (1970), using a modification of the Witkin and Lewis technique found similar results in his study of creativity and regression during an experimental hypnagogic period. More specifically, a positive relationship was found between ego syntonic regressive experiences and creativity as measured both by word lists scored for originality, and a biographic inventory. Clarkin

also found an effect similar to the maladaptive syndrome noted by Goldberger and Holt. That is, there was a relationship between a negative attitude towards the requirements of his experimental task and the absence of non conflictual regressive mentation.

In Richardson's review another study is noted which has a bearing on this research. In that study, Segal and Nathan (1964) found that subjects who were facile at producing images were able to identify the Perky phenomenon at low levels of intensity. Those authors concluded that subjects who are more familiar with their own imaginal internal states are easily able to distinguish these from realistic perceptions. This would imply that familiarity with internal cognitive and perceptual dispositions might conceivably preclude tendencies towards confusing imagination and veridical perception.

The results of the above noted studies in imagery and perceptual isolation bear a provocative resemblance to the results of the studies mentioned earlier by Singer and Antrobus (1963) and Tomanelli (1970) in the area of daydreaming. In the latter two studies, daydreaming patterns suggestive of positive adaptive strategies as well as negative maladjustive orientations emerged.

It would seem reasonable to assume that the above noted common origin would be rooted in the ego's operations as regards the governing of the components of the ideational flow. Thus some measure of ego integrity should bear a relationship to the kind of "imaging" and daydreaming habits or style of the individual.

From the foregoing discussion it appears reasonable to expect certain relationships will exist among creativity indices, visual imagery, daydreaming, and perceptual isolation behavior. Also reasonable to assume would be that these relationships would vary as functions of yet another dimension, this latter being related to ego activity.

Purpose and Design of the Present Study

Therefore this research was designed to explore these posited relationships in two contexts. Firstly, the results of paper and pencil tests of creativity, neuroticism, extraversion, daydreaming and ego activity were explored via a combined correlational and factor analytic approach. Secondly, subjects classified as high and low creative participated in an actual experimental perceptual isolation investigation

of relationships among aspects of creativity, ongoing or spontaneous fantasy dimensions, and aspects of imagery. Thus the research permitted both experimental and empirical or observational approaches via laboratory and questionnaire procedures.

Before proceeding to a formal statement of the hypotheses and other outcome-related expectations of the study, a description of the tests employed seems appropriate.

Description of the Tests:

Assessment of Creativity

Criterion measurements for creativity were secured from two sources: the Biographical Inventory-Creativity (Schaefer, 1970) and the Alternate Uses Test, Form A (Wilson, Christensen, Merrifield and Guilford, 1960).

Biographical Inventory-Creativity - (Appendix A). This inventory is composed of items which call for responses reflecting familial, educational, avocational and miscellaneous correlates of the test-taker's environment. The inventory supplies two scale scores for males; one for artistic-writing and a second for mathematics-science. For females, two scale scores are also supplied; one for artistic and the second for writing.

Reported test-retest reliability coefficients for college males on the artistic-writing scale are: .84 (familial items), .86 (educational items), .89 (avocational items), .89 (miscellaneous items) and .95 (total). On the mathematics-science scale the reported test-retest reliability coefficients are: .94 (familial items), .82 (educational items), .85 (avocational items), .76 (miscellaneous items) and .87 (total).

Reported test-retest reliability coefficients for college females on the artistic scale are .86 (familial items), .54 (educational items), .81 (avocational items), .63 (miscellaneous items), and .76 (total). On the writing scale the reported test-retest reliability coefficients are: .84 (familial items), .84 (educational items), .90 (avocational items), .85 (miscellaneous items), and .93 (total).

Reported construct validity coefficients for the males are: .64 (artistic-writing), .35 (mathematics-science) and for females, .34 (art) and .55 (writing). All coefficients are significant beyond the .001 level. There are one hundred twenty-five items on both male and

female forms of the Biographical Inventory-Creativity. There are no time limits but most subjects are able to complete the Inventory in twenty minutes.

The content categories reflected in the above-mentioned subscales contain items consistent with personological correlates of the subject's life history (Schaefer, 1970). These content categories or subscales are placed in the inventory in the following manner: Family-Items one to thirty; education-Items thirty-one to fifty-three; avocational-Items fifty-four to eighty-nine; miscellaneous-Items ninety to one hundred twenty-five.

Limitations of the Biographical Inventory-Creativity. Scrutiny of the item content of the questionnaire suggests that there may be an inherent bias against subjects whose origins are from below middle class socioeconomic status. Indeed something is to be said for this position in that most of the preliminary developmental work on the inventory utilized subjects from New York City metropolitan area high schools which were geared towards educational programming for specialized training. A second limitation is that it does not provide measurement for creative proclivities among females in the mathematics and science fields. In the present study, this latter limitation led to the necessity for performing two separate statistical analyses.

Reasons for Utilizing the Biographic Inventory-Creativity. Inspite of the above-mentioned limitations, this instrument was utilized because of its "life history" format. More specifically, life history formats contain items which are structured in such a manner as to draw responses of a factual nature. Inventories composed of items which are factual in nature are considered less amenable to response set and faking strategies than other self report devices. Also the Biographic Inventory-Creativity is straightforward, simply structured, systematically assembled, and comprehensive in scope.

It should also be noted in this regard that the Biographic Inventory-Creativity has been shown to have strong predictive validity. Schaefer (1972) administered a questionnaire dealing with the extent to which people engage in independent activities to three hundred thirty of the subjects used in the initial development of the Biographic Inventory-Creativity. The results point to the continued existence of behaviors

associated with initially observed proclivities labeled as creative.

Alternate Uses Test - (Appendix A). On this test the subject is required to supply as many uses as possible for common objects. It is divided into three parts with three items per part. Four minutes are allotted for each part. Thus the total test takes a maximum of twelve minutes.

The Alternate Uses Test is a revised form of the original "Unusual Uses" test on which reliability estimates range from .68 to .81. Validity coefficients are based on the loadings of the Unusual Uses Test on the factor of "spontaneous flexibility" and are reported as .51 and .52 respectively.

Limitations and Reasons for Use in this Study. The Alternate Uses Test, Form A must be considered limited to the extent that it measures a particular cognitive facility, referred to as "spontaneous flexibility". It seems then that the instrument would be at best limited to the measurement of a very specific type of cognitive activity associated with creative processes.

The reason for its inclusion in this study is despite its limitations, the test has gained general acceptance as an easily administered instrument, well standardized through the use of time limits, and is a more experimentally oriented measure than the Biographic Inventory-Creativity.

Assessment of Personality Variables - (Appendix B).

Criterion measurements for Neuroticism, Extraversion-Introversion and a "Doesn't Know" measure were secured from the Maudsley Personality Inventory. This inventory contains forty-eight items keyed positively (yes), negatively (no) and Doesn't Know (?). There are no time limits but subjects are reported to be able to complete the inventory in ten minutes.

Reliability coefficients ranging between .75 and .85 (both split-half and Kuder-Richardson) have been reported for the extraversion-introversion scale and between .85 and .90 for the neuroticism scale. Concurrent validity coefficients of .79 for the extraversion-introversion scale and .92 for the neuroticism scale have been reported.

Limitations and Reasons for Use in this Study. The only limitation discernible by this author in connection with the Maudsley Personality

Inventory is in connection with the precise meaning of the "?" response category. There is a hint in the test manual that this response category may be associated with indecisiveness and a score above ten renders the other scores of questionable value.

As regards the reasons for its use in this study, it should be noted that it is probably one of the most comprehensively researched and well constructed measures of personality dysfunction available. It is also quickly administered and easily interpretable.

It would be appropriate to note that this inventory has been utilized in earlier factor analytic studies of daydreaming (Singer and Antrobus, 1963; 1970).

Assessment of Daydream Patterns - (Appendix C).

To derive measurements of various aspects of daydreaming behavior the instrument employed was the Imaginal Process Inventory (Singer and Antrobus, 1970A). It should be noted that the complete inventory was not used as it contains several scales considered irrelevant to the purposes of this study. A fuller description of the scales utilized in the present research follows in the next chapter.

The Imaginal Processes Inventory is itself composed of twenty-seven scales. The first two of these are "frequency" scales each composed of twelve items pertaining to the relative occurrence of content related to day and night dreams. Scale 3 contains twenty items pertaining to the depth or degree to which an individual becomes immersed in mentational processes. Scales 4 through 21 each contain twelve items pertaining to other structural and content properties of daydreams. Scales 22 through 27 measure various aspects of curiosity and attention.

In the present study both frequency scales were employed as were fourteen scales measuring content and structural properties of day-dreams. The frequency scales are supplied with five possible answers ranging from "rare" or "never" (scored 1) to "very frequently" (scored 5). The structural and content scales are scored for the degree to which the subject considers the item self descriptive. A score of 5 would indicate the item is highly descriptive and a score of 1 would indicate that the item is not at all descriptive.

Singer and Antrobus (1970B) report very satisfactory internal

consistencies (of each item with its total scale) as measured by Cronbach's alpha coefficient, for the scales of the Imaginal Processes Inventory. Most of these range in the .80's with only three falling below .75. These latter three scales do not constitute parts of the inventory utilized in this study.

Measurement of Ego Activity -(Appendix C).

The Ego Strength Scale (Barron, 1953) is a sixty-eight item inventory designed for a true-false forced choice response type format. It was chosen for use in the present study because of its inverse correlations with the pathological scales of the Minnesota Personality Inventory thus implying a reasonable degree of construct validity. The Ego Strength scale is reported to measure a sense of psychological well-being.

The second measure of ego activity is the Experience Inquiry (Fitzgerald, 1966). It is also designed for a true-false forced choice response type format and contains fifty-six items. These items are consistent with content associated with the following areas: tolerance for regressive experiences, tolerance for logical inconsistencies, constructive use of regression, altered states, peak experiences, capacity for regressive experience and tolerance for the irrational. Fitzgerald reports a split half reliability coefficient of .85.

HYPOTHESES

Hypothesis one for males predicts positive intercorrelations among the Biographical Inventory-Creativity Artistic-Writing Scale and the following variables:

A. Daydreaming Frequency
B. Night Dream Frequency of Recall
C. Acceptance of Daydreaming
D. Positive Reactions to Daydreams
E. Visual Imagery in Daydreams
F. Problem Solving Daydreams
G. Future Oriented Daydreams
H. Bizarre Improbable Daydreams
I. Sexual Daydreams
J. Ego Strength
K. Openness to Experience
L. Extraversion

For females, hypothesis one predicts that scores on the Biographic Inventory-Creativity Artistic Scale will correlate positively with scores obtained on the above measures.

Items A, B, and C are proposed because of the findings of Singer and McCraven (1961) which included positive relationships between daydreaming frequency and rated creativity of stories and daydreams. Also relevant would be the work of Singer and Schonbar (1961) which links daydream frequency with the rated creativity of stories, daydreams, and frequency of night dreams.

Item D is proposed in connection with opinion and research stemming from the work of Barron (1967) and MacKinnon (1962) which associate attributes of creative function with access to fantasy in creative individuals.

Item E is advanced because of the work of Roe (1958) which indicates a positive relationship between visual imagery and creative research endeavor; Schmeidler (1965) who found a positive relation between visual imagery and creativity; as well as the findings of Singer and McCraven which linked daydreaming with visual imagery and creativity.

Item F is proposed because it seems related to Klinger's (1971)

proposition that creative endeavor persists via fantasy activity which is geared towards the solution of problems.

Item G seems logically consistent with item F. Specifically, problem solution seems to imply an activity in relation to an unachieved goal. Additionally, Getzels and Jackson (1961) indicate that their high creative subjects demonstrated more alternative future career oriented options than did their high intelligent subjects.

Items H and I are advanced as consistent with the above noted work of Barron and MacKinnon which proposes that creative individuals have more access to personal impulse components than non creative individuals.

Items J and K are proposed because it seems reasonable to assume that creative functioning would be accompanied by ego activities which include endurance and persistence (Barron, 1953; Roe) and receptivity to the components of one's impulse life (Barron, 1967; Fitzgerald, 1966; MacKinnon). Consistent with this reasoning would be the theoretical formulations of Hartmann, Kris and Rapaport.

Item L is suggested because it appears consistent with Eysenck's (1962) reasoning which indicates that high scores on the Maudsley Extraversion Scale are suggestive of emotional stability and freedom from psychological conflict.

Related to this position would be MacKinnon's observation that his creative architect subjects participate in social situations with marked poise and dominance.

Hypothesis two for both males and females predicts positive intercorrelations among the following variables:

A. Absorption in Daydreams
B. Frightened Reactions in Daydreams
C. Past Orientation in Daydreams
D. Hallucinatory-Vividness in Daydreams
E. Fear of Failure in Daydreams
F. Hostile Aggressive Daydreams
G. Guilt in Daydreams
H. Maudsley Neuroticism

Hypothesis two is proposed because of the results obtained by Singer and Antrobus (1963, 1970B) in which factors suggestive of maladaptive fantasy were extracted. Several of the above variables were observed to load on those factors. Additionally, it seems logical to assume that indices of maladaptive daydreaming would correlate positively with an objective questionnaire measure of neuroticism.

Hypothesis three predicts that during a perceptual isolation session, male and female subjects scoring high on measures of creativity as opposed to those scoring low on those measures would produce:

A. Less task relevant material
B. More task irrelevant material
C. More personal material
D. Less impersonal material
E. More fantasy content
F. Less reality content
G. More visual imagery
H. More non visual imagery
I. More interpersonal material
J. Less evidence of blocking in verbalizations
K. More loss of contact with reality
L. Higher primary process ratings of visual imagery

Items A and B are proposed because they seem consistent with the position expressed above which suggests that subjects classified as high creative have more of a capacity to generate internal fantasy substitutes when the environment is depleted. This position seems related to the already discussed findings of Goldberger and Holt which suggests a possible positive relation between the ability to tolerate the requirements of a perceptual isolation session and a capacity to freely express personal experiences.

Items E and F seem appropriate tests of the notions of Barron and MacKinnon in relation to association between creativity and access to fantasy and Cropley's conception of the creative individual as less stimulus-bound.

Item G is proposed because of the work of Schmeidler, noted above, which demonstrated a positive relationship between creativity

and visual imagery.

Item H seems logically consistent with item G. High creative subjects would be expected to demonstrate more imagery than low creative subjects in modalities additional to the visual system.

Item I is proposed as a further exploration of the already discussed notion of a positive relation between creative function and the Rorschach M variable. It seems reasonable to assume that subjects classified as high creative would similarly demonstrate more free fantasy content characterized by interpersonal elements.

Item J is advanced because of the findings of Goldberger and Holt. These authors conclude that attitudes reflecting adaptation and maladaptation emerged in their experimental subjects and that the adaptive attitude would seem to imply creative potential. One instance of adaptation may be a relatively unimpeded flow of verbalizations.

Item K is intended to further explore the degree of loss of contact with the environment noted by Clarkin in the above mentioned study of creativity and hypnagogic imagery.

Item L is suggested in order to test the theoretical propositions of Hartmann, Kris, and Rapaport in connection with a positive relationship between creativity and availability of primary process components.

Hypothesis four for males and females predicts that at least two factors would be extracted from the intercorrelation matrices. One is expected to define dysfunctional daydreaming and the other, healthy fantasy.

This hypothesis is proposed because of the findings of Singer and Antrobus (1963, 1970B) which demonstrated fantasy patterns reflective of maladaptation and adaptation.

Hypothesis five for males and females predicts positive intercorrelations among the Ego Strength Scale, the Experience Inquiry and the Maudsley Extraversion Scale. This hypothesis is proposed because it seems consistent with theoretical expectation. Specifically, ego operations or activities which imply some kind of coping ability should intercorrelate positively. Also, Eysenck's (1962) observation that high scores on the Extraversion measure suggest emotional

stability seems to imply that the scale would correlate positively with the ego activity measures.

Hypothesis six for males and females predicts a positive relationship between maladaptive fantasy and the Maudsley Neuroticism Scale.

This hypothesis is proposed because it seems reasonable to assume that fantasy which expresses conflict should be accompanied by a similar expression of conflict expressed in an objective paper and pencil measure. Additionally, both of the above noted studies of Singer and Antrobus indicate that the Maudsley measure does show a positive relationship with variables reflecting pathological fantasy. Both kinds of measures load similarly on certain factors extracted in these studies.

METHOD

Subjects

The subjects who took the initial tests were students in an introductory psychology course taught at Fordham University. The initial pool consisted of one hundred sixty-seven subjects of whom one hundred twenty-one were male and forty-six female. Attritional factors such as approaching final examinations, refusal to cooperate, having dropped the course, and absence from class, caused a decrease in the pool to one hundred eleven subjects of whom eighty-one were males and thirty females who took the second series of measures. Forty subjects selected from larger group, thirty males and ten females, participated in the last session of the study.

All subjects participated on a strictly voluntary basis and were advised that no course credit would be given in exchange for their cooperation. They were, however, advised that an individual report of their results would be supplied if they so desired. Complete confidentiality was guaranteed.

Description of the Task and Apparatus. Each of the forty selected subjects participating in the perceptual isolation session was read standard instructions by the experimenter when they arrived at the laboratory (See Appendix D). The subjects were simply asked to recline on a cot-type apparatus measuring approximately six feet in length by approximately three and a half feet in width. This cot was located as nearly as possible to the center in a room measuring eight feet (width) by ten feet (height) by eight feet (depth). The room was lead shielded and well insulated to produce optimal screening out of any extraneous noise.

The temperature was set at exactly seventy degrees and the room was air conditioned via a virtually silent duct-type forced air system. The one window in the room was closed off by a movable lead-shielded steel shade mounted on a track and roller system which was anchored to both ceiling and window frame.

The only illumination in the room was supplied by a forty watt red light bulb housed in a ceiling electrical fixture.

A transluscent goggle-like apparatus was placed over the subjects' eyes in order to produce optimal homogeneity within the visual field.

In order to produce consistent homogeneity in the auditory field, white noise was fed into the subjects' ears at a low level of intensity.

Thus the subjects were situated according to the Clarkin (1970) procedure which in itself is modeled on the Witkin and Lewis (1967) technique. While in the Clarkin and Witkin and Lewis studies, attempts were made to produce an experimental hypnagogic state, one aim of the present study was to produce a less sensorially deprived context.

Every four minutes the subjects were interrupted by a signal buzzer and verbalized their thoughts, images and feelings for exactly a one minute period. At the end of this one minute period the white noise was resumed for another four minute period. Each subject was interrupted six times during the experimental session.

Their verbalizations were taperecorded and transcribed resulting in forty typewritten protocols.

Upon completion of the perceptual isolation session the subject was read standard debriefing instructions (See Appendix E), told that he or she was welcome to a report of his or her results, thanked for his or her cooperation and dismissed.

As of this writing, five of the subjects undergoing the perceptual isolation session have called the author inquiring about their results. Of these, four were male, two from the high creative group and two from the low creative group. The one female that called was from the high creative group.

As the data have taken longer to organize than anticipated, each was given, of course, correct but very general information relative to their performance and promised a more comprehensive feedback once the project was completed.

Procedure

Conduct of the Sessions: The study was conducted in three sessions. Arrangements for conducting Session 1 were made by contacting the two graduate assistants and one professor who taught the five sections of the course. All three individuals permitted the experimenter to address their classes and assisted in distributing the materials for the three tests.

Arrangements for Session 2 were essentially the same with one exception. Only one inventory was distributed.

Arrangements for conducting Session 3 were considerably more complicated. The experimenter was able to contact some of the subjects by securing mailing lists and telephone numbers from both the Office of the Registrar and the Alumni Office. This procedure had to be followed because in the period between the second and third session, several subjects had changed residences, married, or were otherwise difficult to locate.

Length of Sessions: Session 1 was held during class time and consumed between forty-five and fifty minutes. Session 2 was also conducted during class time and consumed between fifty and seventy minutes. Session 3 was conducted in the psychological laboratory and consumed between thirty and thirty-five minutes.

Intervals Between Sessions: Session 1 took place during the early part of the Spring 1972 semester. Session 2 took place during the last part of that same semester. The perceptual isolation sessions began some twenty months later and spanned approximately a three and a half month period.

Measures and Procedures Administered Within the Sessions: During Session 1 the initial one hundred sixty-seven subjects were administered the Biographical Inventory-Creativity, the Alternate Uses Test, Form A (See Appendix A) and the Maudsley Personality Inventory (See Appendix B). During Session 2 the remaining one hundred eleven subjects were administered the "Daydream and Cognitive Processes Inventory" (See Appendix C).

The Daydream and Cognitive Processes Inventory: This was constructed especially for the present study. It was divided into four parts. Part I consisted of Scales 1 and 2 of the Imaginal Processes Inventory (Singer and Antrobus, 1970A). These were:

Scale 1. Daydreaming Frequency - 12 items

Scale 2. Night Dreaming Frequency - 12 items

The items from these scales appear in exactly the same randomized order in which they are placed in the Imaginal Processes Inventory.

Part II consisted of the following fourteen scales also drawn from

that same inventory:

Scale 3. Absorption in Daydreams - 20 items
Scale 4. Acceptance of Daydreaming - 12 items
Scale 5. Positive Reactions to Daydreams - 12 items
Scale 6. Frightened Reactions to Daydreams - 12 items
Scale 7. Visual Imagery in Daydreams - 12 items
Scale 9. Problem Solving in Daydreams - 12 items
Scale 11. Future in Daydreams - 12 items
Scale 12. Past in Daydreams - 12 items
Scale 13. Bizarre Improbable Daydreams - 12 items
Scale 16. Hallucinatory Vividness of Daydreams - 12 items
Scale 17. Fear of Failure Daydreams - 12 items
Scale 18. Hostile Aggressive Daydreams - 12 items
Scale 19. Sexual Daydreams - 12 items
Scale 21. Guilt Daydreams - 12 items

The items from these latter fourteen scales were randomized for placement in Part II of the Daydream and Cognitive Processes Inventory.

Part III consisted of all sixty-eight items of the Ego Strength scale (Barron, 1953) and Part IV of all fifty-six items of the Experience Inquiry (Fitzgerald, 1966). Together with these two measures of ego activity, the total inventory thus consisted of three hundred twenty-four items.

During Session 3, the subjects were rated on each of twelve variables measured during the perceptual isolation session. These twelve verbalized thematic content measures were:

1. Content relevant to the task
2. Content irrelevant to the task
3. Content of a personal nature
4. Content of an impersonal nature
5. Content of a fantasy nature
6. Content of a realistic nature
7. Content containing visual imagery
8. Content characterized by non visual imagery
9. Content containing interpersonal imagery
10. Content characterized by blocked verbalizations

11. Content implying loss of reality contact

12. Primary process quality of obtained visual imagery

Method of Selecting Subjects for Session 3: The fifteen highest scoring males were compared to the fifteen lowest scoring males and the five highest females were compared to the five lowest scoring females on the basis of the two scores obtained on the Biographical Inventory-Creativity and the one score obtained on the Alternate Uses Test, Form A. The resulting groups represented the upper and lower sixths of each distribution. Thus each subject's total score on the creativity variable represented the summed Z transforms of the raw scores obtained on each of the three creativity measures.

