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Laterality, personality, and the perception of emotional stimuli.

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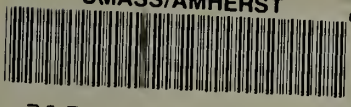
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Laterality, Personality, and
the Perception of Emotional Stimuli

A Dissertation Presented

By

Gary W. DeWitt

Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 1977

Psychology Department


LATERALITY, PERSONALITY AND THE
PERCEPTION OF EMOTIONAL STIMULI


A Dissertation Presented

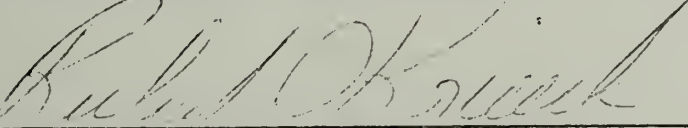
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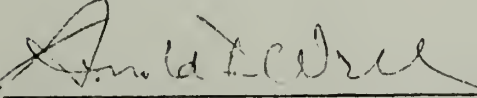
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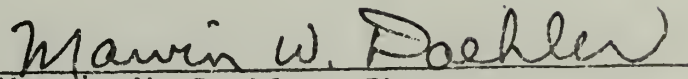
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ABSTRACT

Laterality, Personality, and
the Perception of Emotional Stimuli

September 1977

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The purpose of this study was twofold: first, to investigate personality correlates of individual differences in lateral eye movements; and, second, to explore the relationship between hemispheric dominance (as indicated by lateral eye movements) and emotional reactivity. A total of 186 right-handed subjects were recruited from an undergraduate population. Each of these completed the following personality questionnaires: the Embedded Figures Test; an Emotional Experience Questionnaire; the As Experience Inventory; Eysenck's Personality Inventory; Rotter's Internal-External Locus of Control scale; and two scales assessing sex roles, the Femininity Scale from the California Psychological Inventory and the Bem Sex Role Inventory. Few personality correlates of lateral eye movement were observed among these subjects.

The second part of the study, using subsamples of extreme left and right-gazers, involved 90 subjects from the above session and explored the relationship

between hemispheric dominance and emotional reactivity in an experimental setting. H. Leventhal and his colleagues have reported that cartoons are rated funnier when laughter is heard through the left as opposed to the right ear. In the present study subjects viewed cartoons while they heard the captions in one ear via stereo headphones. They were asked to rate how funny they perceived each cartoon to be. The ear of presentation of the cartoon was varied within subjects with order of presentation being counterbalanced. Half the subjects heard canned laughter after the caption and half did not. After the cartoon rating task, subjects completed Kelly's Repetory Grid Test and the Coping Operations Preference Enquiry. There was some evidence that left-gazers prefer denial-like coping strategies. Males found cartoons funnier when they heard laughter through the left ear as opposed to the right, and this relationship was influenced by hemispheric dominance as indicated by lateral eye movements. Females showed no such relationship. However, conventional tests of masculinity/femininity did indicate that sex-role may be an important moderating variable in cerebral lateralization of function. These results are only in partial agreement with those of Leventhal et al.

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C H A P T E R I

Laterality, Personality, and
the Perception of Emotional Stimuli

It has been argued that the two hemispheres of the brain are fundamentally different in the types of processes they perform. Some research suggests that while the left hemisphere is more adept at processing discrete parcels of information in a serial manner, the right hemisphere is more holistic and parallel in its operation. These two modes are seen by some to be fundamental modes of perceiving and thinking; they are primary colors which shade human experience.

Some people appear to use one hemisphere more than the other and, consequently, are presumed to use one mode of thought more than the other. In turn, it will be seen that quite different personality traits are purported to be associated with a predominance of each mode of thought.

Briefly, those who are more active with the right hemisphere tend to perceive the world more holistically, to be more subjective and emotional, to be more easily influenced by others, and tend to use repression as a defense.

In contrast, the person who is more active with

with the left hemisphere tends to be more articulate in his perception, to be more objective and analytical, and to be more autonomous in his commerce with the world. He tends to use such defenses as projection, isolation, and intellectualization.

These are a few of the aspects of personality held to be associated with lateralized modes of thought. What follows in this chapter is an attempt to provide a theoretical basis for these associations. Although the ideas presented are undoubtedly not without fault, they will hopefully demonstrate the ability of this approach to provide a common theoretical framework for a wide range of diverse research findings in addition to being of considerable heuristic value.

Functional Asymmetries

Typically, functional asymmetries of the brain have been delineated by three primary means. The first reports of lateralized functioning were based upon the observation of patients with unilateral lesions of the brain, a methodology which is still proving to be valuable. Within the last few decades the sectioning of the anterior commissure and the corpus callosum of the brain, pioneered by Sperry, has proved to be another

tool for gaining insight into the functional organization of the brain. As a third approach, stimuli can be presented in a manner which will convey information to only one hemisphere first. This can be done either in the auditory mode by using dichotic listening tasks (Broadbent, 1971) or in the visual mode by using tachistoscopic presentations to only hemiretina (Kimura and Durnford, 1974).

In addition to these traditional methodologies, a currently popular method of studying functional asymmetries of the brain has been developed which involves observing people's lateral eye movements (see Day, 1964). This method is more indirect in its assessment of lateralized abilities, a shortcoming which is more than compensated for by the method's simplicity and ease of use. In a later section we will look more closely at this procedure.

From these various methodologies a number of specific cognitive functions have been found to be asymmetrically localized. Perhaps the first observed and the most generally accepted lateralized function is that of speech. In split-brain research, the right hemisphere appears to have limited verbal skills, while the left has what would be considered normal verbal abilities (Gazzaniga, 1971). Using dichotic listening

tasks,¹ Broadbent (1971) found similar results in that speech sounds are recognized best by the left hemisphere (right ear). Also using a dichotic listening task, Kimura (1962) found a left hemisphere superiority in the perception of verbal stimuli and a right hemisphere superiority for the recognition of melodies (Kimura, 1964).

Using tachistoscopic presentations, Rizzolatti, Umilta, and Berlucchi (1971) found letters to be recognized more quickly when they are presented to the left hemisphere while people's faces are recognized more easily by the right hemisphere.

¹There are afferent pathways from each ear to both the ipsilateral and contralateral hemispheres but the majority go to the contralateral side. When information is presented to only one ear, and nothing to the other (monaural), the information is transferred primarily to the contralateral side, but some small portion goes to the ipsilateral side. The transmission to the contralateral side is enhanced when information of different types is presented to both ears simultaneously (dichotically). During dichotic listening the ipsilateral pathways are functionally occluded and the contralateral pathways favored. This process has been termed "functional decussation" and is enhanced by the presentation of short sounds, decreasing as the sound continues, and by the presentation of very different types of sounds to each ear (Darwin, 1974).

Later in this paper studies will be discussed wherein significant differences were found between the left and right-ear presentation of monaural information. On the basis of the above-mentioned evidence it would appear that these results should have been more pronounced if dichotic presentations were used instead of monaural.

Several studies have found the left hemisphere to be more adept at the perception of time, simultaneity, or temporal order (e.g., Effron, 1963; Umilta, Stadler and Trombini, 1973) and the right hemisphere to be better at visuo-spatial tasks (e.g., Gazzaniga, 1971; Kimura and Durnford, 1974).

In terms of general modes of processing, Umilta (Umilta, Marzi, Zamboni, Franzini, Camarda and Berlucchi, 1974) suggests that the left hemisphere is dominant at tasks which utilize easily categorized stimuli. When stimuli cannot easily be divided into discrete categories, but rather vary along a continuum or when the whole array must be perceived, the right hemisphere becomes regnant.

Caution must be used however in making generalizations to specific tasks. For example, very similar visuo-spatial tasks may be more proficiently processed by different modes of thought and presentation. Take, as Umilta did, the task of determining the orientation of a tilted rod. If only a few possible orientations are offered for identification and if these are very different from each other, e.g., vertical versus 45°, then the task is performed most efficiently by the left hemisphere. As the orientations become more similar and the criterion for a response becomes less distinct,

the right hemisphere becomes more proficient (Umilta et al, 1974).

Similarly, Cohen (Cohen, Berent, and Silverman 1973) found that when the right hemisphere is incapacitated, via unilateral electroconvulsive shock, the left becomes better at perceiving the orientation of the rod on the rod-and-frame test. When the left hemisphere is incapacitated the judgments of orientation are influenced more by the surrounding frame, i.e., there is more difficulty in abstracting a given aspect of the stimulus array; the tendency is to perceive the whole. These findings suggest that under normal conditions, there is a dynamic balance between the two hemispheres, the left facilitating articulated perception and the right facilitating holistic perception.