In order to perform equivalent statistical procedures, the different scale scores for the male (artistic-writing and mathematics-science) and female (artistic and writing) groups on the Biographical Inventory-Creativity had to necessarily lead to separate analyses.

Scoring of the Data - Session 1: Scoring of the Biographical Inventory-Creativity, the Alternate Uses Test, Form A, and the Maudsley Personality Inventory was performed by the author, in accordance with the procedures set forth in the manuals for each of these tests.

Session 2: The scoring of the sixteen Imaginal Process Inventory scales and the two ego activity measures was also done by the author and a trained assistant in accordance with the procedures set forth in the Imaginal Processes Inventory manual and by the authors of the Ego Strength scale and the Experience Inquiry.

Session 3: The data obtained from the first eleven variables tested during the perceptual isolation session were scored by two Masters degree level psychology students, who did not know the group designations of the protocols, in accordance with the procedure outlined in Appendix F. These raters used a five point scale to rate the presence of content associated with each theme (0-no content, 4-protocol characterized by a large amount of content associated with a particular theme). The data from scores obtained on the twelfth variable were scored by the same two raters, this time using the seven point scale devised by Auld, Goldenberg and Weiss (1968). A score of one indicates imagery lacking in primary process quality

and a score of seven, imaginal content highly characterized by primary process components (See Appendix G). See Appendix H for sample scored protocol.

On all twelve measures the final score represents the averaging of the two scores supplied by the raters. In cases of irresolvable disparity, the experimenter did a blind analysis of the protocol and the final score would represent the average of three ratings.

Statistical Analysis of the Data: Scores for the Session 1 and 2 data, that is the creativity indices, the Maudsley indices, the day-dreaming indices and the ego activity indices were subjected to two independent computer generated correlation analyses which yielded two 24x24 matrices of two hundred and seventy-six correlations each, one for males and one for females. As previously noted above in a different connection, the differential score output of the Biographical Inventory-Creativity for males and females necessitated two separate analyses.

The resulting matrices of Pearson correlation coefficients were then factor analyzed via the orthogonal powered vector analytic technique. This particular technique was used because of its relative simplicity; that is, it does not require rotation of axes to produce orthogonal simple structure, and because of its functional efficiency; that is, it is a very rapid and accurate technique (Overall and Klett, 1972).

The data obtained on all twelve variables tested during the Session 3 perceptual isolation period were analyzed via the "DISCRIM" multiple discriminant analysis technique described by Veldman (1967).

RESULTS

Tests of Hypotheses

Hypothesis 1: For males the first hypothesis predicted positive correlations between the Artistic-Writing Scale and nine Imaginal Process Inventory Scales, two Ego Activity measures, and a measure of extraversion. Of these twelve correlations, ten were positive, two negative and only one proved significant. As Appendix I indicates this was the correlation between the Artistic-Writing Scale and the Experience Inquiry ($r=.45$, $p<.01$).

For females, hypothesis one made the same predictions except that the creativity measure was the Artistic Scale. Of these twelve correlations, seven were positive, five negative and again only one proved significant. As Appendix J indicates, this was the correlation between the Artistic Scale and the Imaginal Process Inventory Acceptance of Daydreaming Scale ($r=.34$, $p<.05$).

The first hypothesis received only weak support in both samples.

Hypothesis 2: The second hypothesis was supported. It predicted, for both males and females, (tables 1 and 2) positive correlations among seven Imaginal Process Inventory scales and a measure of neuroticism. For both samples all of these correlations were positive.

TABLE 1

CORRELATIONS AMONG MALADAPTIVE DAYDREAM SCALES AND THE MAUDSLEY NEUROTICISM SCALE - MALE DATA

Variables	A	B	C	D	E	F	G
A. Absorption in Daydreams							
B. Frightened Reactions in Daydreams	.35						
C. Past Orientation in Daydreams	.21	.30					
D. Hallucinatory Vividness of Daydreams	.39	.42	.06				
E. Fear of Failure in Daydreams	.27	.45	.02	.43			
F. Hostile Aggressive Daydreams	.47	.35	.13	.38	.50		
G. Guilt in Daydreams	.28	.49	.02	.58	.81	.46	
H. Maudsley Neuroticism	.47	.21	.08	.18	.32	.38	.29

___ = $p<.05$

___ = $p<.01$

TABLE 2

CORRELATIONS AMONG MALADAPTIVE DAYDREAM SCALES AND THE MAUDSLEY NEUROTICISM SCALE - FEMALE DATA

Variables							
A. Absorption in Daydreams							
B. Frightened Reactions in Daydreams	.26						
C. Past Orientation in Daydreams	.39	.20					
D. Hallucinatory Vividness of Daydreams	.53	.25	.06				
E. Fear of Failure in Daydreams	.45	.60	.19	.46			
F. Hostile Aggressive Daydreams	.32	.50	.09	.36	.56		
G. Guilt in Daydreams	.13	.27	.19	.34	.48	.30	
H. Maudsley Neuroticism	.52	.41	.50	.28	.38	.19	.30

___ = $p < .05$

___ = $p < .01$

For males, sixteen of these correlations were significant and for females, fifteen were significant.

Hypothesis 3: The third hypothesis predicted that subjects classified as high creative as opposed to those classified low creative would differ in specific directions on each of twelve measures obtained during a perceptual isolation session.

For the male subjects (table 3) the hypothesis was confirmed in connection with two of the twelve measures. That is, subjects classified as high creative produced significantly more task irrelevant content ($F=4.22$, $p < .05$) and personally oriented mentation ($F=8.11$, $p < .01$) than did subjects classified as low creative. All of the differences were in the predicted direction.

For the females (table 4) no significant differences were found between high and low scoring subjects on any of the twelve measures. Eleven of the differences were in the predicted direction while one showed no difference between the groups.

Thus the data tend, especially in the male sample, to give some weak support to the third hypothesis.

TABLE 3

Multiple Discriminant Analysis of Male Data

Univariate F Test Results Obtained on Measures of Creativity

High Scoring Subjects(N=14) Versus Low Scoring Subjects(N=15) df=27

Variable	High Creative		Low Creative		F	p	Weight
	M	SD	M	SD			
Task Relevance	1.14	.83	1.53	1.15	1.01	.32	-.28
Task Irrelevance	3.00	.76	2.27	1.14	4.22	.05	.55
Personal Material	2.86	.64	2.00	2.80	8.11	.01	.72
Impersonal Material	1.14	.74	1.33	.94	.34	.57	-.17
Fantasy Content	2.21	1.09	1.47	1.02	3.20	.08	.49
Reality Content	2.14	.83	2.20	1.05	.02	.87	-.04
Visual Imagery	2.14	1.02	1.60	1.30	1.39	.25	.33
Non Visual Imagery	.86	.74	.47	.72	1.93	.17	.39
Interpersonal Material	1.50	1.12	1.33	.79	.20	.66	.13
Blocking	1.43	.73	1.93	1.12	1.89	.18	-.38
Loss of Contact	.78	.77	.67	1.01	.12	.73	.10
Primary Process Quality of Visual Imagery	2.54	1.36	1.64	.87	1.65	.21	.36

___ $p < .05$

___ $p < .01$

Chi Square = 13.08 df = 12 $p < .05$

TABLE 4

Multiple Discriminant Analysis of Female Data

Univariate F Test Results Obtained on Measures of Creativity

High Scoring Subjects(N=5) Versus Low Scoring Subjects(N=5) df=8

Variable	High Creative		Low Creative		F	p	Weight
	M	SD	M	SD			
Task Relevance	1.20	.43	1.60	.28	.80	.60	581.77
Task Irrelevance	3.20	.53	2.40	.28	2.13	.18	77.31
Personal Material	2.60	.28	2.00	.37	2.25	.17	221.98
Impersonal Material	1.00	.00	1.20	.43	.28	.61	- 52.30
Fantasy Content	2.20	.23	1.60	.28	3.60	.09	203.10
Reality Content	2.00	.00	2.60	.46	2.25	.17	- 77.13
Visual Imagery	2.00	.37	1.40	.28	2.25	.17	136.31
Non Visual Imagery	.80	.23	.20	.23	4.50	.06	-121.86
Interpersonal Material	2.00	.00	1.40	.46	2.25	.17	209.80
Blocking	1.40	.46	2.20	.56	2.13	.18	-256.28
Loss of Contact	.20	.23	.20	.23	.00	.99	776.75
Primary Process Quality of Visual Imagery	2.00	.52	1.20	.23	2.67	.14	169.66

Chi Square = 40.49 df = 12 p = .0002

Hypothesis 4: This hypothesis predicted that at least two main factors would emerge from an analysis of the intercorrelations among the variables related to daydreaming. It was expected that one of these would relate to healthy function and the other to dysfunction.

For the males, Factors I and V (tables 5 and 6) refer to dysfunction and Factors II and III (tables 7 and 8) to healthy functioning.

TABLE 5

MALE FACTOR NUMBER ONE

OBSESSIVE-ANXIOUS MENTATION

	Variables	Loadings
22.	Guilt in Daydreams	.89
19.	Fear of Failure in Daydreams	.88
18.	Hallucinatory Vividness of Daydreams	.62
20.	Hostile Aggressive Daydreams	.60
12.	Frightened Reactions in Daydreams	.57
9.	Absorption in Daydreams	.43
5.	Maudsley Neuroticism	.40
10.	Acceptance of Daydreams	-.34

Eigenvalue 3.46 Percent of Total Variance 14

TABLE 6

MALE FACTOR NUMBER FIVE

SCHIZOID-FEARFUL DAYDREAMS

	Variables	Loadings
17.	Bizarre Improbable Daydreams	.54
16.	Past Orientation in Daydreams	.36
12.	Frightened Reactions in Daydreams	.33
15.	Future Orientation in Daydreams	-.39

Eigenvalue .96 Percent of Total Variance 4

TABLE 7

MALE FACTOR NUMBER TWO

CREATIVE ORIENTATION

	Variables	Loadings
1.	BIC Artistic Writing	.82
2.	BIC Mathematics Science	.79
24.	Experience Inquiry	.47
3.	Guilford Alternate Uses	.39

Eigenvalue 1.98 Percent of Total Variance 8

TABLE 8

MALE FACTOR NUMBER THREE

ENJOYABLE SEXUALLY STIMULATING FANTASY

	Variables	Loadings
21.	Sexual Daydreams	.70
9.	Absorption in Daydreams	.70
11.	Positive Reactions in Daydreams	.61
13.	Visual Imagery in Daydreams	.53
15.	Future Orientation in Daydreams	.50
7.	Daydream Frequency	.34
14.	Problem Solving in Daydreams	.34
10.	Acceptance of Daydreams	.34

Eigenvalue 2.82 Percent of Total Variance 12

For the females, Factor IV (table 9) suggests dysfunction and Factors II and III (tables 10 and 11) strongly suggest healthy functioning.

These factors are discussed at greater length below. These data are consistent with hypothesis four.

TABLE 9

FEMALE FACTOR NUMBER FOUR

INHIBITED ARRESTED DAYDREAMING

	Variables	Loadings
16.	Past Orientation in Daydreams	.67
10.	Acceptance of Daydreams	.51
5.	Maudsley Neuroticism	.49
21.	Sexual Daydreams	-.30

Eigenvalue 1.62 Percent of Total Variance 7

TABLE 10

FEMALE FACTOR NUMBER TWO

CREATIVE IMPULSE

	Variables	Loadings
24.	Experience Inquiry	.71
10.	Acceptance of Daydreams	.58
2.	BIC Writing	.47
21.	Sexual Daydreams	.37
1.	BIC Artistic	.37
8.	Night Dream Frequency of Recall	.37
13.	Visual Imagery in Daydreams	.31
5.	Maudsley Neuroticism	-.33
19.	Fear of Failure in Daydreams	-.47
22.	Guilt in Daydreams	-.51

Eigenvalue 2.54 Percent of Total Variance 11

TABLE 11

FEMALE FACTOR NUMBER THREE

CONSTRUCTIVE PLANFUL MENTATION

	Variables	Loadings
15.	Future Orientation in Daydreams	.69
10.	Acceptance of Daydreams	.44
14.	Problem Solving in Daydreams	.37
22.	Guilt in Daydreams	-.38
3.	Guilford Alternate Uses	-.41
17.	Bizarre Improbable Daydreams	-.58

Eigenvalue 1.83 Percent of Total Variance 8

Hypothesis 5: This hypothesis predicted positive intercorrelations among the Ego Strength Scale, the Experience Inquiry, and the Maudsley Extraversion Scale. The data for males and females are summarized in tables 12 and 13 and do not support the hypothesis.

TABLE 12

CORRELATIONS AMONG THE EGO ACTIVITY MEASURES AND THE MAUDSLEY EXTRAVERSION SCALE - MALES

		A	B
A.	Ego Strength Scale		
B.	Experience Inquiry	.18	
C.	Maudsley Extraversion Scale	.28	.21

TABLE 13

CORRELATIONS AMONG THE EGO ACTIVITY MEASURES AND THE MAUDSLEY EXTRAVERSION SCALE - FEMALES

		A	B
A.	Ego Strength Scale		
B.	Experience Inquiry	.01	
C.	Maudsley Extraversion Scale	.03	.14

Hypothesis 6: This hypothesis predicted a positive relationship between the Maudsley Neuroticism Scale and pathological daydreaming. The hypothesis was supported in both samples. The data on dysfunction described as supportive of hypothesis four also support hypothesis six.

Findings: Organization of the Data

The findings will be discussed at greater length below and are presented in the order in which they were obtained for both samples. This distinction between male and female samples is necessary for sessions one and two and is maintained for session three in order to provide uniformity.

Session One and Two - Male Subjects. Table 14 lists the means and standard deviations for each of the twenty-four tests administered to all subjects during the first two sessions of the study.

The normative Fordham University sample upon which the Biographic Inventory-Creativity was developed obtained a mean score on the Artistic-Writing Scale which was less than one point higher than the mean obtained by the present sample. On the Mathematics-Science Scale the normative group earned a mean score less than two points higher than the one obtained by the present sample.

Opportunities for comparison between these subjects and subjects from other samples with regard to the Alternate Uses Test are limited. The only available data are reported by Wilson, Christensen, Merrifield and Guilford (1960), and these authors indicate that the means for both sexes were so similar that they were combined. These data suggest that high scorers in the present sample are roughly equivalent to subjects who fell at approximately the sixty-fifth percentile in a sample of college students of above average academic aptitude at the University of Texas. Low scoring subjects would be comparable to subjects falling between the sixteenth and eighteenth percentiles in that normative sample.

The male subjects in the present sample obtained a mean score two points lower than the one obtained by the American normative sample on the Maudsley Personality Inventory Extraversion Scale. Also the mean score obtained by the present subjects is three points higher than the one obtained by the normative sample on the Maudsley Neuroticism Scale.

TABLE 14

MEANS AND STANDARD DEVIATIONS OF MALE DATA FOR SESSIONS ONE AND TWO

	Variables	Mean	SD
1.	BIC Artistic Writing	98.44	8.76
2.	BIC Mathematics Science	103.04	5.09
3.	Guilford Alternate Uses	20.64	6.61
4.	Maudsley Extraversion	25.83	9.18
5.	Maudsley Neuroticism	23.60	9.99
6.	Maudsley "Doesn't Know"	6.01	5.39
7.	Daydream Frequency	136.51	8.89
8.	Night Dream Frequency of Recall	135.85	9.95
9.	Absorption in Daydreams	146.14	15.55
10.	Acceptance of Daydreams	111.59	17.32
11.	Positive Reactions in Daydreams	132.98	10.57
12.	Frightened Reactions in Daydreams	111.60	9.62
13.	Visual Imagery in Daydreams	117.18	14.41
14.	Problem Solving in Daydreams	117.05	9.33
15.	Future Orientation in Daydreams	128.68	15.44
16.	Past Orientation in Daydreams	109.98	13.41
17.	Bizarre Improbable Daydreams	109.76	11.09
18.	Hallucinatory Vividness of Daydreams	121.29	7.35
19.	Fear of Failure in Daydreams	121.00	7.52
20.	Hostile Aggressive Daydreams	126.45	9.38
21.	Sexual Daydreams	136.21	10.17
22.	Guilt in Daydreams	119.75	8.44
23.	Ego Strength	41.13	7.30
24.	Experience Inquiry	32.71	6.81

Appendix I contains the correlation matrix which summarizes the intercorrelations among the twenty-four measures obtained during sessions one and two (of the resulting two hundred seventy-six correlations, twenty-four are significant at the five percent level and fourteen are significant at the one percent level).

Session Three - Male Subjects. These data which are cited above in table 3 indicate that the groups contrasted on the creativity measure differ significantly in the predicted direction on two of the twelve measures taken during the perceptual isolation session.

Session One and Two - Female Subjects. Table 15 lists the means and standard deviations computed for each of the twenty-four tests administered to all subjects during the first two sessions of the study.

The mean score for this sample differs by only one point from the mean score obtained by the normative group on the Biographic Inventory-Creativity Artistic Scale. On the Writing Scale however, the mean score obtained by the present sample was approximately four points lower.

Compared with the original University of Texas group, the high female scorers in this sample tend to score again at the same sixty-fifth percentile as do their male counterparts on the Alternate Uses Test. Low female scorers would be comparable to subjects falling at the nineteenth percentile in the normative Texas sample.

These subjects obtained a mean score approximately one point lower than that obtained by the American normative group on the Maudsley Personality Inventory Extraversion Scale. These students score slightly more than five points higher on the Maudsley Neuroticism Scale.

Appendix J contains the correlation matrix which summarizes the intercorrelations among the twenty-four measures obtained during sessions one and two (of the resulting two hundred seventy-six correlations, twenty-nine are significant at the five percent level and twenty-two at the one percent level).

TABLE 15

MEANS AND STANDARD DEVIATIONS OF FEMALE DATA FOR SESSIONS ONE AND TWO

	Variables	Mean	SD
1.	BIC Artistic	99.83	3.63
2.	BIC Writing	102.20	4.90
3.	Guilford Alternate Uses	21.60	5.30
4.	Maudsley Extraversion	28.07	8.89
5.	Maudsley Neuroticism	26.73	9.34
6.	Maudsley "Doesn't Know"	6.17	5.23
7.	Daydream Frequency	140.83	7.76
8.	Night Dream Frequency of Recall	140.83	6.74
9.	Absorption in Daydreams	151.67	20.38
10.	Acceptance of Daydreams	115.16	20.36
11.	Positive Reactions in Daydreams	134.00	9.13
12.	Frightened Reactions in Daydreams	111.90	13.09
13.	Visual Imagery in Daydreams	113.20	12.43
14.	Problem Solving in Daydreams	120.57	11.23
15.	Future Orientation in Daydreams	133.27	15.12
16.	Past Orientation in Daydreams	112.63	15.14
17.	Bizarre Improbable Daydreams	106.90	10.26
18.	Hallucinatory Vividness of Daydreams	120.50	6.55
19.	Fear of Failure in Daydreams	120.40	7.16
20.	Hostile Aggressive Daydreams	121.06	7.59
21.	Sexual Daydreams	132.40	11.27
22.	Guilt in Daydreams	115.70	4.95
23.	Ego Strength	35.50	5.25
24.	Experience Inquiry	32.63	7.68

Session Three - Female Subjects. As is apparent from table 4 above the two groups contrasted on the creativity measures do not differ significantly on any of the measures taken during the perceptual isolation session.

Interpretation of the Data:

Sessions One and Two - Male Data - Results of the Factor Analysis. Before proceeding directly into an analysis of each of the factors, it should be noted that the significant loadings are presented in descending order of magnitude in the accompanying tables. A complete list of the factors and their loadings is presented in Appendix K.

Factor I, "Obsessive-Anxious Mentation" has been summarized in table 5 above. The factor accounts for fourteen percent of the total variance among the six extracted factors. It derives six of its seven significant positive loadings from the following Imaginal Processes Inventory scales: Guilt Daydreams, Fear of Failure Daydreams, Hallucinatory Vividness of Daydreams, Hostile Aggressive Daydreams, Frightened Reactions to Daydreams, and Absorption in Daydreams. The seventh significant positive loading is contributed by another Imaginal Process Inventory scale, Acceptance of Daydreaming. Examination of the pattern of loadings on this factor suggests that it is a bipolar dimension.

This may be indicating that the factor is primarily a fantasy factor characterized by types of daydreaming which have been associated with relatively severe maladjustment. Consistent with this observation is the significant positive loading contributed by the Maudsley Neuroticism scale. The meaning of the factor is further qualified by the negative loading of the Imaginal Processes Inventory Acceptance of Daydreaming scale.

Factor I appears to describe fantasy behavior which is featured by elements of tortured concern regarding the self, anxiety, relatively great vividness, anger, fear reactions and immersion in thought. The obsessive quality is apparently anchored in the anger, vividness, guilt, absorption, and Maudsley neuroticism variables. The anxious quality would seem generated by the Fear of Failure and Frightened Reaction variables.

Factor II, Creative Orientation, is summarized in table 7 above. It accounts for approximately eight percent of the total variance. The emergence of this unipolar factor implies a link between measures of creativity and openness to experience.

Those variables contributing significant positive loadings on Factor II are: the artistic-writing and mathematics-science scales of the Biographical Inventory-Creativity, the Experience Inquiry and the Guilford Alternate Uses Test.

Further information regarding the behavior described by this factor emerges in the contributions from the Daydream Frequency and Acceptance of Daydreaming scales of the Imaginal Processes Inventory. These may be considered as lending support to positions linking creativity, openness to experience, and disposition towards and acceptance of daydreaming. However, since the loadings of these daydream scales are low, this support is weak.

Factor III, Enjoyable Sexually Stimulating Fantasy, is summarized in table 8 above and accounts for approximately twelve percent of the total variance. Factor III appears to be an unipolar dimension characterized by positive significant loadings derived exclusively from the Imaginal Processes Inventory. These contributing variables are: Sexual Daydreams, Absorption in Daydreams, Positive Reactions in Daydreams, Visual Imagery in Daydreams, Future Orientation in Daydreams, Daydream Frequency, Problem Solving in Daydreams and Acceptance of Daydreams.

This factor appears to describe fantasy behavior which involves relatively intensive use of elaborate vivid sexually toned thematism yielding pleasure and enjoyment. The factor also includes elements of planfulness, problem solving, frequent indulgence in fantasy and a generally accepting attitude toward one's thoughts.

Factor IV, Attentiveness to Inner Imaginal Productions, is summarized in table 16. This factor accounts for approximately six percent of the total variance and derives its positive significant loadings from four Imaginal Processes Inventory scales: Night Dream Frequency, Problem Solving in Daydreams, Future Orientation in Daydreams and Daydream Frequency. It appears that the factor is tending towards bipolarity in that there are weaker but fairly

substantial loadings contributed by the Imaginal Process Inventory Bizarre Improbable Daydreams scale and the Maudsley Personality Inventory "Doesn't Know" measure.

Factor IV's significant components derive almost exclusively from the scales of the Imaginal Processes Inventory. The positive loadings on the factor suggest that it is descriptive of behavior which involves a fairly high value placed upon fantasy activity for its own sake as well as for problem solving and planful future concerns. Additionally, the overall concern with conscious daily fantasy is paralleled by a very strong interest in the recall of nocturnal dreams. This factor may be considered as evidence consistent with the Freudian position which considers daydreams as extensions or derivatives of the content disguised in night dreams (Freud, as cited by Jones, 1959).

TABLE 16

MALE FACTOR NUMBER FOUR

ATTENTIVENESS TO INNER IMAGINAL PRODUCTIONS

	Variables	Loadings
8.	Night Dream Frequency of Recall	.62
14.	Problem Solving in Daydreams	.57
15.	Future Orientation in Daydreams	.47
7.	Daydream Frequency	.36

Eigenvalue 1.49 Percent of Total Variance 6

Factor V, Schizoid-Fearful Daydreams, is summarized in table 6 above and accounts for approximately four percent of the total variance. Factor V is structurally rather simple deriving its significant positive and negative loadings exclusively from the Imaginal Processes Inventory. Its chief positive loadings are contributed by the Bizarre Improbable Daydreams scale, the Past Orientation in Daydreams scale, and the Frightened Reactions to Daydreams scale. Its only significant negative loading is contributed by the Imaginal Process Inventory Future Orientation in Daydreams scale. A supportive weaker negative loading is contributed by the Imaginal Processes Inventory Positive Reactions in Daydreaming scale.

Factor V also appears to be a bipolar dimension characterized by maladaptive fantasy correlates at the positive pole and adaptive fantasy correlates at the negative pole.

Factor VI, Extraverted Orientation, is summarized in table 17. It accounts for approximately four percent of the total variance. The factor appears representative of a bipolar behavioral dimension reflecting outgoingness and freedom from disabling symptoms at the positive pole. At the negative pole a significant negative loading is contributed by the Maudsley Neuroticism variable. The significant positive loadings are contributed by the Barron Ego Strength Measure and the Maudsley Extraversion measure.

Factor VI is one of the simplest constructionally of the six extracted factors and is noticeably devoid of significant loadings from the Imaginal Processes Inventory.

TABLE 17

MALE FACTOR NUMBER SIX

EXTRAVERTED ORIENTATION

Variables	Loadings
23. Ego Strength	.49
4. Maudsley Extraversion	.44
5. Maudsley Neuroticism	-.43

Eigenvalue .90 Percent of Total Variance 4

Sessions One and Two - Female Data - Factor Analysis. As in the case of the male data all of the significant loadings descriptive of each of the factors are presented in descending order of magnitude in the accompanying tables. A complete listing of all loadings is presented in Appendix L.

Factor I, Attentiveness to Varied Inner Mentation, accounts for approximately nineteen percent of the total variance among the seven extracted factors and is summarized in table 18. It is positively defined by a variety of different kinds of daydreaming and affective components and there is a suggestion of attention to external events and symptom freedom negatively characterizing the factor.

The Imaginal Processes Inventory scales which contribute positive significant loadings to Factor I are: Absorption in Daydreams, Sexual Daydreams, Hallucinatory Vividness of Daydreams, Daydream Frequency, Positive Reactions to Daydreams, Fear of Failure in Daydreams, Problem Solving in Daydreams, Hostile-Aggressive Daydreams, Visual Imagery in Daydreams, Frightened Reactions in Daydreams, and Future Orientation in Daydreams.

Non Imaginal Process Inventory contributions which load positively on Factor I are from the Maudsley Personality Inventory Neuroticism Scale and the Experience Inquiry. Suggestive negative contributions derive from the Barron Ego Strength measure and the Maudsley Personality Extraversion measure.

TABLE 18

FEMALE FACTOR NUMBER ONE

ATTENTIVENESS TO VARIED INNER MENTATION

	Variables	Loadings
9.	Absorption in Daydreams	.84
21.	Sexual Daydreams	.73
18.	Hallucinatory Vividness of Daydreams	.69
7.	Daydream Frequency	.66
11.	Positive Reactions in Daydreams	.66
19.	Fear of Failure in Daydreams	.54
14.	Problem Solving in Daydreams	.51
20.	Hostile Aggressive Daydreams	.51
5.	Maudsley Neuroticism	.49
13.	Visual Imagery in Daydreams	.39
12.	Frightened Reactions in Daydreams	.38
24.	Experience Inquiry	.36
15.	Future Orientation in Daydreams	.33

Eigenvalue 4.49 Percent of Total Variance 19

Factor II, Creative Impulse, is summarized in table 10 above and accounts for approximately eleven percent of the total variance among the factors. Factor II derives its significant positive loadings

from the Experience Inquiry, both the artistic and writing scales of the Biographical Inventory-Creativity and the following scales of the Imaginal Processes Inventory: Acceptance of Daydreams, Sexual Daydreams, Recall of Night Dreams, and Visual Imagery in Daydreams. Significant negative loadings are contributed by the Maudsley Personality Inventory Neuroticism Scale and two Imaginal Process Inventory scales: Fear of Failure in Daydreams and Guilt in Daydreams.

This factor appears to be bipolar and presents additional empirical support for the theoretical positions proposing at least two patterns of fantasy and for conceptions linking indices of creativity, healthy daydreaming and attentiveness to inner imaginal productions.

Factor III, Constructive Planful Mentation, is summarized in table 11 above. This factor is also apparently a bipolar dimension and accounts for approximately eight percent of the total variance. It derives its significant positive loadings from three Imaginal Process Inventory scales: Future Orientation in Daydreams, Acceptance of Daydreams and Problem Solving in Daydreams. Significant negative contributions derive from two Imaginal Processes Inventory scales: Guilt in Daydreams and Bizarre Improbable Daydreams. A third significant negative contribution has its source interestingly in the Guilford Alternate Uses Test.

Factor III appears to contrast adaptive thoughtfulness with conflict-ridden thinking.

Factor IV, Inhibited Arrested Daydreaming, is summarized in table 9 above. It accounts for approximately seven percent of the total variance. Factor IV tends towards bipolarity and is defined positively by two Imaginal Process Inventory scales; Past Orientation in Daydreams and Acceptance of Daydreams and the Maudsley Personality Inventory Neuroticism Scale. It is defined negatively by the significant loading of the Imaginal Processes Inventory Sexual Daydreams scale. Further information about the meaning of the factor seems supplied by the negative loading of the Imaginal Process Inventory Positive Reactions in Daydreams scale.

Factor IV appears to be contrasting two oppositional fantasy dispositions. At the positive pole are fantasy and personality correlates associated with obsessional constricted proclivities and at the

negative pole are fantasy correlates associated with sexuality, pleasure, and vividness of imaginal activity.

Factor V, Freedom From Disabling Symptoms, is summarized in table 19. It appears bipolar in nature and accounts for approximately six percent of the total variance. Relatively simple in structure, Factor V derives its single significant positive loading from the Barron Ego Strength measure and its two significant negative loadings from the Imaginal Processes Inventory Visual Imagery in Daydreams scale and the writing scale of the Biographic Inventory-Creativity.

Factor V may be suggestive of behavior typified by the conspicuous absence of psychiatric symptoms and lacking in imaginal components and psychological mindedness or insight.

TABLE 19

FEMALE FACTOR NUMBER FIVE

FREEDOM FROM DISABLING SYMPTOMS

	Variables	Loadings
23.	Ego Strength	.65
13.	Visual Imagery in Daydreams	-.51
2.	BIC Writing	-.65

Eigenvalue 1.39 Percent of Total Variance 6

Factor VI, Creative Impulse Expression, is summarized in table 20 and accounts for approximately six percent of the total variance. While apparently bipolar and structurally somewhat simple, the behavior it encompasses is considerably more difficult to describe.

Factor VI derives its significant positive loadings from two scales of the Imaginal Processes Inventory: Hostile-Aggressiveness in Daydreams and Fear of Failure in Daydreams. Its third significant positive loading is contributed by the artistic scale of the Biographical Inventory-Creativity.

This factor might be describing behavior characterized by the channeling of primarily hostile and anxious affects in addition to other impulses into some creative expressional medium. Curiously, however, vivid visual imagery, often associated with artistic expression, loads

negatively on this factor.

Examining the structure of Factor VI more extensively indicates that there is an admixture of fantasy and personality variables loading positively on the factor, suggesting it may be rather general in nature.

TABLE 20

FEMALE FACTOR NUMBER SIX

CREATIVE IMPULSE EXPRESSION

	Variables	Loadings
20.	Hostile Aggressive Daydreams	.60
1.	BIC Artistic	.54
19.	Fear of Failure in Daydreams	.38
13.	Visual Imagery in Daydreams	-.32

Eigenvalue 1.38 Percent of Total Variance 6

Factor VII, Doubtful Indecisive Mentation, is summarized in table 21 and accounts for five percent of the total variance. It draws its significant positive loadings from two scales of the Maudsley Personality Inventory: The Doesn't Know and Neuroticism measures. Examining the factorial structure further suggests that Factor VII is also bipolar in that its two Imaginal Process Inventory loadings, Visual Imagery in Daydreams and Problem Solving in Daydreams, apparently balance the factor in the direction of behavior conceptually opposite to that presented via the positive loadings. That is the doubtful, neurotic personality correlates, which positively load the factor, are counterbalanced by fantasy measures associated with planful mentation.

TABLE 21

FEMALE FACTOR NUMBER SEVEN

DOUBTFUL INDECISIVE MENTATION

	Variables	Loadings
6.	Maudsley "Doesn't Know"	.53
5.	Maudsley Neuroticism	.44
13.	Visual Imagery in Daydreams	-.38
14.	Problem Solving in Daydreams	-.40

Eigenvalue 1.21 Percent of Total Variance 5

Session Three - Male Data - Results of the Multiple Discriminant Analysis. For these subjects the results indicate that the high and low scoring groups differed significantly on two of the twelve content measures. These results are consistent with prediction. The high scoring subjects indicated significantly more task irrelevant thought than did the low scoring subjects ($F=4.22$, $p<.05$) as well as significantly more personally oriented material ($F=8.11$, $p<.01$).

With regard to the results of the multiple discriminant analysis for males it should be noted that the chi square statistic is significant, indicating that the multiple discriminant analysis does indeed separate the high and low groups with regard to their overall performance during the perceptual isolation session. Those variables which carry the most weight in effecting this separation are: task irrelevance and personal material. The third variable carrying a substantial share of the weight is fantasy content. This latter measure, however, fails to reach significance.

Session Three - Female Data - Results of the Multiple Discriminant Analysis. For the female subjects no significant differences on any of the twelve measures taken during the perceptual isolation session emerged between high and low scoring groups. The spuriously high chi square statistic cannot be interpreted as significant nor can the weights ascribed to each of the variables. This appears to be the result of the relatively small sample sizes employed.

Summary of the Results

Correlations were obtained among variables related to creativity, daydreaming, ego activity and extraversion. While in general the intercorrelations were in the predicted direction, only two of these reached significance. For males, this was the correlation between the Artistic Writing Scale and the Experience Inquiry. For females, this was the correlation between the Artistic Scale and the Acceptance of Daydreams Scale.

The factor analysis of the intercorrelation matrix extracted six factors for males. These were:

Factor I. Obsessive-Anxious Mentation

Factor II. Creative Orientation

Factor III. Enjoyable Sexually Stimulating Fantasy

Factor IV. Attentiveness to Inner Imaginal Productions

Factor V. Schizoid Fearful Daydreams

Factor VI. Extraverted Orientation

The factor analysis of the intercorrelation matrix extracted seven factors for females. These were:

Factor I. Attentiveness to Varied Inner Stimulation

Factor II. Creative Impulse

Factor III. Constructive Planful Mentation

Factor IV. Inhibited Arrested Daydreaming

Factor V. Freedom from Disabling Symptoms

Factor VI. Creative Impulse Expression

Factor VII. Doubtful Indecisive Mentation

The multiple discriminant analysis uncovered significant differences between high and low scoring males on two of the twelve perceptual isolation variables.

The multiple discriminant analysis uncovered no significant differences between high and low scoring subjects in the female sample on any of the twelve perceptual isolation variables.

DISCUSSION

In general, the results of the study tended to show patterns of results in the predicted directions. Since most of the findings did not reach statistical significance, the following remarks must be taken as tentative and as leads for future research.

Significant Findings

For the male sample, the positive correlation between the Artistic-Writing Scale of the Biographic Inventory-Creativity and the Experience Inquiry ($p < .05$) seems to suggest that one characteristic of the high scoring subjects and perhaps of creative artists and writers is an attitude of tolerance for and interest in the contents of the personal ideational process.

This correlation may be considered supportive of the first hypothesis and lends additional suggestive support to the positions promulgated by Kris (1950, 1952) and Rapaport (1951) in relation to openness to experience as one aspect of the intrapsychic creative process and Barron (1955, 1967) as well as MacKinnon (1962) conceiving of creativity as related to access to fantasy derivatives.

For the female sample a suggestion of much the same kind of process is evident in the correlation between the Biographical Inventory-Creativity Artistic Scale and the Acceptance of Daydreaming Scale of the Imaginal Processes Inventory ($p < .01$).

Adaptive Versus Maladaptive Daydreaming. Other suggestive results provide support for the findings of Singer and Antrobus (1963, 1970B) and Singer (1966) which challenged conceptions of daydreaming as exclusively pathological. The results of this study provide additional support for those positions which envision fantasy or daydreaming as at least a two pattern dimension as regards adaptation or psychological health versus maladaptation or psychological dysfunction.

Factors Indicative of Pathological Daydreaming. Factor I with its obsessive, anxious and hostile themes and Factor V with its elements of unreality, fright and fixity in the past may be considered most illustrative of dysfunctional fantasy evident in the male sample. In the female sample, Factor IV with its foci implicative of constricted past-oriented and generally neurotic components is most suggestive of maladaptation.

Factors Indicative of Psychologically Healthy or Adaptive Daydreaming. Factor III with its themes of sexual pleasure, enjoyment, visual imagery, planfulness and acceptance of daydreams and Factor II, with its focus on attentiveness to inner experience and apparent interest in creative expression suggest healthy or adaptive behavior in the male sample.

As regards the female sample, Factor II is characterized by a significant positive loading from a variety of different daydream scales as well as the openness to experience measure and the Biographic Inventory-Creativity. The significant negative loadings of the Maudsley Neuroticism Scale and several maladaptive fantasy scales strongly suggest that the factor describes healthy functioning. Factor III for females, characterized by content associated with planfulness, acceptance of fantasy, and problem solving, can be considered suggestive of adaptational fantasizing.

Findings Suggesting Relationships Among Indices of Creativity, Openness to Experience and Daydreaming. Factor II for males and Factor II for females may also be considered supportive of theories which postulate conceptual linkages among measures of creativity, openness to experience and daydreaming. These factors seem consistent with positions propounded by Singer in relation especially to daydreaming as a "creative skill", Kris and Rapaport in relation to openness to experience as one aspect of creative function and Barron as well as MacKinnon who both envision creative endeavor as dependent upon access to fantasy products.

To a limited extent supportive of a possible interrelation for the male sample is Factor II with its significant loadings contributed by both the artistic-writing and mathematics-science scales of the Biographical Inventory-Creativity, the Experience Inquiry, the Guilford Alternate Uses Test-Form A, and the supportive loadings of two Imaginal Process Inventory scales; Daydream Frequency and Acceptance of Daydreaming.

Similarly supportive for the above positions is Factor II which emerged from the female data. This particular factor is composed chiefly of contributions from the Experience Inquiry, the artistic and writing scales of the Biographical Inventory-Creativity and four scales

of the Imaginal Process Inventory. This network of loadings seem to incorporate acceptance of and visual imagery in daydreams, sexuality in daydreams and the recall of the content of nocturnal dream productions.

It should be pointed out at this juncture that no relationship was found in the Singer and Antrobus study (1963) between the eighteen Guilford creativity measures (one of which was Alternate Uses) and the daydreaming scales employed.

It is conceivable that the explanation for this evident discrepancy lies in the fact that this study, in addition to the Guilford measure, also utilized the Biographical Inventory-Creativity as a main criterion measure for creativity.

Suggesting itself as a possible explanation is the likelihood that the Biographical Inventory-Creativity is a more comprehensive measure of behaviors associated with creativity than is the Alternate Uses Test-Form A. This is implied in the differential manner in which these instruments load on male Factor II and female Factor II. In both instances, the loading of the Guilford measure is noticeably less than the loadings derived from the Biographical Inventory-Creativity.

Findings Indicative of a Disparity Between the Ego Activity Measures. Examination of the relationship between these variables as they appear in the correlation matrices raises some rather interesting theoretical possibilities. The weak inverse relation between the Ego Strength Scale and the Experience Inquiry seems to be suggesting that these are measuring different behaviors both of which are related to the operation of the ego.

As was suggested earlier, one inference that may be drawn is that the Ego Strength Scale seems, at least upon the basis of the suggestive results obtained in this study to be measuring (a) an attitude of unconcern with matters pertaining to the self and (b) content reflective of freedom from incapacitating psychic conflict. On the other hand, the Experience Inquiry appears more related to correlates of self-awareness. The former instrument correlates in a positive but non significant manner only with the Maudsley Extraversion measure in the male sample. Its correlations with the other variables depicted

in the matrices are in general either negligible or negative.

The latter instrument, in general, appears more consistently related to the variables depicted in the matrices.

It seems that the Experience Inquiry is thus more a measure of openness to internal dimensions while the Ego Strength Scale may be measuring content associated with interest in and perhaps receptivity towards experiencing aspects of the external world.

Both would seem differentially related to adaptation to the extent that they might be measuring different coping strategies. These strategies seem related both to adjusting to the contents of one's internal psychic organization and to the demands of the external surround.

In any case the above inferences are based upon non significant correlations and as such are at best hypothetical statements which require extensive research before they are verified or disproved.

Comparison of the Results of the Factor Analysis with Results Obtained in Earlier Studies. Factor I for males, tentatively labeled "Obsessive-Anxious Mentation" in this study, is reminiscent of Factor III, "Obsessive-Emotional Daydreaming" (Singer and Antrobus, 1970B).

Factor VI, "Extraverted Orientation", for males, uncovered in the present study is also conceptually similar to Factor I, "Social Extraversion" (Singer and Antrobus, 1970B) and Factor F, "Extraversion" noted in an earlier study (Singer and Antrobus, 1963).

In the present study, Factor III for males, "Enjoyable Sexually Stimulating Fantasy" is somewhat similar to Factor IV, "Positive-Vivid Daydreaming" which emerged in the Singer-Antrobus (1970B) study. In that study, sexual daydreams also appeared in the context of general enjoyment and vividness. Interestingly, however, in the earlier factor analytic study (Singer and Antrobus) sexual daydreams loaded on a factor characterized by a mixture of daydreams associated with adaptive as well as maladaptive components.

Male Factor IV, "Attentiveness to Inner Imaginal Productions", is positively defined by rather crystallized or distinctive classes of fantasy activity and negatively by improbability and denial. This factor seems to include behaviors which loaded on Factors I and E

("Autistic Daydreaming" and "Mind-Wandering or Poorly Controlled Thought") which were extracted in the earlier of the two Singer and Antrobus studies. Factor IV also incorporates behaviors which loaded differentially on two factors (IV, Positive Vivid Daydreaming, and II, Anxious, Poorly Controlled Thought) which were extracted in the more recent Singer and Antrobus study.

Male Factor V, "Schizoid-Fearful Daydreams", noted in the present study resembles Factor H, "Neurotic Self-Conscious Daydreaming" derived in the Singer and Antrobus (1963) study and elements of Factors II, Neuroticism-Anxious, Poorly Controlled Thought and III Obsessional-Emotional Daydreaming, uncovered in the later Singer and Antrobus study.

Female Factors: Compared to Male Factors and to Factors Emerging in Earlier Research. Considering next the female factors which emerged in the present research, Factor I "Attentiveness to Varied Inner Mentation" very much resembles Factor A "General Daydreaming" noted in the Singer and Antrobus (1963) study. Both of these factors seem to incorporate diverse kinds of daydreaming activity and can thus be considered factors of a rather broad or scopic quality. Factor I for females in this study is somewhat similar to, although more comprehensive than, male Factor I "Attentiveness to Inner Imaginal Productions".

Female Factor II "Creative Impulse" appears to lack precedence in the earlier Singer and Antrobus investigations and does bear a resemblance to male Factor II "Creative Orientation". A key differentiating element between these two factors is the loading of the Imaginal Process Inventory Sexual Daydreams scale. On the male factor the loading of this scale is minimal while it is highly significant on the female factor.

One implication that may be drawn is that creative functioning in females involves more of an association with behaviors generally correlated with sexuality than it does in males.

Both female Factor II and male Factor II are similar also with respect to the manner in which they contrast behaviors associated with creative dispositions and neuroticism. The structures of these "creative" factors would seem to provide support for the positions

proposed by Schachtel (1959) in which he contrasts affects associated with activity as opposed to "embeddedness", and Erwin Singer (1970) in which the organism is seen as continually in the midst of a conflict between attempts to creatively "self-expand" and a need to maintain an emotional "status quo" which would constitute neurosis.

Female Factor IV, "Inhibited Arrested Daydreaming" bears a fairly substantial resemblance to male Factor V, "Schizoid-Fearful Daydreams". In turn, both of these factors appear to have behavioral commonalities with similar factors noted by Singer and Antrobus (1963), (Factor E, -Poorly Controlled Thought) and by the same authors (1970B), (Factor 3, Obsessional Emotional Daydreaming and Factor 2, Anxious, Poorly Controlled Thought).

Female Factor V, "Freedom from Disabling Symptoms", is somewhat structurally similar to male Factor VI, "Extraverted Orientation" primarily because of the high loading of the Ego Strength scale on both of these factors. Both factors are also somewhat similar in that they display a noticeable lack of fantasy and correlates usually associated with insight and "psychological mindedness".

Female Factor VI, "Creative Impulse Expression" has no precedent in the earlier Singer-Antrobus studies and differs considerably from female Factor II, "Creative Impulse" extracted in the present study as well as from male Factor II, "Creative Orientation". This difference seems attributable to the undercurrents of anger and anxiety present in female Factor VI and lacking in the other two noted factors.

Noteworthy in this regard is the conspicuous negative loading of visual imagery on this factor. While noted to play an important role in certain healthy expressional endeavors (Roe, 1946), the nature of the visual imagery loading on this factor may be implying that the context of behaviors as arrayed in female Factor VI is really associated with more maladaptive behavior than is readily apparent. In any case, Factor VI seems worthy of continued research in order to clarify the role of visual imagery in the expression of negative affect.