Cohen (1973) presented evidence suggesting that the left hemisphere processes information as discrete components in a serial fashion, whereas the right hemisphere processes in parallel. Leventhal (1975) has forwarded the view that the left hemisphere attends to the discrete aspects of a stimulus array while the right will perceive the whole array, maintaining the inter-relatedness of the parts to the whole. This distinction, discrete versus holistic, seems to be a consistent theme

in the studies described above and will be taken to be the fundamental difference between left and right hemisphere modes of functioning (see also: Bogen, 1969; Deikman, 1971; Ornstein, 1972).

Lateral Eye Movements

As mentioned earlier, lateral eye movements have been found to be indicators of lateralized cortical activity. When a person turns his attention inward, and is not attending to some aspect of his environment, he will tend to gaze in a direction contralateral to the hemisphere which is most active at that moment. If there is not a preponderance of activity on one side or the other, then the gaze will be straight ahead. This phenomenon was first reported by Day (1964), was later confirmed by Duke (1968), and has since become a popular topic of research.

The validation of these eye movements as indicators of lateralized activity is based primarily upon two types of studies. In the first type, questions are asked which are known to require lateralized abilities and the resultant eye movements observed. For example, if a person is given a task which requires verbal skills (e.g., "What English word begins with L and

ends with C?"), he will tend to gaze to the right. If the task involves spatial relations (e.g., "What way does George Washington face on a quarter, left or right?"), the gaze will most often be to the left (Bakan, 1969; Morgan, McDonald and McDonald, 1971; Schwartz, Davidson, Maer and Bromfield, 1973).

As a second approach to validating this type of behavior, bilateral recordings of EEG alpha activity have been taken simultaneously with the administration of the verbal and spatial tasks. In this way the alpha activity of the hemispheres can be compared and increased alpha is presumed to indicate decreased discursive thought and vice versa. In studies of this sort (e.g., Schwartz et al, 1973) when a person is performing a verbal task there is relatively more alpha activity over the right hemisphere, i.e., the left hemisphere is more active. For spatial questions (left-gazing) there is relatively more alpha activity in the left hemisphere, i.e., the right is more active.

Kinsbourne (1972) has offered a hypothesis to explain these eye movements. In the frontal portion of each hemisphere is a center for controlling the lateral movements of the eyes. If the left center is more active the eyes will shift to the right and when the

right is active the gaze will be to the left. When the activity of these two centers is balanced, the gaze will be directed straight ahead.

Since the cerebrum is a highly linked network of neurons these centers are vulnerable to interference from other areas. In Kinsbourne's view, if, for example, verbal processing were taking place then activity from the verbal centers could spread rostrally into the left-sided orientation center--driving the gaze off-center and to the right. Thus, when one hemisphere is primarily involved in a task the eyes tend to gaze toward the contralateral side. Again, all this is assuming that the person has turned his attention inward and is not directing it toward some aspect of the external environment.

Individual Differences in Gazing Behavior

Some people tend to gaze in the same direction, either to the left or right, when they turn their attention inward, regardless of the task at hand. Appropriately, these people have been termed left-gazers or right-gazers, and a test-retest reliability of .72 has been reported for this behavior (Bakan and Strayer, 1973). In keeping with other findings concerning

lateral eye movements, it is assumed that left-gazers are more active with their right hemisphere and right-gazers more active with the left (Bakan, 1969).

After eliminating the left-gazers and right-gazers, we can divide all others into two subgroups: discriminators and non-discriminators. Discriminators show eye movements in accord with the demands of the task, i.e., left for spatial and right on verbal tasks. Non-discriminators do not display a preferred direction of gaze nor do they show gazes appropriate to question type. Their gazing behavior seems to be haphazard (Gur, Gur, and Harris, 1975).

Lateral eye movements are also influenced by the location of the experimenter. If the experimenter is seated facing the subject then the subject's eye movements will tend to be in the subject's preferred direction, either to the left or the right. If the experimenter is seated behind the subject then the movements will more often reflect the demands of the task--the problem type takes precedence over the individual's preference. It has been suggested that when the experimenter is facing the subject there may be more anxiety and the person copes with his preferred mode of thought whereas in the experimenter-behind condition

the subject is more concerned with the task (Gur, Gur, and Harris, 1975).