Female Factor VII, "Doubtful Indecisive Mentation" stands in rather sharp contrast to female Factor III, "Constructive Planful Mentation". The former is suggestive of inadequate functioning while the latter implies productive problem solving thought.

Relationships Among the Male Factors. Factors I (Obsessive Anxious Mentation) and V (Schizoid-Fearful Daydreams) both appear to contain fantasy and personality correlates associated with dysfunction. Factors II (Creative Orientation), III (Enjoyable Sexually Stimulating Fantasy) and IV (Attentiveness to Inner Imaginal Productions) each appear to relate to behaviors associated on a more general level with creative self-interested and adaptive functioning.

Factors II and VI (Extraverted Orientation) apparently stand in vivid contrast to each other. The former defines behaviors associated with an interest in and enjoyment of the aspects of creative process which also seems to involve attention to fantasy, and the latter defines behaviors which minimize attentiveness to the creative process and fantasy but maximizes an attitude of outgoingness and social interest.

Relationships Among the Female Factors. A similar examination of the factorial structures emerging from the female data reveals similarities between Factors IV (Inhibited-Arrested Daydreaming) and VII (Doubtful Indecisive Mentation) which seem to cast both of these factors into a class of behaviors associated with maladaptiveness and perhaps more severe forms of psychopathology. Factors II (Creative Impulse) and VI (Creative Impulse Expression) appear similar upon the basis of the creativity measures which are held in common. However, upon closer scrutiny it seems that the former tends to be more associated with adaptive or skillful behavioral correlates while the latter seems more related to maladaptation.

Factor I (Attentiveness to Varied Inner Stimulation) apparently describes behaviors associated with a proclivity towards daydreaming of many different kinds. Factor III (Constructive Planful Mentation) on the other hand seems more specific in its practically oriented daydream patterns.

Factor V (Freedom from Disabling Symptoms) seems to stand alone in the group of factors extracted from the female sample. It appears to represent apparent unconcern with matters pertaining to the self and therefore seems more to describe behavior associated with physical vigorousness and health. It seems to lack relatedness to behaviors associated with psychological mindedness.

Limitations of the Study

Deficiencies in the experimental design of the perceptual isolation procedure may have led to the failure of most of the predictions, stated under hypothesis three, to emerge.

A question arises in connection with the adequacy of four minute intervals followed by abrupt interruptions of one minute's duration during which the subject was to verbalize the content generated during the previous four minutes. It is conceivable that such an arrangement might detract from the atmosphere typically characteristic of true states of perceptual isolation.

In this regard the perceptual isolation procedure may have been more similar to a perceptual vigilance or signal monitoring task context than to a depleted perceptual state. The subjects knew that they had a certain interval within which to produce content and another interval during which they were to report on the nature of this content.

Consistent with the above, remarks by several of the subjects subsequent to the laboratory procedure indicated they were more concerned with how they were going to report everything that occurred to them in a one minute period than with what they were actually going to report.

One proposed modification of the task situation for future replications of this kind of research might be considerably lengthier daydream periods. Also the question arises as to the utility of interrupting subjects on the type of regime employed in this study. Perhaps in future research attempts of this sort, different modes of "impinging" upon the subject's mentation ought to be employed. For example, length of isolation sessions might be punctuated with no interruptions, very few interruptions, several interruptions and the like. Stated differently, varied programs of interruption should be employed.

Probably also hindering significant outcomes in the perceptual isolation session were the relatively small sizes of the samples used, especially in the female sample.

Another factor that ought to be considered was the unavoidable but relatively lengthy period of time over which the total research program extended.

Therefore the suggestion is advanced that in replications of this study efforts be made to secure larger samples, and radically decrease the amount of time during which the research spans.

Another variation on the design of projects of this sort might be the utilization of different states of altered awareness from which fantasy could be elicited. Specifically, optimal wakefulness could be used as could hypnagogic and hypnapompic states, hypnosis, and possibly drug-induced states. Subjects scoring high and low on measures of creativity could be expected to demonstrate differences in these states.

Also questionable in the present study was the appropriateness of the Auld, Goldenberg and Weiss scale for measuring the primary process quality of visual imagery. Especially in view of the rather limited degree to which subjects could actually relax, it would seem that any visual imagery that occurred was more a function of secondary process elaboration than primary process components. Examination of the raw scores obtained on this variable substantiates this speculation in that these are in fact very low even for the high creative subjects.

In addition to the possible inappropriateness of the Auld, Goldenberg and Weiss scale for this study, one must question the actual level of proclivities towards creative dispositions in the subjects used. Substantive of the need to further examine the propensity towards a creative attitude in the present sample, would be their scores on the Maudsley Personality Inventory scales. The subjects utilized in this study demonstrate scoring indicative of behaviors which might be considered as inhibitive towards the enjoyment of any emerging mental contents.

Bearing in mind the somewhat questionable disposition toward creative behaviors in the subjects utilized in this study, future replications should involve samples drawn from other sources.

A major difficulty with drawing firm conclusions in relation to the results of the factor analysis is the relatively small size of the samples. However, there seem to be enough suggestive as well as significant patterns to offer a basis for specualtion and further research.

Just as likely to benefit in terms of significant statistical yield from the use of large samples would be the results of the multiple discriminant analyses. It appears that the small samples used in this study precluded the emergence of significant findings in any more than the two instances noted.

Concluding Notes

The study did suggest tentative indications of patterns which link measures of creative function with certain measures of inner experience. Factor II for males with its positive significant loadings contributed by the three creativity measures and the Experience Inquiry may be considered a possible example. For females a suggestive example would be Factor II with its positive significant loadings contributed by the two Biographic Inventory Scales, the Experience Inquiry and the Acceptance of Daydreams Scale.

The consistent pattern of correlations in the appendices also suggests that the two measures of ego activity differ in the behaviors they purportedly describe. The Ego Strength Scale would seem unrelated to any of the measures of attentiveness to mentational processes while the Experience Inquiry seems related to those measures.

Also established was additional evidence for positions such as Singer's (1966) which claim that all daydreaming is not pathological. Consistent with this evidence are further findings which illustrate a connection between maladaptive fantasizing and a measure of neuroticism.

In regard to the laboratory procedure, significant positive relationships between the scores on the creativity measures and two aspects of performance during a perceptual isolation task were demonstrated for the male subjects. Future research making use of larger samples would possibly permit the emergence of significant differences between contrasted groups of both sexes on more than merely the two dimensions noted above.

The association between the measures of creativity and attentiveness to inner experience gives some evidence to Klinger's (1971) position, a part of which notes that the products of the impulse and

ideational processes must be received hospitably. Klinger's position is thus similar to the conclusions proposed by Barron, and MacKinnon, relative to the relationship between creative functioning and fantasy.

APPENDIX A

Biographical Inventory - Creativity

Alternate Uses Form A

BIOGRAPHICAL INVENTORY

Charles E. Schaefer

This is a questionnaire, not a test. There are no "right" answers except the answers which are accurate about yourself. The questions are about such things as your home, education, and hobbies.

For each question, select the *one* answer which best applies to you. Record your answer on the separate answer sheet and be sure that the number of the statement agrees with the number on the answer sheet. Use a number 2 pencil and make your marks as long as the pair of dotted lines, completely filling the area between the lines. If you wish to change your answer, erase your first mark completely. Make no marks in this booklet and make no stray marks on the answer sheet.

Be sure to answer every question. If you are not sure of an answer, make the best estimate or judgment you can. *Answer those questions dealing with your parents in terms of the person who most fully acted as a father or mother to you, e.g., real parent, foster parent, relative or guardian.* Remember to select the *one* answer that best applies to you for each question.

There is no time limit, but the average person completes this inventory in about 20 minutes.

EDUCATIONAL AND INDUSTRIAL TESTING SERVICE SAN DIEGO, CALIFORNIA 92107

FAMILY HISTORY

1. Father's birthplace:
   - A. State in which currently residing
   - B. Other state in U.S.A.
   - C. Foreign country

2. Predominant national ancestry of father:
   - A. Italian
   - B. Irish
   - C. German
   - D. American (4th generation)
   - E. Other (including equal combination)

3. Father's education (highest level graduated):
   - A. Elementary School
   - B. High School
   - C. College
   - D. Graduate School
   - E. Other (including technical, etc.)

4. Father's major subject in college:
   - A. Business-Accounting
   - B. Natural sciences
   - C. English-Art
   - D. Social sciences
   - E. Other (or Not Applicable)

5. Type of honors or awards father has received (select most frequent):
   - A. None
   - B. Writing-Arts (painting, poetry, drama, etc.)
   - C. Sciences
   - D. Sports
   - E. Other

6. Father plays a musical instrument:
   - A. Yes
   - B. No

7. Type of father's hobbies (select the one most frequent):
   - A. None
   - B. Collecting (stamps, coins, etc.)
   - C. Writing-Art
   - D. Scientific (electronics, etc.)
   - E. Other

8. How often does your father read books, on the average?
   - A. One or two a year or less
   - B. One or two a month
   - C. One a week
   - D. Two or more a week

9. How often does your father play Bridge?
   - A. Never
   - B. Seldom
   - C. Occasionally
   - D. Frequently

10. When you were between the ages of 6 and 14 years, your father most frequently disciplined you by:
    - A. Spanking
    - B. Scolding or threatening
    - C. Loss of privileges
    - D. Reasoning
    - E. Other

11. Which one of the following adjectives do you consider *most* descriptive of your father?
    - A. Understanding
    - B. Independent
    - C. Industrious
    - D. Enthusiastic
    - E. Sincere

12. Mother's birthplace:
    - A. State in which currently residing
    - B. Other state in U.S.A.
    - C. Foreign country

13. Predominant national ancestry of mother:
    - A. Italian
    - B. Irish
    - C. German
    - D. American - 4th generation
    - E. Other (including equal combinations)

14. Mother's education (highest level graduated):
    - A. Elementary school
    - B. High school
    - C. College
    - D. Graduate school
    - E. Other (including nursing, technical, etc.)

15. Mother's major subject in college:
    - A. Business-Accounting
    - B. Natural sciences
    - C. English-Art
    - D. Social sciences
    - E. Other (including Not Applicable)

16. Type of honors or awards mother has received (select most frequent):
    - A. None
    - B. Arts (writing, painting, drama)
    - C. Sciences
    - D. Sports
    - E. Other

17. Mother plays a musical instrument:
    - A. Yes
    - B. No

18. Type of mother's hobbies (select most frequent):
    - A. None
    - B. Collecting
    - C. Writing-Art
    - D. Sewing
    - E. Other

19. How often does your mother read books, on the average?
    - A. One or two a year or less
    - B. One or two a month
    - C. One a week
    - D. Two or more a week

20. When you were between the ages of 6 and 14 years, your mother most frequently disciplined you by:
    - A. Spanking
    - B. Scolding or threatening
    - C. Loss of privileges
    - D. Reasoning
    - E. Other

21. Which one of the following adjectives do you consider *most* descriptive of your mother?

A. Understanding
B. Independent
C. Industrious
D. Enthusiastic
E. Sincere

22. How often does your mother visit museums and art galleries?

A. Never
B. Seldom
C. Occasionally
D. Frequently

23. The discipline in your family might *best* be described as:

A. Always fair
B. Generally fair
C. Strict
D. Inconsistent
E. Uncertain

24. Which parent taught you most about art?

A. Mother
B. Father
C. Both parents about the same
D. Neither

25. Which parent taught you most about the value of an education?

A. Mother
B. Father
C. Both parents about the same
D. Neither

26. Which parent taught you most about sports?

A. Mother
B. Father
C. Both parents about the same
D. Neither

27. Which parent taught you most about the appreciation of nature (trees, flowers, etc.)?

A. Mother
B. Father
C. Both parents about the same
D. Neither

28. How often does either of your parents speak a foreign language at home?

A. Never
B. Seldom
C. Occasionally
D. Frequently

29. How often has your family moved from one state to another?

A. Never
B. Once
C. Two or more times

30. Have any of your brothers or sisters received a national award or honor for academic achievement (e.g., National Merit Scholarship)?

A. No (including only child)
B. Yes

EDUCATIONAL HISTORY

31. Did you attend nursery school?

A. Yes
B. No

32. You were first taught to read by:

A. Mother
B. Father
C. Brother or sister
D. School teacher
E. Other

33. In elementary or junior high school, one of your favorite subjects was Mathematics:

A. Yes
B. No

34. In elementary or junior high school, one of your favorite subjects was Writing:

A. Yes
B. No

35. In elementary or junior high school, one of your favorite subjects was Art:

A. Yes
B. No

36. In elementary school, you received your highest marks in:

A. Math
B. Reading
C. Art
D. All subjects about equal
E. Other

37. In elementary school, you received a prize or award in art or writing:

A. Yes
B. No

38. In elementary school, what career appealed you the most?

A. Teacher
B. Doctor - Lawyer
C. Artist - Writer - Actor
D. Scientist
E. Other (or None)

39. In high school (Grades 10, 11, 12), your favorite subject was:

A. Math
B. Writing
C. Art
D. Natural sciences
E. Other

40. In high school, you received your highest marks in:

A. Math
B. Writing
C. Art
D. Natural sciences
E. Other

41. Type of academic honors or awards you have received in high school:

A. Writing-Art
B. Natural sciences
C. Other
D. No awards or honors

42. Extent of voluntary participation in high school athletics:

A. Seldom or never
B. Occasionally
C. Frequently

43. How many extracurricular activities in high school did you participate in?

A. None
B. One
C. Two
D. Three
E. Four or more

44. Did you participate in high school extracurricular activities of a scientific (chemistry, physics, etc.) nature?

A. Yes
B. No

45. Did you participate in a high school extracurricular activity of a writing-art nature?

A. Yes
B. No

46. Did you participate in high school extracurricular activities of an academic honor society nature?

A. Yes
B. No

47. Did you participate in high school extracurricular activities involving languages (classic or modern)?

A. Yes
B. No

48. Highest position you achieved in a high school extracurricular activity:

A. President-Editor-Chairman
B. Minor office (Vice-president, Secretary, etc.)
C. No office, member only
D. Did not join extracurricular activities

49. Type of college you attended or are considering attending:

A. Ivy League
B. Large public metropolitan
C. Small private
D. Other
E. None

50. Number of college extracurricular activities you joined or are considering joining:

A. None
B. One
C. Two
D. Three
E. Four or more

51. Did you join or are you considering joining an art-writing extracurricular activity in college?

A. Yes
B. No

52. How many high school teachers did you have that you consider to be outstanding teachers?

A. None
B. One
C. Two
D. Three
E. Four or more

53. Did you obtain or do you anticipate obtaining an advanced degree after college?

A. Yes
B. No or undecided

AVOCATIONAL ACTIVITIES

54. Number of present hobbies (*excluding* sports and socializing, but *including* such activities as record collecting, reading, gardening, art-writing, sewing or cooking, woodworking, etc.):

A. None
B. One
C. Two
D. Three
E. Four or more

55. Do you currently have a hobby of an art-writing nature?

A. Yes
B. No

56. Do you currently have a hobby of a scientific nature (e.g., electronics, chemistry)?

A. Yes
B. No

57. As a child (before age 12) did you spend a great deal of your free time reading?

A. Yes
B. No

58. As a child, did you have a hobby of an art-writing nature?

A. Yes
B. No

59. As a child, did you have a hobby of a scientific nature?

A. Yes
B. No

60. Number of hobbies you had as a child:

A. None
B. One
C. Two
D. Three
E. Four or more

61. Number of childhood hobbies that have continued to present:

A. None
B. One
C. Two
D. Three
E. Four or more

62. Type of musical instrument you now play (most frequently):

A. None
B. Guitar-banjo
C. Piano
D. Brass type (e.g., trombone)
E. Other

63. Did you ever take private art lessons?

A. Yes
B. No

64. Did you ever receive lessons in ceramics, woodworking, or other crafts?

A. Yes B. No

65. Which one of the following types of art do you like *best* (choose only one)?

A. Impressionistic
B. Primitive
C. Pop or Op
D. Realistic
E. Other (or None)

66. About how many books do you read in a year (other than school books)?

A. 0 - 5
B. 6 - 10
C. 11 - 30
D. 31 - 50
E. Over 50

67. Which type of book do you *most* prefer to read for your own enjoyment?

A. None
B. Science fiction
C. Biography
D. Adventure
E. Other (philosophy, history, etc.)

68. How many collections (e.g., stamps, matchbooks, rocks, shells) do you now have?

A. None
B. One
C. Two
D. Three
E. Four or more

69. Have you ever owned an unusual collection (e.g., spider webs, road signs)?

A. Yes B. No

70. What is the longest period you have continued one of your collections?

A. No collection
B. 1 year
C. 2 years
D. 3 years
E. Over 3 years

71. Do you regularly read the sports section of the newspaper?

A. Yes B. No

72. Do you regularly read the editorial section of the newspaper?

A. Yes B. No

73. Do you regularly read the book review section of the newspaper?

A. Yes B. No

74. How many different sections of the newspaper (e.g., comics, news, theater, book review, columnists, sports, editorial) do you regularly read?

A. None
B. One
C. Two
D. Three
E. Four or more

75. Number of different magazines bought regularly in your home:

A. None
B. One
C. Two
D. Three
E. Four or more

76. Is one or more of the following magazines bought regularly in your home? Saturday Review, Atlantic Monthly, Harpers, New Yorker.

A. Yes B. No

77. Type of magazines bought regularly in your home: foreign affairs – political commentary (e.g., Atlas, Nation, New Republic):

A. Yes B. No

78. Type of magazines bought regularly in your home: scientific (e.g., Science, Scientific American):

A. Yes B. No

79. About how many classical records do you personally own?

A. None
B. 1 - 5
C. 6 - 10
D. 11 - 25
E. Over 25

80. About how many folk records do you personally own?

A. None
B. 1 - 5
C. 6 - 10
D. 11 - 25
E. Over 25

81. How often do you visit art museums or galleries?

A. Never
B. Seldom
C. Occasionally
D. Frequently

82. How often do you attend stage plays?

A. Never
B. Seldom
C. Occasionally
D. Frequently

83. How often do you attend sports events?

A. Never
B. Seldom
C. Occasionally
D. Frequently

84. How often do you attend concerts?

A. Never
B. Seldom
C. Occasionally
D. Frequently

85. About how many hours a week do you typically spend playing sports?

A. None
B. 1 - 5
C. 6 - 15
D. Over 15

86. About how many hours a week do you typically spend on hobbies?

A. None
B. 1 - 5
C. 6 - 15
D. Over 15

87. Do you personally own art supplies (e.g., paints, brushes)?

A. Yes
B. No

88. Have you ever owned a microscope?

A. Yes
B. No

89. Have you ever owned a chemistry set?

A. Yes
B. No

MISCELLANEOUS

90. Have you ever had a significant part in a play or dramatic production?

A. Yes
B. No

91. Have you ever received an honor or award in science apart from school (e.g., Westinghouse National Science Award)?

A. Yes
B. No

92. Have you ever received a scholastic honor or award apart from school (e.g., National Merit Scholarship Award)?

A. Yes
B. No

93. Before entering high school, did you ever invent or design anything, create a new object, or write an original story, song, play, etc.?

A. No
B. Yes, 1 object
C. Yes, 2 - 5 objects
D. Yes, 6-10 objects
E. Yes, over 10 objects

94. Did you create a mechanical or electronic object before high school?

A. Yes
B. No

95. Did you create a story or poem before high school?

A. Yes
B. No

96. How often do you usually go on dates?

A. Never
B. About once a year
C. About once a month
D. About once a week
E. About twice a week or more

97. Do you *personally* own a cat?

A. Yes
B. No

98. Number of different types of pets you have personally owned (e.g., cats, dogs, fish, insects, rodents, reptiles-lizards, turtles-frogs, birds):

A. None
B. One
C. Two
D. Three
E. Four or more

99. Have you ever joined a science club or organization apart from school?

A. Yes
B. No

100. Number of different parts of the United States you have visited (i.e., Northeast, Northwest, Far West, Southwest, Middle States, South):

A. None
B. One
C. Two
D. Three
E. Four or more

101. Have you ever had a summer job of a scientific nature (e.g., laboratory work)?

A. Yes
B. No

102. You tend to daydream:

A. Never
B. Seldom
C. Occasionally
D. Frequently

103. You tend to daydream about sports:

A. Yes
B. No

104. How often do you write poems or verses for your own enjoyment?

A. Never
B. Seldom
C. Occasionally
D. Frequently

105. Before high school, how many of your drawings or paintings were framed, if any?

A. None
B. One
C. Two
D. Three
E. Four or more

106. Which of the following games was your favorite in childhood?

A. Monopoly
B. Bingo
C. Scrabble
D. Mechanical puzzles
E. Other

107. The earliest memory you have of your childhood is when you were approximately:

A. 6 years old
B. 5 years old
C. 4 years old
D. 3 years old
E. 2 years old or earlier

108. As a child, did you ever have any imaginary companions (e.g. friends, animals)?

A. No
B. Yes - one
C. Yes - two
D. Yes - three or more

109. As a child, how many of the following things can you recall being afraid of: the dark, monsters, animals, reptiles, high places, drowning, certain people, thunder and lightning?

A. None
B. One
C. Two
D. Three
E. Four or more

110. Are you considering a career as a teacher or social worker?

A. Yes
B. No

111. Are you considering a career as an artist or writer?

A. Yes
B. No

112. Are you considering a career as a scientist?

A. Yes
B. No

113. Have you definitely decided on a career?

A. Yes
B. No

114. Are any of your close friends considering a career in business?

A. Yes
B. No

115. Are any of your close friends considering a career as an artist or writer?

A. Yes
B. No

116. Your close friends are usually:

A. Younger than you
B. Same age as you
C. Older than you
D. Both older and younger than you
E. Other combination (i.e., same age and older)

117. How many really close friends did you have in elementary school, if any?

A. None
B. One
C. Two
D. Three
E. Four or more

118. Did you have your own room as a child?

A. No
B. Yes, in elementary school
C. Yes, in both elementary and high school

119. Do you remember ever making up a new childhood game or toy? (e.g., card or word game)

A. No
B. Yes - one
C. Yes - two or more

120. How often were you a leader of your childhood group activities up to age 12?

A. Never
B. Seldom
C. Occasionally
D. Frequently

121. When you have a personal problem, you usually seek help from:

A. Mother
B. Father
C. Friend
D. Several persons
E. Other (including No one)

122. How often have you entered a strange place and felt that you had been there before, or felt that you knew something was going to happen before it actually occurred?

A. Never
B. Seldom
C. Occasionally
D. Frequently

123. How often have you had an event or object vividly pictured in your mind after it was no longer present to your senses?

A. Never
B. Seldom
C. Occasionally
D. Frequently

124. How often have you had a complete memory lapse for a very familiar person, place, or thing?

A. Never
B. Seldom
C. Occasionally
D. Frequently

125. How often have you become so absorbed in a project that you skipped a meal or stayed up very late?

A. Never
B. Seldom
C. Occasionally
D. Frequently

Please be sure that you have answered *every* question.
If you are not certain about how to answer a question,
make the best judgment you can.

PRINT YOUR NAME IN THE BOXES PROVIDED. THEN BLACKEN THE LETTER BOX BELOW WHICH MATCHES EACH LETTER OF YOUR NAME.

YOUR LAST NAME | YOUR FIRST NAME | MI

SEX: MALE FEMALE

TEACHER NO. | PERIOD NO.

TEST DATE: Mo. | Day | Year

Grade

BIRTH DATE: Mo. | Day | Year

NAME _____ SEX _____ AGE _____

SCHOOL _____ DATE _____

TEACHER OR CLASS _____ PERIOD _____

1 A B C	2 A B C D E	3 A B C D E	4 A B C D E	5 A B C D E	6 A B	7 A B C D E	8 A B C D
9 A B C D	10 A B C D E	11 A B C D E	12 A B C	13 A B C D E	14 A B C D E	15 A B C D E	16 A B C D E
17 A B	18 A B C D E	19 A B C D	20 A B C D E	21 A B C D E	22 A B C D	23 A B C D E	24 A B C D
25 A B C D	26 A B C D	27 A B C D	28 A B C D	29 A B C	30 A B	31 A B	32 A B C D E
33 A B	34 A B	35 A B	36 A B C D E	37 A B	38 A B C D E	39 A B C D E	40 A B C D F
41 A B C D	42 A B C	43 A B C D E	44 A B	45 A B	46 A B	47 A B	48 A B C D
49 A B C D E	50 A B C D E	51 A B	52 A B C D E	53 A B	54 A B C D E	55 A B	56 A B
57 A B	58 A B	59 A B	60 A B C D E	61 A B C D E	62 A B C D E	63 A B	64 A B
65 A B C D E	66 A B C D E	67 A B C D E	68 A B C D E	69 A B	70 A B C D E	71 A B	72 A B
73 A B	74 A B C D E	75 A B C D E	76 A B	77 A B	78 A B	79 A B C D E	80 A B C D E
81 A B C D	82 A B C D	83 A B C D	84 A B C D	85 A B C D	86 A B C D	87 A B	88 A B
89 A B	90 A B	91 A B	92 A B	93 A B C D E	94 A B	95 A B	96 A B C D E
97 A B	98 A B C D E	99 A B	100 A B C D E	101 A B	102 A B C D	103 A B	104 A B C D
105 A B C D E	106 A B C D E	107 A B C D E	108 A B C D	109 A B C D E	110 A B	111 A B	112 A B
113 A B	114 A B	115 A B	116 A B C D E	117 A B C D E	118 A B C	119 A B C	120 A B C D
121 A B C D E	122 A B C D	123 A B C D	124 A B C D	125 A B C D			

INSTRUCTIONS

This answer sheet is for recording your answers to the Biographical Inventory.

1. Use # 2 pencil only.

2. Be sure each mark completely fills the response space.

3. Erase completely any mark you wish to change.

4. Answer sheet should not be folded, torn or mutilated.

BIOGRAPHICAL INVENTORY

Biographical Inventory Creativity (BIC)

MALE HANDSCORING STENCIL

Place this stencil over the completed BIC answer sheet. Count one point for each mark appearing through the holes. Enter this sum in the large hole to the right. The label beside this hole indicates the part score obtained from this stencil.

After all four part scores have been obtained, the two total scale scores are determined from the part scores recorded on the answer sheet by adding 100 to the positive part score and subtracting the corresponding negative part score.

CRAW-B

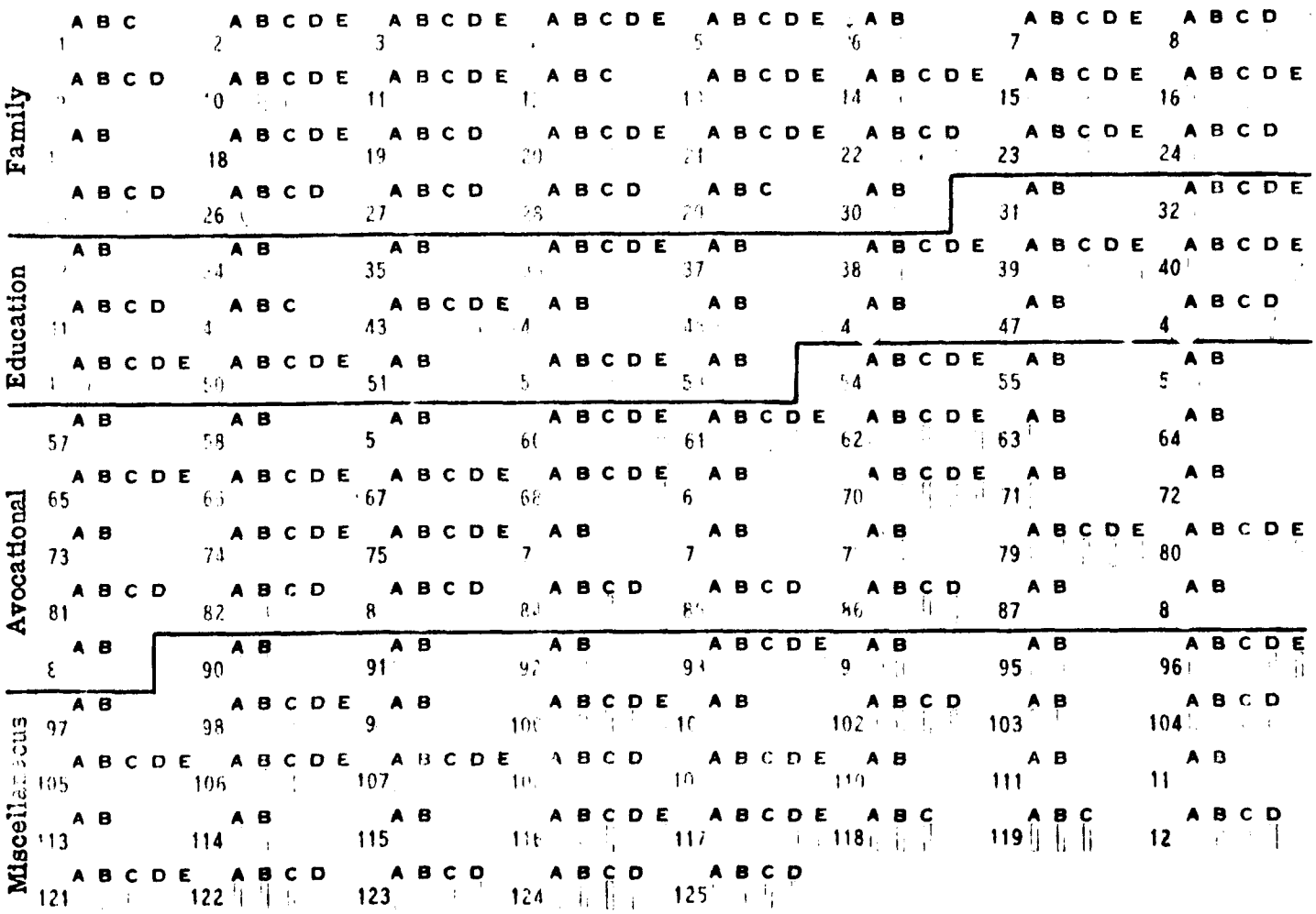
POSITIVE — ART — WRITING

NEGATIVE — ART — WRITING

CRMS-B

POSITIVE — MATH — SCIENCE

NEGATIVE — MATH — SCIENCE



CRAW-B

MALE HANDSCORING STENCIL

POSITIVE — ART — WRITING

NEGATIVE — ART — WRITING

CRMS-B

POSITIVE — MATH — SCIENCE

NEGATIVE — MATH — SCIENCE

Biographical Inventory Creativity (BIC)

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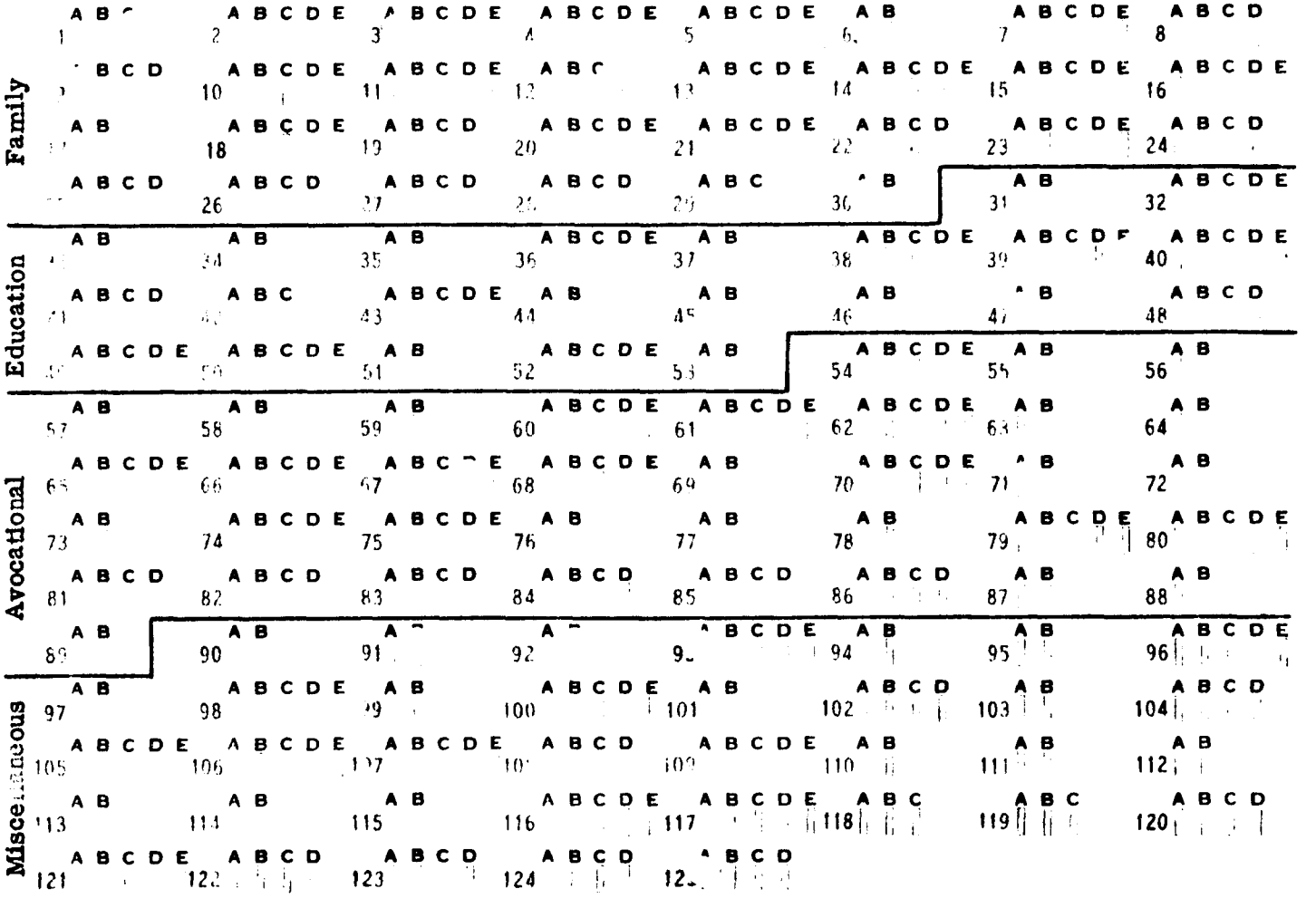

Biographical Inventory Creativity (BIC)

MALE HANDSCORING STENCIL

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CRAW-B

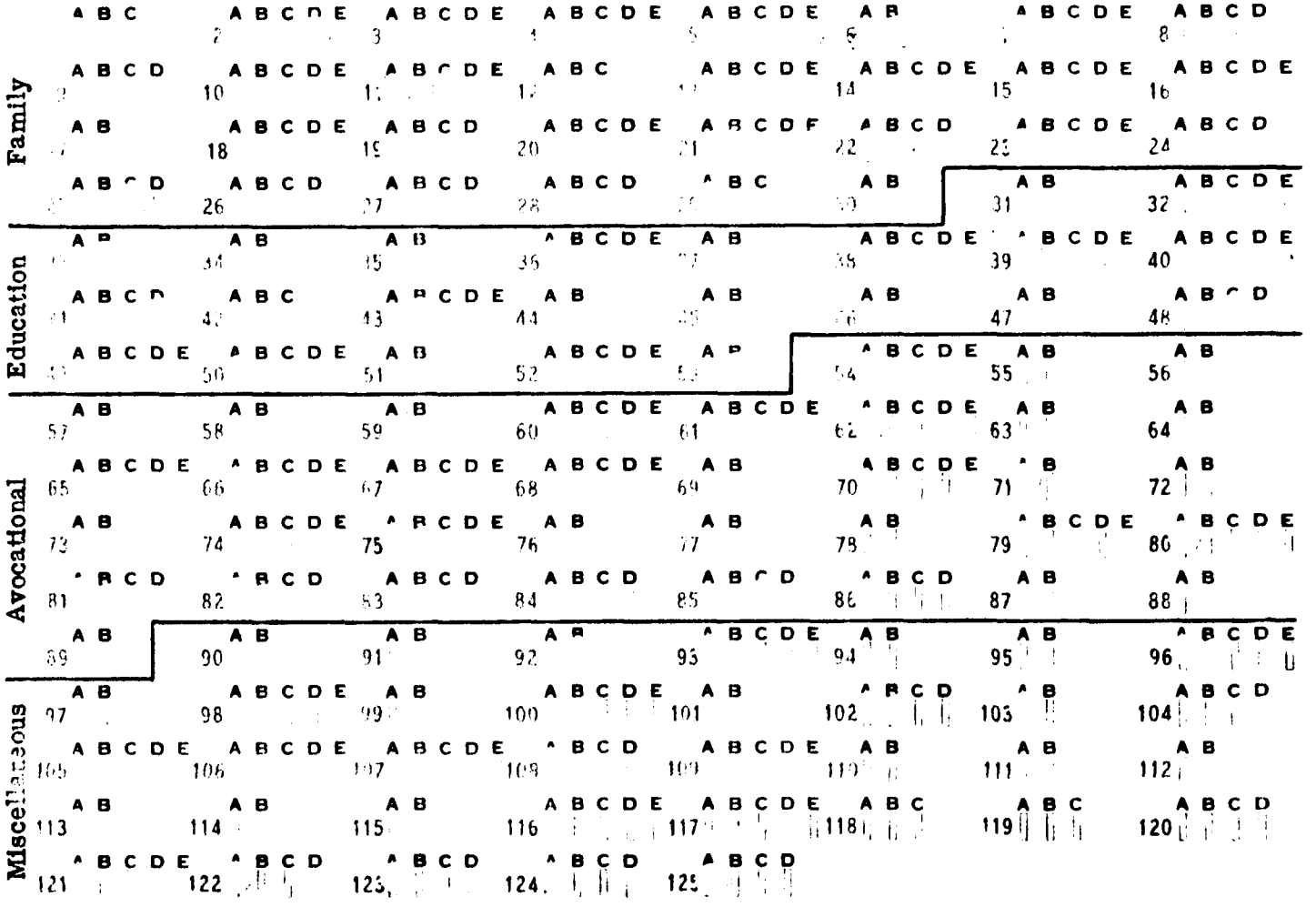
POSITIVE — ART — WRITING

NEGATIVE — ART — WRITING

CRMS-B

POSITIVE — MATH — SCIENCE

NEGATIVE — MATH — SCIENCE



CRAW-B

MALE HANDSCORING STENCIL

POSITIVE — ART — WRITING

NEGATIVE — ART — WRITING

Biographical Inventory Creativity (BIC)

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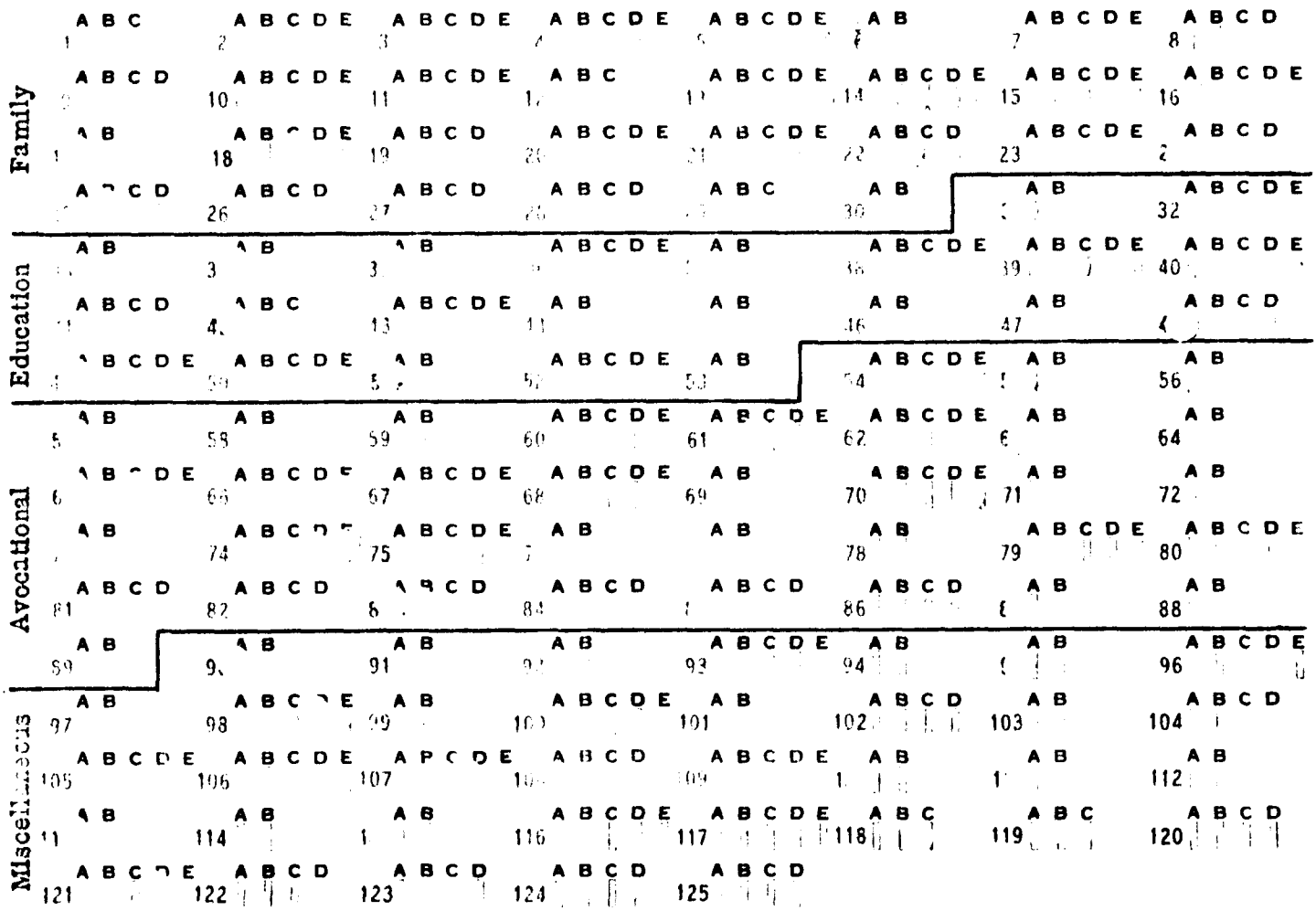
CRMS-B

POSITIVE — MATH — SCIENCE

NEGATIVE — MATH — SCIENCE



CRA-G

FEMALE HANDSCORING STENCIL

POSITIVE — ART

NEGATIVE — ART

CRW-G

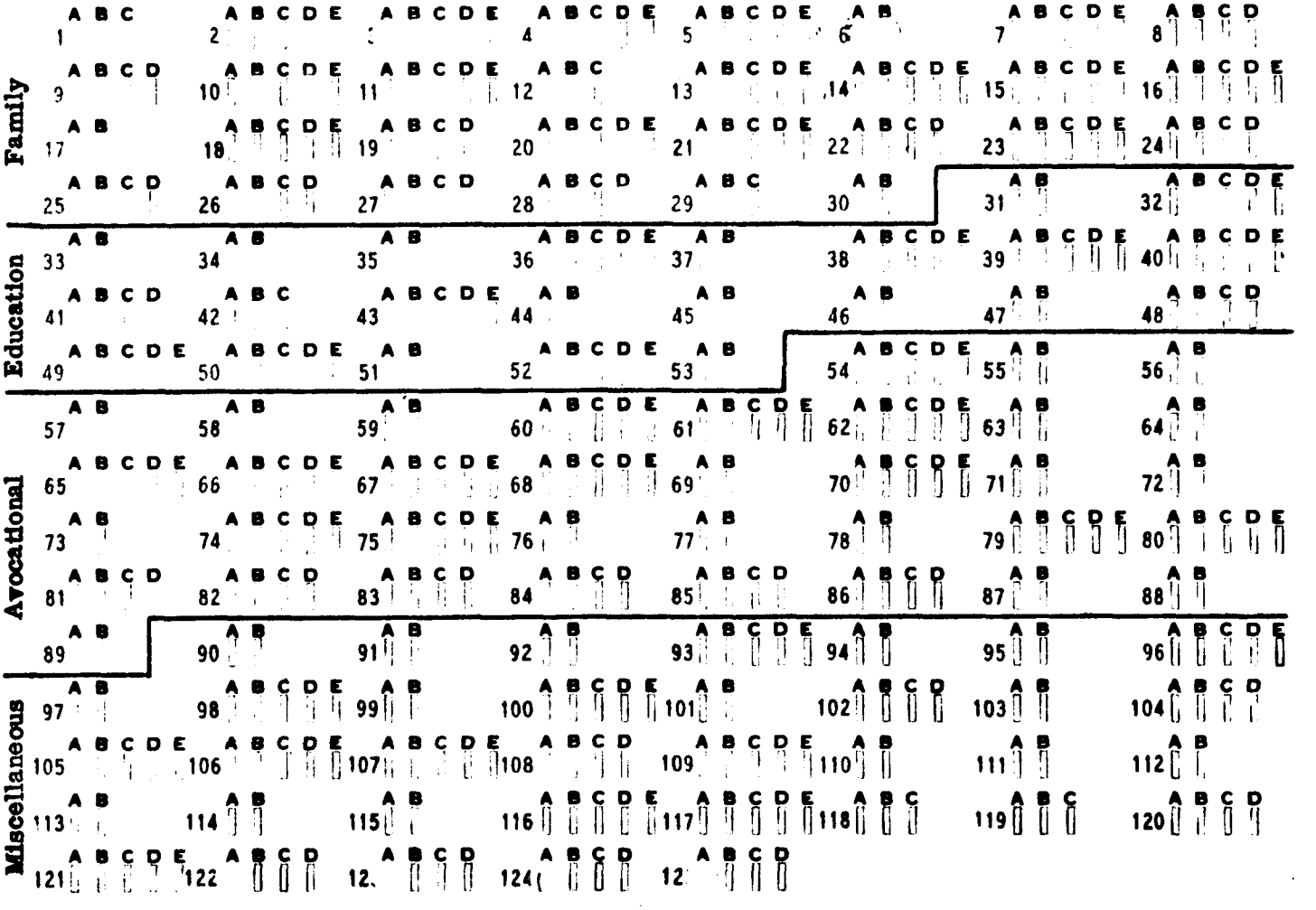
POSITIVE — WRITING

NEGATIVE — WRITING

Biographical Inventory Creativity (BIC)

Place this stencil over the completed BIC answer sheet. Count one point for each mark appearing through the holes. Enter this sum in the large hole to the right. The label beside this hole indicates the part score obtained from this stencil.

After all four part scores have been obtained, the two total scale scores are determined from the part scores recorded on the answer sheet by adding 100 to the positive part score and subtracting the corresponding negative part score.



CRA-G

FEMALE HANDSCORING STENCIL

POSITIVE — ART

NEGATIVE — ART

Biographical Inventory Creativity (BIC)

Place this stencil over the completed BIC answer sheet. Count one point for each mark appearing through the holes. Enter this sum in the large hole to the right. The label beside this hole indicates the part score obtained from this stencil.

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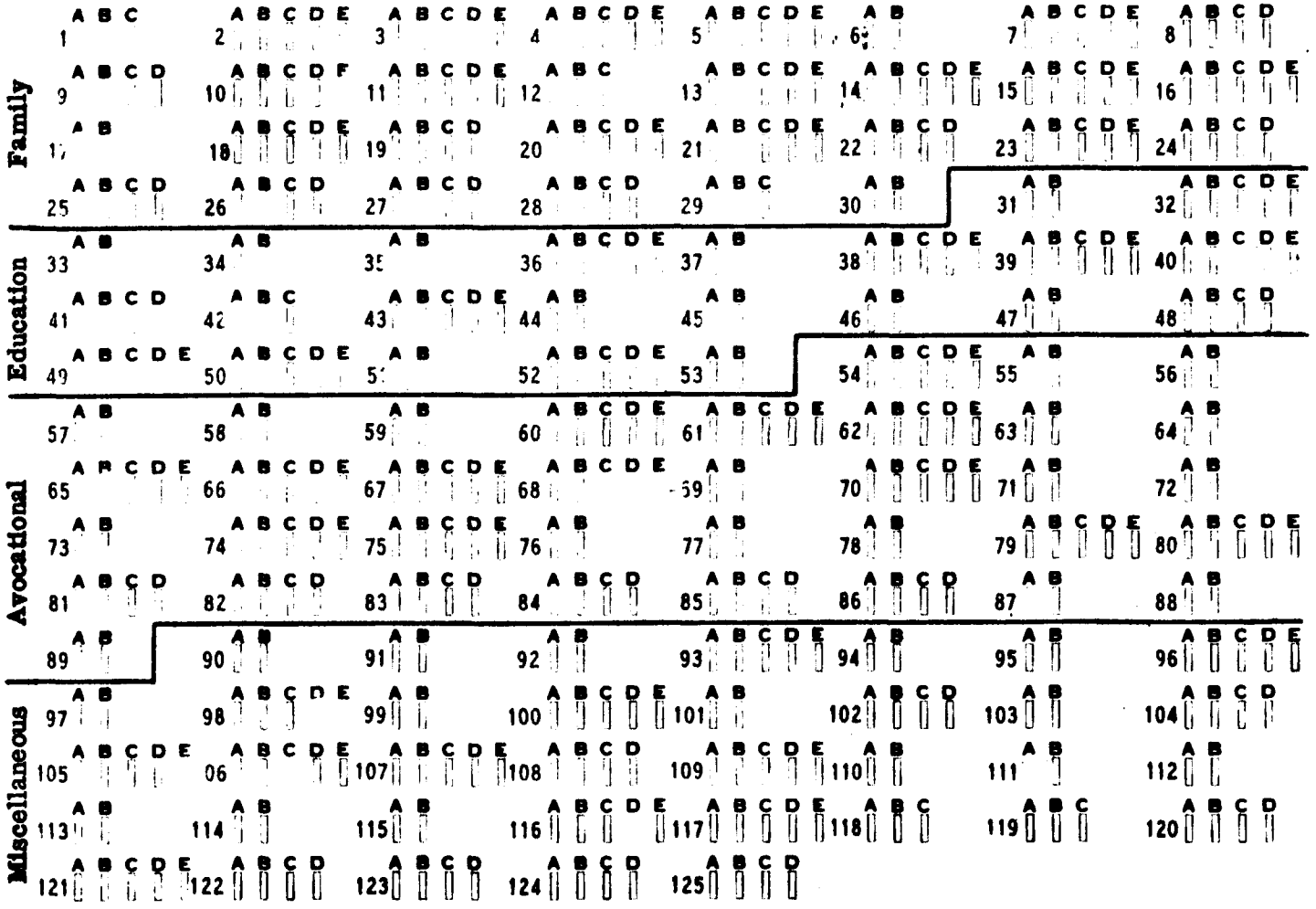
CRW-G

POSITIVE — WRITING

NEGATIVE — WRITING



CRA-G

FEMALE HANDSCORING STENCIL

POSITIVE — ART

NEGATIVE — ART

Biographical Inventory Creativity (BIC)

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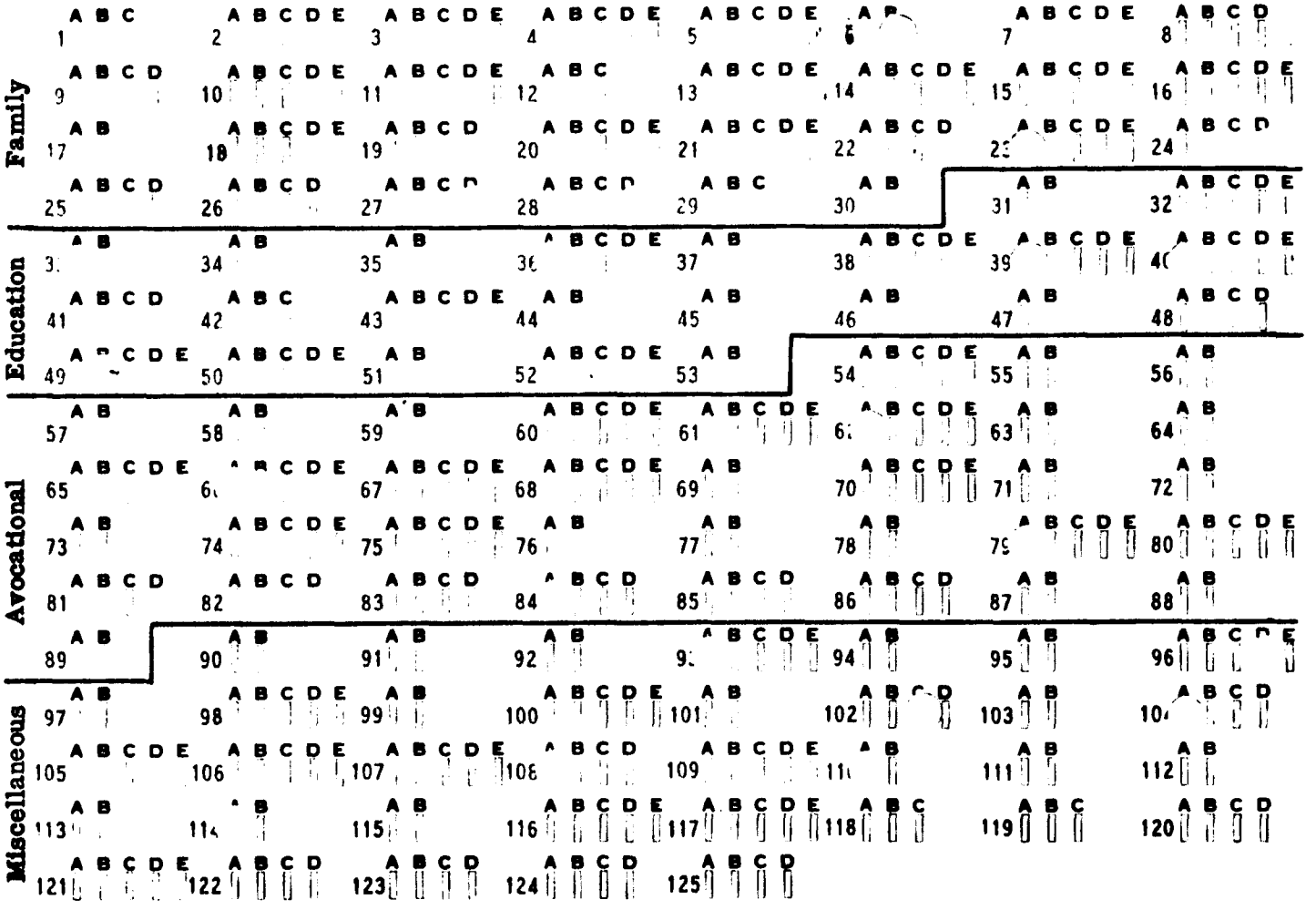
CRW-G

POSITIVE — WRITING

NEGATIVE — WRITING



CRA-G

FEMALE HANDSCORING STENCIL

POSITIVE — ART

NEGATIVE — ART

Biographical Inventory Creativity (BIC)

Place this stencil over the completed BIC answer sheet. Count one point for each mark appearing through the holes. Enter this sum in the large hole to the right. The label beside this hole indicates the part score obtained from this stencil.

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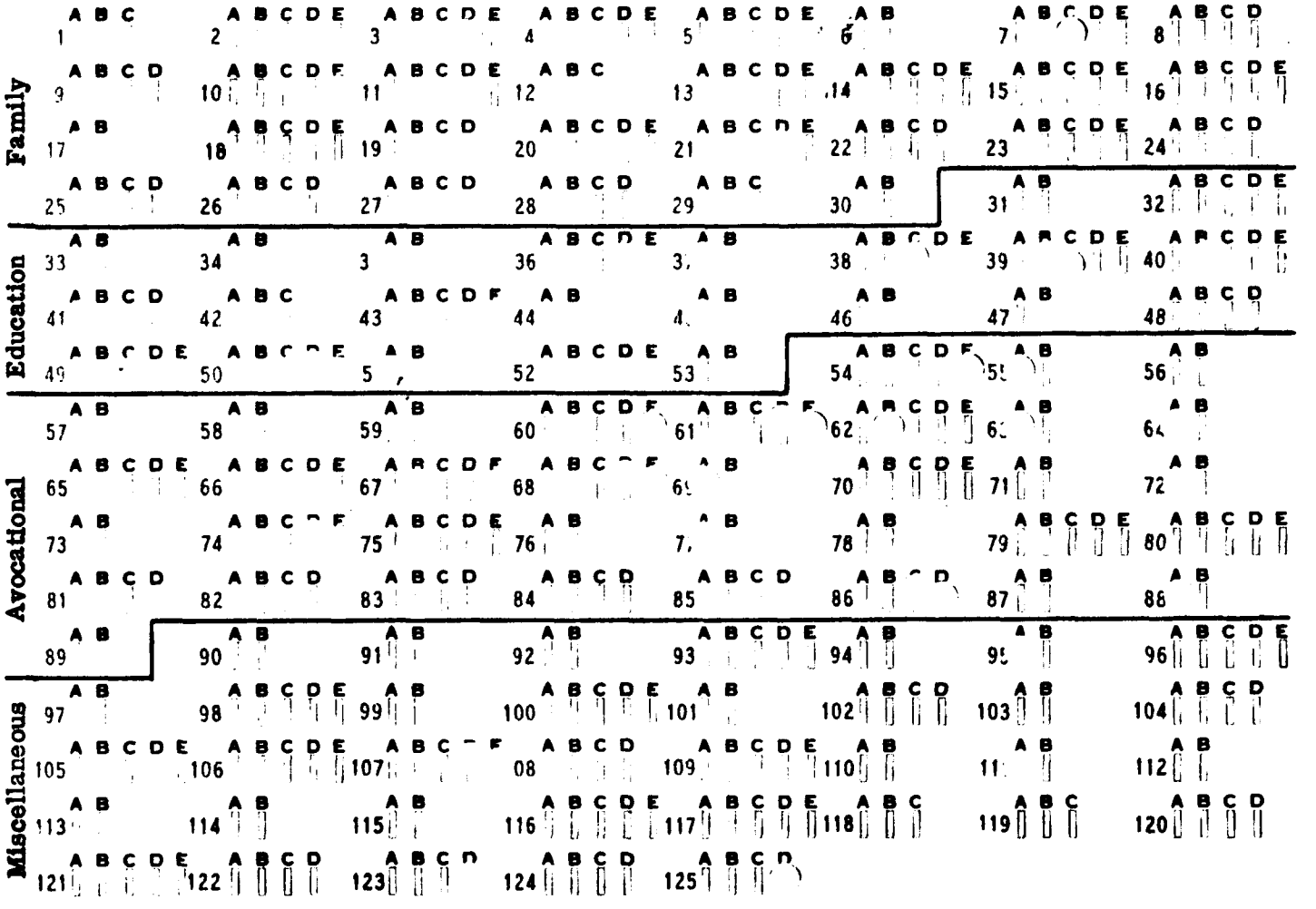
CRW-G

POSITIVE — WRITING

NEGATIVE — WRITING



PART I

List as many as six possible uses for each of the following objects

1. SHOE (used as footwear)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

2. BUTTON (used to fasten things)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

3. KEY (used to open a lock)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

ALTERNATE USES

Form A

Paul R. Christensen, J. P. Guilford, Philip R. Merrifield and Robert C. Wilson

NAME _____ SEX: M ____ F ____ SCORES: I ____ II ____ III ____ Total ____

GROUP _____ DATE _____

In this test, you will be asked to consider some common objects. Each object has a common use, which will be stated. You are to list as many as six other uses for which the object or parts of the object could serve.

EXAMPLE:

Given: A NEWSPAPER (used for reading). You might think of the following other uses for a newspaper.

a. start a fire
b. wrap garbage
c. swat flies
d. stuffing to pack boxes
e. line drawers or shelves
f. make up a kidnap note

Notice that all of the uses listed are different from each other and different from the primary use of a newspaper. Each acceptable use must be different from others and from the common use.

Do not spend too much time on any one item. Write down those uses that occur to you and go on to the others in the same Part. You may return to the incomplete items in a Part if time for that Part permits.

There are three parts to this test, with three items per part. You will have 4 minutes for each part.

If you have any questions, ask them now.

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

PART I

List as many as six possible uses for each of the following objects:

1. SHOE (used as footwear)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

2. BUTTON (used to fasten things)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

3. KEY (used to open a lock)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

PART II

List as many as six possible uses for each of the following objects:

4. CHAIR (used for sitting)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

5. WATCH (used for telling time)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

6. SAFETY PIN (used for fastening)

   a. _____

   b. _____

   c. _____

   d. _____

   e. _____

   f. _____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

PART III

List as many as six possible uses for each of the following objects:

7. WOODEN PENCIL (used for writing)

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

8. AUTOMOBILE TIRE (used on the wheel of an automobile)

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

9. EYEGLASS (used to improve vision)

a. _____

b. _____

c. _____

d. _____

e. _____

f. _____

STOP HERE. WAIT FOR FURTHER INSTRUCTIONS.

APPENDIX B

Maudsley Personality Inventory

A Measure of Neuroticism and Extraversion

1. Are you happiest when you get involved in some project that calls for rapid action?	Yes	?	No
2. Do you sometimes feel happy, sometimes depressed, without any apparent reason?	Yes	?	No
3. Does your mind often wander while you are trying to concentrate?	Yes	?	No
4. Do you usually take the initiative in making new friends?	Yes	?	No
5. Are you inclined to be quick and sure in your actions?	Yes	?	No
6. Are you frequently "lost in thought" even when supposed to be taking part in a conversation?	Yes	?	No
7. Are you sometimes bubbling over with energy and sometimes very sluggish?	Yes	?	No
8. Would you rate yourself as a lively individual?	Yes	?	No
9. Would you be very unhappy if you were prevented from making numerous social contacts?	Yes	?	No
10. Are you inclined to be moody?	Yes	?	No
11. Do you have frequent ups and downs in mood, either with or without apparent cause?	Yes	?	No
12. Do you prefer action to planning for action?	Yes	?	No
13. Are your daydreams frequently about things that can never come true?	Yes	?	No
14. Are you inclined to keep in the background on social occasions?	Yes	?	No
15. Are you inclined to ponder over your past?	Yes	?	No
16. Is it difficult to "lose yourself" even at a lively party?	Yes	?	No
17. Do you ever feel "just miserable" for no good reason at all?	Yes	?	No
18. Are you inclined to be overconscientious?	Yes	?	No
19. Do you often find that you have made up your mind too late?	Yes	?	No
20. Do you like to mix socially with people?	Yes	?	No
21. Have you often lost sleep over your worries?	Yes	?	No
22. Are you inclined to limit your acquaintances to a select few?	Yes	?	No
23. Are you often troubled about feelings of guilt?	Yes	?	No
24. Do you ever take your work as if it were a matter of life or death?	Yes	?	No
25. Are your feelings rather easily hurt?	Yes	?	No
26. Do you like to have many social engagements?	Yes	?	No
27. Would you rate yourself as a tense or "highly-strung" individual?	Yes	?	No
28. Do you generally prefer to take the lead in group activities?	Yes	?	No
29. Do you often experience periods of loneliness?	Yes	?	No
30. Are you inclined to be shy in the presence of the opposite sex?	Yes	?	No
31. Do you like to indulge in a reverie (daydreaming)?	Yes	?	No
32. Do you nearly always have a "ready answer" for remarks directed at you?	Yes	?	No
33. Do you spend much time in thinking over good times you have had in the past?	Yes	?	No
34. Would you rate yourself as a happy-go-lucky individual?	Yes	?	No
35. Have you often felt listless and tired for no good reason?	Yes	?	No
36. Are you inclined to keep quiet when out in a social group?	Yes	?	No
37. After a critical moment is over, do you usually think of something you should have done but failed to do?	Yes	?	No
38. Can you usually let yourself go and have a hilariously good time at a gay party?	Yes	?	No
39. Do ideas run through your head so that you cannot sleep?	Yes	?	No
40. Do you like work that requires considerable attention?	Yes	?	No
41. Have you ever been bothered by having a useless thought come into your mind repeatedly?	Yes	?	No
42. Are you inclined to take your work casually, that is as a matter of course?	Yes	?	No
43. Are you touchy on various subjects?	Yes	?	No
44. Do other people regard you as a lively individual?	Yes	?	No
45. Do you often feel disgruntled?	Yes	?	No
46. Would you rate yourself as a talkative individual?	Yes	?	No
47. Do you have periods of such great restlessness that you cannot sit long in a chair?	Yes	?	No
48. Do you like to play pranks upon others?	Yes	?	No

APPENDIX C

Daydream and Cognitive Processes Inventory

Containing Items From:

1. Imaginal Processes Inventory
2. Ego Strength Scale
3. Experience Inquiry

DAYDREAM AND COGNITIVE PROCESSES INVENTORY
PART I

INSTRUCTIONS

There are 24 questions in Part I. Each question has 5 possible answers. For each question choose the answer which is most true or appropriate for you. Each answer corresponds to one of the numbers 1 through 5. Please circle in the test booklet the number of the alternative which is most characteristic of you. However, if you have been provided with an IBM answer sheet, please fill in the appropriate space.

PART I

1. I daydream
   1. infrequently.
   2. once a week.
   3. once a day.
   4. a few times during the day.
   5. many different times during the day.

2. Daydreams or fantasies make up
   1. no part of my waking thoughts.
   2. less than 10% of my waking thoughts.
   3. at least 10% of my waking thoughts.
   4. " " 25% " " " "
   5. " " 50% " " " "

3. As regards daydreaming, I would characterize myself as
   1. someone who never daydreams.
   2. someone who very rarely engages in daydreaming.
   3. someone who tends towards occasional daydreaming.
   4. someone who tends towards moderate daydreaming.
   5. an habitual daydreamer.

4. I have a night dream
   1. rarely or never.
   2. once a month.
   3. several times a month.
   4. " " " week.
   5. once a night.

5. I recall or think over my daydreams
   1. infrequently.
   2. once a week.
   3. once a day.
   4. a few times during the day.
   5. many different times during the day.

6. When I am not paying close attention to some job, book, or TV, I tend to be daydreaming
   1. 0% of the time.
   2. 10% of the time.
   3. 25% of the time.
   4. 50% of the time.
   5. 75% of the time.

7. I can recall a dream
   1. rarely or never.
   2. once a month.
   3. several times a month.
   4. " " " week.
   5. once a night.

8. When I am sleeping, I seem to be dreaming
   1. practically never.
   2. just a little.
   3. some of the time.
   4. more than half the time.
   5. most of the time.

PART I

9. Instead of noticing people and events in the world around me, I will spend approximately
   1. 0% of my time lost in thought.
   2. less than 10% of my time lost in thought.
   3. 10% of my time lost in thought.
   4. 25% " " " " " "
   5. 50% " " " " " "

10. I daydream at work (or school)
   1. infrequently.
   2. once a week.
   3. once a day.
   4. a few times during the day.
   5. many different times during the day.

11. I recall my night dreams vividly
   1. rarely or never.
   2. once a month.
   3. several times a month.
   4. several times a week.
   5. once a night.

12. I recall my night dreams in the form of
   1. vague impressions.
   2. fragments.
   3. general idea.
   4. main plot with some detail.
   5. clearly with great detail.

13. A night's sleep for me contains a dream
   1. rarely or never.
   2. once a month.
   3. several times a month.
   4. several times a week.
   5. once a night.

14. Recalling things from the past, thinking of the future, or imagining unusual kinds of events occupies
   1. 0% of my waking day.
   2. less than 10% of my waking day.
   3. 10% of my waking day.
   4. 25% of my waking day.
   5. 50% of my waking day.

15. I recall my dreams fairly clearly
   1. rarely or never.
   2. once a month.
   3. several times a month.
   4. several times a week.
   5. once a night.

16. I have a really vivid dream
   1. rarely or never.
   2. once a month.
   3. several times a week.
   4. once a week.
   5. every night.

PART I

17. I lose myself in active daydreaming
    1. infrequently.
    2. once a week.
    3. once a day.
    4. a few times during the day.
    5. many different times during the day.

18. Whenever I have time on my hands I daydream
    1. never.
    2. rarely.
    3. sometimes.
    4. frequently.
    5. always.

19. I recall my dreams in some form
    1. rarely or never.
    2. once a month.
    3. several times a month.
    4. several times a week.
    5. once a night.

20. When I am at a meeting or show that is not very interesting, I daydream rather than pay attention
    1. never.
    2. rarely.
    3. sometimes.
    4. frequently.
    5. always.

21. I recall interesting or elaborate dreams
    1. rarely or never.
    2. once a month.
    3. several times a month.
    4. several times a week.
    5. once a night.

22. I consider myself a person who dreams
    1. never.
    2. rarely.
    3. occasionally.
    4. frequently.
    5. a great deal.

23. I am awakened with the realisation that I have been dreaming
    1. rarely or never.
    2. once a month.
    3. several times a month.
    4. several times a week.
    5. once a night.

24. On a long bus or train ride I daydream
    1. never.
    2. rarely.
    3. occasionally.
    4. frequently.
    5. a great deal of the time.

DAYDREAM AND COGNITIVE PROCESSES INVENTORY

PART II

INSTRUCTIONS:

All of the remaining items belong to Part II. Each item says something about daydreams or daydreaming. Indicate to what extent each item applies to you, or is true for you.

Please indicate your answer in the blanks to the right of each sentence.

5 stands for "very true for me" or "strongly characteristic of me".

1 stands for "definitely not true for me" or "strongly uncharacteristic of me".

The middle numbers in the scale stand for intermediate degrees between "very true" and "definitely true".

HOWEVER, IF YOU HAVE BEEN PROVIDED WITH AN IBM ANSWER SHEET PLEASE FILL IN THE APPROPRIATE SPACE.

PART II

25. I can be aroused and excited by a daydream.

26. Daydreams I have often are about different ways of finishing things I still have to do in my life.

27. I often have thoughts about things that could rarely occur in real life.

28. A "happy" daydream helps me "snap out of" a spell of unhappiness.

29. When faced with a difficult situation, I imagine that I have worked out the problem and try out my solution in my thoughts.

30. As a child I was a constant daydreamer.

31. I daydream about utterly impossible situations.

32. The visual images in my daydreams are so vivid. I believe that they are actually happening.

33. If something is really on my mind I often brood on it for hours on end.

34. My daydreams are often stimulating and rewarding.

35. In my daydreams I solve the problems of my family and my friends as well as my own.

36. During a daydream I sometimes feel a rousing sense of enthusiasm and excitement.

37. The things I daydream about aren't things that could happen in real life.

38. My daydreams offer me useful clues to tricky situations I face.

39. My daydreams often cheer me up when I feel blue.

40. My daydreams are fairly realistic.

41. In my daydreams, both visual scenes and sounds are so clear and distinct that I almost have to pinch myself to make sure they're not real.

42. Sometimes a thrill goes up my spine as I reflect on a great moment of triumph or achievement.

43. My daydreams are always just sort of ways of passing time rather than attempts to solve my actual daily problems.

44. My daydreams are as weird as science fiction.

45. It is hard for me to distinguish my daydreams from what is actually happening in real life.

46. I become so affected by my daydreams, that they will subsequently determine my mood.

PART II

47. I tend to get pretty wrapped up in my daydreaming.

48. My idle thoughts do not provide me many workable solutions to problems.

49. I often relive happy or exciting experiences in my daydreams.

50. My daydreams are closely related to problems that come up during my daily life.

51. I daydream about doing things I know will never be possible for me.

52. I believe I actually see visions of people I know even though it seems impossible for them to be there at the time.

53. I seldom have the same daydream more than once.

54. My daydreams often leave me with feelings of sadness.

55. My daydreams are realistic and rarely contain wild, strange thoughts.

56. Some of the voices in my thoughts are threatening or frightening.

57. A daydream can bring a smile to my face.

58. I imagine solving all my problems in my daydreams.

59. Sometimes my imagination keeps coming back to the same things over and over again, no matter how much I try to change the subject.

60. I often imagine myself as a different person or living a very different life than I am now.

61. In my fantasies, voices of people important in my life are telling me what to do.

62. When I have an unusually enjoyable daydream, I try to prevent it from coming to an end.

63. I usually feel content and quite excited after a daydream.

64. Daydreams do not have any practical significance for me.

65. Some of my daydreams are so striking that I keep on thinking about them after they're over.

66. The events in my daydreams are so much like the things I do from day to day.

67. My daydreams are so clear that I often believe the people in them are in the room.

68. When a child, I would often create a great fantasy world for myself.

69. The voices and sounds in my daydreams seem real.

70. Sometimes a daydream will make me so upset that I feel like crying.

PART II

71. Daydreams are more likely to arouse pleasant than unpleasant emotions within me.

72. My fantasies sometimes surprise me by suggesting an answer to a problem which I could not work out.

73. The things that happen in my daydreams are often extremely strange and unusual.

74. In my daydreams, the voices of people in my family are criticizing me.

75. Something that has happened during the day often goes over and over in my mind.

76. My daydreams often leave me with a warm, happy feeling.

77. I can get a fresh approach to an old problem almost at once during what begins as an idle daydream.

78. Voices in my daydreams seem so distinct and clear that I'm almost tempted to answer them.

79. My daydreams seldom repeat themselves.

80. Most of my daydreams are about really unusual people or about events that could hardly ever happen.

81. My imagination often goes around and around in the same circle.

82. A daydream can completely change my mood.

83. The people in my daydreams are so true to life, I often believe they are in the same room with me.

84. I feel very emotional during my daydreams.

85. My fantasies usually provide me with pleasant thoughts.

86. Sometimes an answer to a difficult problem will come to me during a daydream.

87. I often have some kind of emotional reaction to me daydreams.

88. My daydreams are fairly matter-of-fact and down-to-earth.

89. I often daydream about events that happened over a year ago.

90. I often have the same daydream over and over again.

91. My thoughts seem as real as actual events in my life.

92. Some of my daydreams are so powerful that I just can't take my attention away from them.

93. Daydreaming in an adult is really childish.

PART II

94. Before going somewhere, I imagine the scene and what I will be doing.

95. In my daydreams, I fear meeting new responsibilities in life.

96. My daydreams often contain depressing events which upset me.

97. I imagine myself physically hurting someone I hate.

98. The "scenes" in my daydreams are sort of fuzzy and unclear.

99. I often daydream about events that happened more than a year ago.

100. Daydreaming is normal for adults as well as for adolescents and children.

101. I picture myself as I will be several years from now.

102. I picture myself not receiving a promotion I long waited for.

103. A mere daydream cannot frighten or upset me.

104. In my fantasies, I am resentful to a superior for reprimanding me without just cause.

105. I can see the people or things in my daydreams as if they were moving around.

106. I never think at all about events or scenes of my early childhood.

107. I feel badly about daydreaming because it may indicate a weakness in character.

108. I am more likely to think about tomorrow than wonder about yesterday.

109. I find myself imagining the unhappiness I caused my family because of my failure.

110. I will not allow myself to think of some things, knowing how upset I can become when I do.

111. In my fantasies, I see myself seeking revenge on those I dislike.

112. I sometimes have a very clear, lifelike picture of what I am imagining.

113. My daydreams about love are so vivid, I actually feel they are occurring.

114. A really original idea can sometimes develop from a really fantastic daydream.

115. I think about how "the world of the future" will look.

116. I get the "chills" as a result of some of my thoughts.

117. In my daydreams, I am caught after stealing something very expensive.

118. I can often "see" a large number of things or people in my fantasies.

PART II

119. I imagine myself to be physically attractive to people of the opposite sex.

120. Daydreams are unreal and seldom come true.

121. I never plan where I'll be or what I'll be doing several years from now.

122. Sometimes a passing thought will seem so real that I will shudder and feel uneasy.

123. I daydream about having been caught in a crime and sentenced to jail for a long time.

124. I do not really "see" the objects in a daydream.

125. While working intently at a job, my mind will wander to thoughts about sex.

126. I feel guilty about my daydreams.

127. I do not think about what the future will be like.

128. My daydreams have such an emotional effect on me that I often react with fear.

129. In my fantasies, a friend discovers that I have lied.

130. My fantasies often consist of black-and-white or color images.

131. Sometimes on the way to work, I imagine myself making love to an attractive person of the opposite sex.

132. Because daydreaming often takes me away from my work, I try to avoid it even when I have no specific task to complete.

133. I daydream about what is about to happen.

134. I respond with a shock when an exciting daydream reaches a peak.

135. I often feel tortured by the images of the sins I have committed.

136. My daydreams are mostly made up of thoughts and feelings rather than visual images.

137. My sexual daydreams are very vivid and clear in my mind.

138. The fewer daydreams one has, the more time there is to really "live".

139. I seldom think about what I will be doing in the future.

140. Some of my daydreams are so filled with emotion as to make me tense up my body.

141. I daydream more about events that have already happened than about things in the future.

PART II

142. I daydream about taking advantage of someone less fortunate than I and feeling guilty about it afterward.

143. Visual scenes are an important part of my daydreams.

144. I daydream of being interviewed for an important job and giving a bad impression.

145. While reading, I often slip into daydreams about sex or making love to someone.

146. Daydreams accomplish nothing more than a temporary escape and just avoid things that must be done.

147. I picture myself telling off my parents.

148. The effect of a frightening daydream will linger on for a long time.

149. I daydream about the first places in which I lived, the scenery, and the events of my youth.

150. I often imagine that someone else knows of the things I've done wrong and holds them against me.

151. The "pictures in my mind" seem as clear as photographs.

152. I daydream that my children or others I love do not become very successful.

153. While traveling on the train or bus my idle thoughts turn to love.

154. Daydreaming never solves any problems.

155. Unpleasant daydreams don't frighten or bother me.

156. I rarely find myself recalling moments of my childhood.

157. In my daydreams I feel guilty for having escaped punishment.

158. The scenes of my daydreams are never longer than brief flashes.

159. I imagine myself not being able to finish a job I am required to do.

160. Whenever I am bored, I daydream about the opposite sex.

161. Daydreaming is a common experience for great scientists and artists as well as for the average person.

162. In my daydreams I become angry and even antagonistic towards others.

163. I never panic as a result of a daydream.

164. Events from my childhood recur to me very clearly and with many details.

165. I imagine myself running away from someone who is going to punish me.

PART II

166. The "scenes" in my daydreams are so vivid and clear to me that my eyes seem actually to follow them.

167. In my idle thoughts, I fear not being able to meet the demands of my job.

168. Sometimes in the middle of the day, I will daydream of having sexual relations with someone I am fond of.

169. I find my daydreams are worthwhile and interesting to me.

170. Some of my fantasies are so terrifying, I shake and shiver.

171. In my daydreams, I am more likely to "re-live" the past than to look ahead into the future.

172. I feel guilty in a daydream because of my cheating in a game or contest.

173. I can still remember scenes from recent daydreams.

174. In my daydreams, I lose my job and am financially in debt, and feel worthless.

175. In my fantasies, I arouse great desire in someone I admire.

176. In my daydreams, I get so bitter, I begin hurting people I love.

177. I sometimes daydream about people and places I was familiar with when I was younger.

178. In my daydreams, I am always afraid of being caught doing something wrong.

179. My thoughts are of the future rather than of the past.

180. I daydream that I will never do anything worthwhile for myself or for others.

181. Before going to sleep, my idle thoughts turn to lovemaking.

182. I think more about "here-and-now" than about yesterday.

183. In my daydreams I feel guilty because I have done something which is not in accord with my religious beliefs.

184. I daydream about what I would like to see happen in the future.

185. In my daydreams, my employer is disappointed with my work.

186. My daydreams tend to arouse me physically.

187. I daydream of ways of "rubbing it in" or annoying certain people I dislike.

188. I do not think about scenes from my early years.

PART II

189. I imagine myself borrowing something dear from a friend and damaging it.

190. I find myself imagining what I will be doing a year from now.

191. I imagine myself failing those I love.

192. I find myself imagining ways of getting even with those I dislike.

193. In my daydreams, I show my anger towards my enemies.

194. I seldom find myself daydreaming about my younger days.

195. I imagine myself displaying my hatred against those whose morals and values are not in accord with my own.

196. I tend to daydream about the events of the coming weeks and months more than of the happenings of the past.

197. I daydream about not living up to my parents' expectations.

198. I daydream of clashing with my parents over trivial matters.

199. I think a lot about the past.

200. I see myself attaining revenge against someone who has deceived me.

DAYDREAM AND COGNITIVE PROCESSES INVENTORY

PART III

INSTRUCTIONS:

Please answer true or false to the following items in the blanks to the right of each question.

HOWEVER, IF YOU HAVE AN ANSWER SHEET, BEGIN FILLING IN THE SPACES BEGINNING WITH ITEM # 201. ANSWER ONLY IN THE SPACES LABELED "T" OR "F".

PART III

		T	F
201.	I have a good appetite.	-	-
202.	I have diarrhea once a month or more.	-	-
203.	At times I have fits of laughing and crying that I cannot control.	-	-
204.	I find it hard to keep my mind on a task or job.	-	-
205.	I have had very peculiar and strange experiences.	-	-
206.	I have a cough most of the time.	-	-
207.	I seldom worry about my health.	-	-
208.	My sleep is fitful and disturbed.	-	-
209.	When I am with people I am bothered by hearing very queer things.	-	-
210.	I am in just as good physical health as most of my friends.	-	-
211.	Everything is turning out just like the prophets of the Bible said it would.	-	-
212.	Parts of my body often have feelings like burning, tingling, crawling, or like " going to sleep".	-	-
213.	I am easily downed in an argument.	-	-
214.	I do many things which I regret afterwards (I regret things more or more often than others seem to).	-	-
215.	I go to church almost every week.	-	-
216.	I have met problems so full of possibilities that I have been unable to make up my mind about them.	-	-
217.	Some people are so bossy that I feel like doing the opposite of what they request, even though I know they are right.	-	-
218.	I like collecting flowers or growing house plants.	-	-
219.	I like to cook.	-	-
220.	During the past few years I have been well most of the time.	-	-
221.	I have never had a fainting spell.	-	-
222.	When I get bored I like to stir up some excitement.	-	-
223.	My hands have not become clumsy or awkward.	-	-
224.	I feel weak all over much of the time.	-	-
225.	I have had no difficulty in keeping my balance in walking.	-	-
226.	I like to flirt.	-	-

PART III

		T	F
227.	I believe my sins are unpardonable.	-	-
228.	I frequently find myself worrying about something.	-	-
229.	I like science.	-	-
230.	I like to talk about sex.	-	-
231.	I get mad easily and then get over it soon.	-	-
232.	I brood a great deal.	-	-
233.	I dream frequently about things that are best kept to myself.	-	-
234.	My way of doing things is apt to be misunderstood by others.	-	-
235.	I have had blank spells in which my activities were interrupted and I did not know what was going on around me.	-	-
236.	I can be friendly with people who do things which I consider wrong.	-	-
237.	If I were an artist I would like to draw flowers.	-	-
238.	When I leave home I do not worry about whether the door is locked and the windows closed.	-	-
239.	At times I hear so well it bothers me.	-	-
240.	Often I cross the street in order not to meet someone I see.	-	-
241.	I have strange and peculiar thoughts.	-	-
242.	Sometimes I enjoy hurting persons I love.	-	-
243.	Sometimes some unimportant thought will run through my mind and bother me for days.	-	-
244.	I am not afraid of fire.	-	-
245.	I do not like to see women smoke.	-	-
246.	When someone says silly or ignorant things about something I know about, I try to set him right.	-	-
247.	I feel unable to tell anyone all about myself.	-	-
248.	My plans have frequently seemed so full of difficulties that I have had to give them up.	-	-
249.	I would certainly enjoy beating a crook at his own game.	-	-
250.	I have had some very unusual religious experiences.	-	-
251.	One or more members of my family is very nervous.	-	-
252.	I am attracted by members of the opposite sex.	-	-

PART III

		T	F
253.	The man who had most to do with me when I was a child (such as my father, stepfather, etc.) was very strict with me.	-	-
254.	Christ performed miracles such as changing water into wine.	-	-
255.	I pray several times every week.	-	-
256.	I feel sympathetic towards people who tend to hang on to their griefs and troubles.	-	-
257.	I am afraid of finding myself in a closet or small closed place.	-	-
258.	Dirt frightens or disgusts me.	-	-
259.	I think Lincoln was greater than Washington.	-	-
260.	In my home we have always had the ordinary necessities (such as enough food, clothing, etc.)	-	-
261.	I am made nervous by certain animals.	-	-
262.	My skin seems to be unusually sensitive to touch.	-	-
263.	I feel tired a good deal of the time.	-	-
264.	I never attend a sexy show if I can avoid it.	-	-
265.	If I were an artist I would like to draw children.	-	-
266.	I sometimes feel that I am about to go to pieces.	-	-
267.	I have often been frightened in the middle of the night.	-	-
268.	I very much like horseback riding.	-	-

EXPERIENCE INQUIRY

PART IV

INSTRUCTIONS:

This section contains 56 numbered statements. Please read each statement and decide whether it is true as applied to you or false as applied to you.

You are to mark your answers on this sheet in the blanks to the right of each statement, or on the second answer sheet if you have been provided with one.

There are no right or wrong answers. The statements are about matters on which people often differ. The best answer is just your own opinion. Please answer TRUE or FALSE for every statement, even if you have to guess at some.

PART IV

		T	F
1.	I am regarded by others as a person with a strong sense of humor.	-	-
2.	Sometimes I wander off into my own thoughts while doing a routine task so that I actually forget that I am doing the task, and then find, a few minutes later, that I have completed it without even being aware of what I was doing.	-	-
3.	At times I have carried on real conversations with another person while I was asleep (e.g., with someone who walked into my room).	-	-
4.	Sometimes I have had the impression that the walls or the ceiling were moving and changing size or state, even though I knew that this was impossible.	-	-
5.	When I am working, I find it distracting if the TV is on or if someone is talking in the room.	-	-
6.	At times I have focused on something so hard that I went into a kind of benumbed state of consciousness, or at other times into a state of extraordinary calm and serenity.	-	-
7.	I can look at an object--a leaf, a stone, a flower--for a long time, continuing to discover different things about it.	-	-
8.	I prefer Martin Luther King to Jonathan Winters.	-	-
9.	I avoid sports and activities that are thrilling but in which there is some risk of physical injury.	-	-
10.	I feel uncomfortable when I cannot make my ideas consistent.	-	-
11.	I avoid "putting people on" or doing things just to see the reaction of others.	-	-
12.	People are intolerable who take "sacred" things in a light and humorous way.	-	-
13.	One should be on guard against obscuring rational thought by beliefs in mystical experiences.	-	-
14.	Sometimes I imagine what it would be like if the world were different, e.g., if there were no laws, if we could read each other's minds, etc.	-	-
15.	I usually prefer to do things in tried ways rather than new and different ways.	-	-
16.	It is possible that we had a previous existence of which we have no memory.	-	-
17.	I would like to get beyond the world of logic and reason and experience something new and different.	-	-
18.	At times I have actively stared at something familiar and had it become very strange before my eyes.	-	-

PART IV

		T	F
19.	While lying in bed or reeling in a chair I sometimes find myself perceiving faces, objects, etc., in the shadows of the light or the design of the ceiling, etc.	-	-
20.	I think that things should be predictable and certain.	-	-
21.	At times I see unusual relations between things.	-	-
22.	It is possible that our sense organs (i.e., eyes, ears, etc.) do not bring us our most important information.	-	-
23.	Poetry has little effect on me.	-	-
24.	I prefer the standards of the scientist to those of the artist.	-	-
25.	I like to indulge in emotions and sensations with the feeling of just "letting go."	-	-
26.	I would enjoy a contest in a carnival in which I had to break a pile of dishes.	-	-
27.	I have never had a strange or weird experience.	-	-
28.	I have had experiences which inspired me to write a poem or a story, or make up a humorous tale, or paint a picture.	-	-
29.	I have had the experience of being caught up by music or dancing, becoming enraptured by it, and having it live and express itself through me so that I seemed to cease to be.	-	-
30.	I am quick to see "deuble meanings" in things people are saying or in what I am reading.	-	-
31.	I think that miracles are possible.	-	-
32.	I think that our most intense experiences can be communicated in words to others.	-	-
33.	If one concentrates hard enough it is possible to influence the thoughts and behavior of other people.	-	-
34.	Some people are capable of extrasensory perception.	-	-
35.	There have been times when I have been completely immersed in nature or in art and had a feeling of awe sweep over me so that I felt as if my whole state of consciousness was somehow temporarily altered.	-	-
36.	I have experienced moments of inspiration and creativity, when artistic expression, ideas, or the solutions to problems I had struggled with came to me with a special intensity and clarity.	-	-
37.	I prefer people who are predictable and dependable to those who are impulsive and changeable.	-	-
38.	I usually try to understand my dreams.	-	-

PART IV

		T	F
39.	It is not possible literally to read another person's mind.	-	-
40.	I think that unidentified flying objects from outer space have in fact been sighted.	-	-
41.	I would like to try parachute jumping.	-	-
42.	At amusement parks I usually avoid roller-coasters, ferris wheels and similar "thrill rides."	-	-
43.	I think that many people in our culture have had visions at some time or another.	-	-
44.	Solutions to problems or ideas for new projects come to me at times "out of the blue."	-	-
45.	Most things people laugh at are not really funny.	-	-
46.	I enjoy "wild" parties.	-	-
47.	I am often bored when left alone.	-	-
48.	I have been so strongly in love with someone that I somehow felt that my own self was fading and I was at one with the beloved person.	-	-
49.	I have had the experience of doing some task in the middle of the night (e.g., jotting down a note, answering a phone call) with no memory the next morning of having done so.	-	-
50.	It is possible for the mind to leave the body and experience things at great distances, even in the past and in the future.	-	-
51.	When solving a problem I allow myself to consider all possibilities even though some are unrealistic or absurd.	-	-
52.	It is sometimes right to hit someone who makes you angry.	-	-
53.	I would prefer vacationing at a fashionable resort to sailing around the world, paddling down the Mississippi, or some similar activity.	-	-
54.	Eventually everything will be explained by the laws of science.	-	-
55.	It is often better to act upon one's feelings than upon a logically reasoned plan.	-	-
56.	I find myself uncomfortable in the presence of unconventional or "peculiar" people.	-	-

NAME _____ (LAST / FIRST / MIDDLE) DATE _____ AGE _____ SEX (M OR F) _____

SCHOOL _____ CITY _____ GRADE OR CLASS _____ INSTRUCTOR _____

1 _____ 2 _____ NAME OF TEST _____ PART _____ DATE OF BIRTH _____

SCORES 1 _____ 2 _____ 3 _____ 4 _____ 5 _____ 6 _____ 7 _____ 8 _____

	T	F					T	F					T	F					T	F					T	F			
	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
1						31						61						91						121					
2						32						62						92						122					
3						33						63						93						123					
4						34						64						94						124					
5						35						65						95						125					
6						36						66						96						126					
7						37						67						97						127					
8						38						68						98						128					
9						39						69						99						129					
10						40						70						100						130					
11						41						71						101						131					
12						42						72						102						132					
13						43						73						103						133					
14						44						74						104						134					
15						45						75						105						135					

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

	T	F					T	F					T	F					T	F					T	F			
	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
16						46						76						106						136					
17						47						77						107						137					
18						48						78						108						138					
19						49						79						109						139					
20						50						80						110						140					
21						51						81						111						141					
22						52						82						112						142					
23						53						83						113						143					
24						54						84						114						144					
25						55						85						115						145					
26						56						86						116						146					
27						57						87						117						147					
28						58						88						118						148					
29						59						89						119						149					
30						60						90						120						150					

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(OVER)

SCORES

1 _____ 5 _____

2 _____ 6 _____

3 _____ 7 _____

4 _____ 8 _____

NAME _____ LAST _____ FIRST _____ MIDDLE

	T	F					T	F					T	F					T	F					T	F			
	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
151						181						211						241						271					
152						182						212						242						272					
153						183						213						243						273					
154						184						214						244						274					
155						185						215						245						275					
156						186						216						246						276					
157						187						217						247						277					
158						188						218						248						278					
159						189						219						249						279					
160						190						220						250						280					
161						191						221						251						281					
162						192						222						252						282					
163						193						223						253						283					
164						194						224						254						284					
165						195						225						255						285					

BE SURE YOUR MARKS ARE HEAVY AND BLACK.
ERASE COMPLETELY ANY ANSWER YOU WISH TO CHANGE.

	T	F					T	F					T	F					T	F					T	F			
	1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5		1	2	3	4	5
166						196						226						256						286					
167						197						227						257						287					
168						198						228						258						288					
169						199						229						259						289					
170						200						230						260						290					
171						201						231						261						291					
172						202						232						262						292					
173						203						233						263						293					
174						204						234						264						294					
175						205						235						265						295					
176						206						236						266						296					
177						207						237						267						297					
178						208						238						268						298					
179						209						239						269						299					
180						210						240						270						300					

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APPENDIX D

Instructions Read to All Subjects Prior to the Experimental Perceptual Isolation Period

"I would firstly like to thank you for your cooperation so far in this research. The next and final phase will involve your reclining on this cot and telling me about any images that come into your mind. Give me the fullest description of the images that you can. Please report also any thoughts, feelings, sensations, or other perceptions that may occur during the course of the next thirty minutes. I realize this is asking a lot of you, but at the same time I must stress that complete honesty in reporting your experiences is very crucial. Let me assure you that complete confidentiality will be observed.

While you are reclining on this cot, your eyes will be covered with these goggles (the experimenter shows subjects the goggles) and you will be wearing these earphones (the experimenter shows subjects the earphones). I will be in the adjoining room (the experimenter points in the direction of the room) controlling some recording devices. After you are made comfortable with the goggles and earphones properly fitted, we will be ready to begin the actual experiment.

Firstly, through these earphones you will hear a sound which resembles rushing air (the white noise). This sound will last for exactly four minutes. When it stops you will immediately begin to tell me everything that came into your mind during the previous four minutes. This reporting period will last for exactly one minute at the end of which the rushing air sound will begin again. At this point you are to stop reporting and again focus completely upon the contents of your mind. After exactly four minutes, the rushing sound will again stop and you are to again report the contents which occurred during the preceding interval. This process will last for exactly thirty minutes whereupon I will talk to you for a minute or two (debriefing) and then you will be free to go."

APPENDIX E

Instructions Read To All Subjects During The Debriefing

(Post Perceptual Isolation Period)

"Again thank you for your patience and cooperation throughout this research. We feel it only proper that you be presented with an opportunity to find out your results on all these tests and procedures. If you wish such a feedback, please phone me at _____ and I will be happy to discuss your results with you. Just allow me two weeks or so to prepare the data. Remember, call me at _____ and I'll have your results.

In the meantime may I stress the necessity of keeping silent about the nature of this last procedure. We have found that when subjects are about to undergo this final procedure, prior information from previous subjects very definitely affects their attitudes and possibly their participation in this procedure. In other works, let them be just as surprised as you were."

APPENDIX F

Instructions to Raters For Ranking First Eleven Perceptual Isolation Variables

For Task Relevant Material:

Rate 0 if complete absence of any statement regarding the task.

Rate 1 if only passing mention of task.

Rate 2 if subject shows more than usual interest in task.

Rate 3 if subject talks primarily about the task.

Rate 4 if subject talks only about the task.

For Task Irrelevant Material:

Rate 0 if the subject makes no mention of things other than the task.

Rate 1 if there is some passing thought regarding something other than the task.

Rate 2 if there is a fair amount of mention of things irrelevant to the task.

Rate 3 if there is a large amount of mention of things irrelevant to the task.

Rate 4 if there is no mention of things related to the task.

For Personal Material:

Rate 0 if the subject makes no personally oriented reference to himself or herself.

Rate 1 if the subject makes only passing reference to himself or herself related in some manner to the task.

Rate 2 if the subject makes self oriented references unrelated to the task.

Rate 3 if the subject makes predominantly self oriented references.

Rate 4 if the subject makes only self oriented references.

For Impersonal Material:

Rate 0 if there are no references other than to the self.

Rate 1 if there is a passing reference to, or something other than, the self.

Rate 2 if there are repeated references to somethings other than the self.

Rate 3 if the subject makes predominantly non self oriented references.

Rate 4 if the subject makes no reference to the self or other persons.

For Fantasy Content:

Rate 0 if there are no references to thought content.

Rate 1 if there is passing reference to thought content.

Rate 2 if there are repeated references to thought content.

Rate 3 if there are predominant references to thought content.

Rate 4 if there are only references to thought content.

APPENDIX F (Continued)

For Reality Content:

Rate 0 if there are no references to real content.

Rate 1 if there is passing reference to real content.

Rate 2 if there are repeated references to real content.

Rate 3 if there are predominant references to real content.

Rate 4 if there are only references to real content.

For Visual Imagery:

Rate 0 if there is no mention of visual images.

Rate 1 if there is a passing reference to a visual image.

Rate 2 if there are several references to visual images.

Rate 3 if there is a predominance of visual imagery.

Rate 4 if there is a preoccupation with visual images.

For Non Visual Imagery:

Rate 0 if there is no mention of thought, auditory, kinesthetic or other somatically oriented concerns.

Rate 1 if there is some mention of any of the above.

Rate 2 if there are several references to any of the above.

Rate 3 if there is a predominance of the above or any combination of these.

Rate 4 if there is a preoccupation with any of the above or a combination of the above.

For Interpersonal Material:

Rate 0 if there are no references to other people.

Rate 1 if there is a passing reference to another person.

Rate 2 if there are references to people in social contact.

Rate 3 if there is a predominance of references to people in social contact.

Rate 4 if there is preoccupation with material depicting people in social contact.

For Blocking in Verbalizations:

Rate 0 if there is a negligible number of breaks in the protocol.

Rate 1 if there are a few breaks in the protocol.

Rate 2 if there are several breaks in the protocol.

Rate 3 if there are indications of many long pauses in the protocol.

Rate 4 if there are consistent indications of long pauses resulting in a seriously depleted protocol.

APPENDIX F (Continued)

For Loss of Contact with Reality:

Rate 0 if the subject indicates no feelings relative to non involvement with the task.

Rate 1 if the subject makes some reference to feeling as if he were in some other context.

Rate 2 if the subject makes repeated references to feeling as if he were elsewhere.

Rate 3 if the subject feels as if he were "floating".

Rate 4 if the subject has to be reoriented relative to his surroundings.

Indicate your ratings in the spaces provided on the rater's form.

APPENDIX G

Instructions to Raters For Rating Primary Process Quality of Visual Imagery During The Perceptual Isolation Sessions

Rate 1 if the dream is logical, and there is nothing unusual happening in it.

Rate 2 if the dream is logical and orderly, but an unusual (though not impossible) event is described in it.

Rate 3 if some event in the dream is impossible or involves a contradiction; or there is obvious symbolism; or the transitions in time, space, and sequence are not explained; or there is something mildly uncanny in the dream, such as a feeling that one cannot move.

Rate 4 if there are rapid shifts in time, locale, or sequence without any linkage provided by secondary revision; or there is a highly illogical or quite impossible series of events; or human qualities are attributed to animals or to inanimate objects; or the dream depicts a dead person coming back to life to watch the living; or the dream as a whole is moderately bizarre or uncanny.

Rate 5 if there are one or more instances of metamorphosis (e.g., the changing of a lion into a person) or condensation (e.g., the presence of the qualities of two people in one person); or the dream as a whole is a bizarre fantasy.

Rate 6 if the dream as a whole is very bizarre, quite uncanny, and autistic, but there are still some logical linkages in the dream. (Visual representation is often employed. Taboo acts are represented without disguise.)

Rate 7 if the dream as a whole is extremely bizarre, uncanny, and autistic. Events in the dream lack any obvious relationship to each other. There may be depersonalization - the dreamer seeing himself in the dream as observing himself.

Indicate your rating for Primary Process Quality of Visual Imagery in the space provided on the rater's form.

APPENDIX H

Sample Protocol and Rating Sheet for the Perceptual Isolation Session

SUBJECT # I4

1. My thought moved away to the weekend...I'm in this beach house... I'm walking along the beach which is something I enjoy doing very much... and it relaxes me...to a great extent...I can see myself walking along the beach...occasionally going into the water and coming back out...and collecting shells and rocks...usually walking down to the jetty and walking back up again.....most of the time I like to go alone on my walks along the beach...

2. Today it's very hot and I have to go looking for an apartment...and I can see myself walking from building to building...talking to the supers seeing if there are any apartments available and having no luck....I even hate to daydream about it (laughs) because I'mso pessimistic about the whole thing...I guess because it's kind of hot in the room I picture how hot it's going to be going from building to building.....
.....

3. ...I'm thinking about going to graduate school...and that I'm really looking forward to it...mainly because after four years of doing nothing I finally feel like I'm doing something constructive...doing something that I want to do...and I think about it often because I can't imagine what it's going to be like...being busy for a full day...that's something that I really enjoy.....and I hope I meet a lot of new friends.....and I'm just very anxious about the whole situation.....

4. There was this children's play I saw about a week ago...It was about this cow that went to school and about two weeks ago I met a little boy at a friend's house...and I really want to see the kid again...(inaudible) and his name was Oliver...boy he was a really cute kid and I think he'd really enjoy the story about the cow that went to school.....
When I first saw the play I thought of Oliver and how he'd really appreciate the story...but I had the feeling I'm never going to see Oliver again...
(Tape switched at this point - approximately five seconds data loss).....
.....

5. .....and especially during the summer because everything is really ugly (during period of tape switch subject mentioned something about the Bronx). You can smell the garbage in the air and I live in a building on the sixth floor.....so many kids and it's such a bad place

SUBJECT # 14

because the kids have no place to play and the hydrants are constantly open.....

6. Tonight at seven o'clock I'm going downtown to see a movie called "The Bicycle Thief",...which is really a great movie...and I was thinking of taking the train down there...or I could take the car..... but I probably wouldn't find a place to park...and I really hate taking the train.....I have a lot of stuff to do before seven.....
.....

Rater's Ranking Form For Perceptual Isolation Variables

TO THE RATER:

Please rank on a scale ranging from 0 through 4 the following variables:

	RANKING
Task relevant material	1
Task irrelevant material	4
Personal material	3
Impersonal material	1
Fantasy content	3
Reality content	2
Visual imagery	3
Non-visual imagery	1
Interpersonal material	2
Blocking in verbalizations	2
Loss of contact with reality	0

Please rank on a scale ranging from 1 through 7 the primary process quality of the above-noted visual imagery.

RANKING
2

Subject # 14

APPENDIX I

Male Data - Sessions One and Two

Intercorrelation Matrix

Variables	1	2	3	4	5	6	7	8	9
1. BIC Artistic Writing									
2. BIC Mathematics Science	.65**								
3. Guilford Alternate Uses	.34*	.24							
4. Maudsley Extraversion	.14	.03	.07						
5. Maudsley Neuroticism	-.01	.08	.01	-.19					
6. Maudsley "Doesn't Know"	-.06	-.06	-.13	-.12	.03				
7. Daydream Frequency	.21	.07	.03	-.03	.20	-.24			
8. Night Dream Frequency of Recall	.06	.09	-.04	.04	.05	-.22	.45**		
9. Absorption in Daydreams	.14	.07	.36*	-.04	.47**	-.11	.35*	.11	
10. Acceptance of Daydreams	.21	.08	.08	.30	-.23	-.08	.12	.17	.14
11. Positive Reactions in Daydreams	.08	-.09	.17	.11	.12	-.13	.13	-.08	.36*
12. Frightened Reactions in Daydreams	-.08	.07	-.06	-.08	.21	-.07	.21	.15	.35*
13. Visual Imagery in Daydreams	.16	.07	.17	.14	.04	-.14	.21	.23	.46**
14. Problem Solving in Daydreams	.05	.12	.09	.03	.09	-.27	.25	.42*	.29
15. Future Orientation in Daydreams	.19	.03	.18	.06	.04	.12	.27	.38*	.39*
16. Past Orientation in Daydreams	-.13	-.15	-.09	.01	.08	-.13	.17	.08	.21
17. Bizarre Improbable Daydreams	-.07	.08	.07	-.00	.23	.04	.11	-.05	.07
18. Hallucinatory Vividness of Daydreams	-.07	.02	.12	-.14	.18	-.05	.15	.20	.39*
19. Fear of Failure in Daydreams	-.12	.04	-.03	-.21	.32*	.05	.28	.03	.27
20. Hostile Aggressive Daydreams	.07	.02	.03	-.27	.38*	-.07	.20	.07	.47**
21. Sexual Daydreams	.11	-.06	.25	.10	.25	-.12	.34*	.13	.58**
22. Guilt in Daydreams	-.11	.14	.06	-.28	.29	.08	.17	.04	.28
23. Ego Strength	-.08	-.06	.05	.28	-.30	-.12	-.19	-.13	-.18
24. Experience Inquiry	.43**	.25	.26	.21	.05	-.02	.27	.20	.25

Var.	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														
11.	.16													
12.	-.08	-.16												
13.	.24	.29	.14											
14.	.30	.17	.20	.38*										
15.	.35*	.23	.08	.34*	.52**									
16.	.29	.08	.30	.20	.14	.07								
17.	-.14	-.17	.24	.06	-.16	-.33*	.15							
18.	-.11	.06	.42*	.41*	.32*	.21	.06	.01						
19.	-.34*	-.15	.45**	-.01	.12	.04	.02	.12	.43**					
20.	-.20	.04	.35*	.22	.12	.20	.13	.09	.38*	.50**				
21.	.12	.43**	.02	.33*	.10	.32*	.19	.12	.14	.09	.36*			
22.	-.33*	-.18	.49**	-.02	.04	-.03	.02	.19	.58**	.81**	.46**	.07		
23.	.11	-.00	-.20	-.12	.00	.03	.07	.03	-.10	-.16	-.18	.05	-.21	
24.	.20	.11	-.02	.20	.25	.14	-.12	.07	.05	-.11	.13	.27	-.04	-.18

*p < .05
**p < .01

APPENDIX J

Female Data - Sessions One and Two

Intercorrelation Matrix

Variables	1	2	3	4	5	6	7	8	9
1. BIC Artistic									
2. BIC Writing	.38*								
3. Guilford Alternate Uses	.29	.15							
4. Maudsley Extraversion	-.05	.04	.13						
5. Maudsley Neuroticism	-.28	-.15	-.09	-.23					
6. Maudsley "Doesn't Know"	-.12	.08	-.03	.07	.20				
7. Daydream Frequency	.04	.06	-.12	-.27	.45**	-.07			
8. Night Dream Frequency of Recall	.26	.16	.07	.40*	-.09	-.25	-.04		
9. Absorption in Daydreams	-.18	.08	.11	-.30	.52**	.07	.56**	-.25	
10. Acceptance of Daydreams	.34*	.36*	-.21	.05	-.06	-.20	.10	.16	.11
11. Positive Reactions in Daydreams	-.00	.03	.17	-.07	.18	-.02	.26	-.17	.67**
12. Frightened Reactions in Daydreams	-.21	-.08	-.00	-.16	.41*	.06	.34*	-.16	.26
13. Visual Imagery in Daydreams	.01	.44**	.17	.01	-.01	-.15	.38*	.08	.32*
14. Problem Solving in Daydreams	.23	.22	.17	-.11	.05	-.14	.42*	-.02	.42*
15. Future Orientation in Daydreams	-.08	.06	-.35*	-.26	.24	.06	.13	-.31*	.34*
16. Past Orientation in Daydreams	.21	.08	-.04	-.26	.50**	-.13	.28	.14	.39*
17. Bizarre Improbable Daydreams	.05	-.13	.12	.18	-.14	-.13	.07	.19	.17
18. Hallucinatory Vividness of Daydreams	-.19	-.08	-.06	-.12	.28	.04	.55**	-.04	.53**
19. Fear of Failure in Daydreams	-.02	.08	.16	-.10	.38	.12	.39*	-.25	.45**
20. Hostile Aggressive Daydreams	.27	.16	.12	.04	.19	-.04	.34*	.12	.32*
21. Sexual Daydreams	-.07	.08	.11	-.08	.21	.25	.35*	.08	.63**
22. Guilt in Daydreams	.01	-.33*	.01	-.21	.30	.05	.30	.08	.13
23. Ego Strength	-.11	-.39*	-.17	-.03	-.15	.03	.01	-.09	-.28
24. Experience Inquiry	.22	.32*	.23	.14	-.05	.26	.10	.25	.31

Var.	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1.														
2.														
3.														
4.														
5.														
6.														
7.														
8.														
9.														
10.														
11.	.17													
12.	-.04	-.02												
13.	.11	.22	.05											
14.	.21	.22	.08	.38*										
15.	.25	.32*	-.03	-.08	.46**									
16.	.41*	-.01	.20	.14	.07	.14								
17.	.06	.01	.11	.30	-.12	-.44**	.31*							
18.	-.28	.28	.25	.37*	.45**	.23	.06	.02						
19.	-.20	.24	.60**	-.04	.20	.23	.19	-.06	.46**					
20.	-.02	.23	.50**	.05	.42*	.22	.09	-.02	.36	.56**				
21.	-.01	.60**	.21	.26	.29	.03	.01	.13	.56**	.18	.34*			
22.	-.44**	-.10	.27	-.14	-.04	-.09	.19	.08	.34*	.48**	.30	.05		
23.	.18	-.14	-.02	-.44**	-.12	-.11	-.24	-.28	-.16	-.27	-.20	-.06	-.15	
24.	.40*	.36*	.02	.28	.04	-.19	.11	.26	.10	-.16	.11	.65**	-.20	-.01

*p < .05
**p < .01

APPENDIX K

Male Data - Sessions One and Two

List of Factor Loadings

	Variables	Factor Loadings					
		1	2	3	4	5	6
1.	BIC Artistic Writing	-.10	.82	.06	-.05	-.09	-.05
2.	BIC Mathematics Science	.09	.79	-.20	.04	.08	.06
3.	Guilford Alternate Uses	.04	.39	.28	-.19	-.04	.13
4.	Maudsley Extraversion	-.28	.13	.15	-.03	.07	.44
5.	Maudsley Neuroticism	.40	-.04	.28	-.11	.20	-.43
6.	Maudsley "Doesn't Know"	.03	-.09	-.20	-.28	-.11	-.19
7.	Daydream Frequency	.28	.21	.34	.36	.27	-.11
8.	Night Dream Frequency of Recall	.10	.12	.18	.62	.12	-.11
9.	Absorption in Daydreams	.43	.20	.70	-.10	.03	-.14
10.	Acceptance of Daydreams	-.34	.20	.34	.28	.04	.25
11.	Positive Reactions in Daydreams	-.13	.03	.61	-.18	-.22	-.05
12.	Frightened Reactions in Daydreams	.57	-.01	.02	.15	.33	.02
13.	Visual Imagery in Daydreams	.11	.19	.53	.17	.14	.06
14.	Problem Solving in Daydreams	.16	.15	.34	.57	-.09	.09
15.	Future Orientation in Daydreams	.08	.18	.50	.47	-.39	.10
16.	Past Orientation in Daydreams	.08	-.17	.29	.08	.36	.14
17.	Bizarre Improbable Daydreams	.18	.01	-.05	-.22	.54	.03
18.	Hallucinatory Vividness of Daydreams	.62	-.00	.21	.16	-.10	.11
19.	Fear of Failure in Daydreams	.88	-.05	-.10	.01	-.07	.07
20.	Hostile Aggressive Daydreams	.60	.08	.28	-.09	-.03	-.17
21.	Sexual Daydreams	.17	.10	.70	-.14	.10	.11
22.	Guilt in Daydreams	.89	.02	-.15	-.06	.00	.03
23.	Ego Strength	-.24	-.11	.01	-.04	.02	.49
24.	Experience Inquiry	-.03	.47	.26	.12	.14	-.08

APPENDIX L

Female Data - Sessions One and Two

List of Factor Loadings

Variables	Factor Loadings						
	1	2	3	4	5	6	7
1. BIC Artistic	-.09	.37	.02	.22	-.21	.54	-.14
2. BIC Writing	.09	.47	.23	.01	-.65	.14	.12
3. Guilford Alternate Uses	.09	.15	-.41	-.14	-.20	.21	-.03
4. Maudsley Extraversion	-.24	.27	-.20	-.21	-.05	.15	.08
5. Maudsley Neuroticism	.49	-.33	.07	.49	.11	-.16	.44
6. Maudsley "Doesn't Know"	.09	.05	.04	-.20	-.05	-.07	.53
7. Daydream Frequency	.66	-.11	-.05	.20	.06	.05	-.19
8. Night Dream Frequency of Recall	-.14	.37	-.26	.20	-.07	.25	-.16
9. Absorption in Daydreams	.84	.01	.03	.19	-.02	-.20	.03
10. Acceptance of Daydreams	.04	.58	.44	.51	.12	.07	-.27
11. Positive Reactions in Daydreams	.66	.21	.15	-.25	.09	-.07	-.06
12. Frightened Reactions in Daydreams	.38	-.27	-.21	.22	.08	.30	.14
13. Visual Imagery in Daydreams	.39	.31	-.20	-.00	-.51	-.32	-.38
14. Problem Solving in Daydreams	.51	.06	.37	-.11	-.17	.23	-.40
15. Future Orientation in Daydreams	.33	-.20	.69	.07	-.05	-.01	.00
16. Past Orientation in Daydreams	.28	.08	-.02	.67	-.06	.00	.01
17. Bizarre Improbable Daydreams	.09	.22	-.58	.30	-.03	-.11	-.23
18. Hallucinatory Vividness of Daydreams	.69	-.24	-.06	-.21	-.04	-.04	-.15
19. Fear of Failure in Daydreams	.54	-.47	-.06	.09	-.20	.38	.22
20. Hostile Aggressive Daydreams	.51	-.09	.03	-.04	-.14	.60	-.02
21. Sexual Daydreams	.73	.37	-.16	-.30	.19	.01	.20
22. Guilt in Daydreams	.24	-.51	-.38	.17	.07	.29	.12
23. Ego Strength	-.24	.05	.15	-.15	.65	.03	-.04
24. Experience Inquiry	.36	.71	-.21	-.03	.09	.03	.25

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