It should be noted that in a situation where right-handed subjects display appropriate gazing for a given task, left-handers do not usually discriminate between different types of tasks. This is taken as support for the view that left-handers are less well lateralized than right-handers (Gur, Gur, and Harris, 1975).

Personality Correlates of Gazing Behaviors

Most, if not all, research relating personality to laterality has been based upon lateral eye movements. This is not surprising in light of the fact that assessment of gazing behavior is quick, easy, and requires no equipment and the subject need not know what is happening. These points are most critical in personality research for which large numbers of subjects are most often needed.

Several researchers (e.g., Bakan, 1969; DeWitt and Averill, 1976) have found left-gazers to be more highly susceptible to hypnosis than right-gazers. Left-gazers are more easily influenced by persuasion, suggesting either greater empathy and/or a lack of self-determination (Sherrod, 1972). They do not do as

well on concept identification tasks which presumably reflect analytic abilities (Weiten and Etaugh, 1973). Left-gazers more often major in classical/humanistic areas and score higher on the verbal portion of the SAT whereas right-gazers more often major in science/quantitative areas and score higher on the math portion of the SAT (Bakan, 1969).

Left-gazers experience more frequent and vivid daydreaming than do right-gazers (Meskin, 1973) and are more sensory oriented, i.e., they attend more to internal sensory experience whereas the right-gazer is more visually oriented and attends more to external events (Day, 1968). Similarly, left-gazers perceive anxiety as having an internal source while right-gazers tend to externalize the locus of anxiety (Day, 1968).

Left-gazers tend to repress anxiety producing stimuli whereas right-gazers are more sensitive. As an example, while awaiting surgery, left-gazers typically underestimate their anxiety and right-gazers tend to overestimate (Gerdes and Kinsbourne, 1974). In this case anxiety was objectively defined as physiological arousal (heart rate).

It is thought that repression can lead to the formation of psychosomatic symptoms and left-gazers have

been found to show more such symptoms (Gur and Gur, 1975). In this same study it was also found the left-gazers tend to use more global and diffuse defense mechanisms, such as denial or repression whereas right-gazers use more specialized mechanisms such as projection.

To summarize these personality differences, left-gazers experience hypnosis more easily, are more easily persuaded, are usually interested in an education in humanistic fields of study, have more frequent and vivid daydreams, internalize the locus of anxiety, and employ defenses such as denial and repression.

It appears that the experiences of the left-gazer are less self-directed than those of the right-gazer. The hypnotized person often feels a loss of self-control and volition; the daydreamer allows his fantasies to spin their own web; by yielding to persuasion the left-gazer allows others to direct his behavior. In general, the left-gazer's experiences appear to be more spontaneous and subjective and could be characterized by a high degree of involvement.

By contrast, right-gazers are less hypnotizable, are less easily persuaded, tend to choose the sciences as fields of study, have less vivid and frequent daydreams, and tend to use projection as a defense. The

right-gazers appear to be more objective, deliberate and reflective in their experience and behavior.

Laterality and Emotions

There is a body of research suggesting that emotional experience is mediated by the right hemisphere. Topically, this section might better have been combined with the first section wherein we discussed other lateralized functions. However, some of the important research concerning emotions has made use of lateral eye movements and now that we have introduced that topic we can proceed with the discussion of emotions and laterality.

There are two major lines of research concentrating upon the possible lateralization of emotional processes. One line of research is being conducted by Howard Leventhal at the University of Wisconsin, while another series of studies was done by Gary Schwartz and his colleagues at Harvard. Looking at the Harvard work first, in one study (Schwartz et al, 1973), subjects were asked questions and lateral eye movements observed. The content of the questions differed along two dimensions: verbal-spatial and emotional-unemotional. In this 2 x 2 design questions with verbal content

elicited more left-gazes. It was concluded by the researchers that the right hemisphere was most active during the experience of emotions. No sex differences were reported in this study.

In another study (Davidson and Schwartz, 1975) subjects were asked to generate emotional feelings, e.g., "relive a scene of intense anger." A significant decrease in right hemisphere alpha activity was found during the generation of emotion, again suggesting greater right hemisphere involvement. This time the effect was significant for females only. This sex difference was explained by the hypothesis that males prefer an analytical mode of processing (left-hemispheric), even for emotions.

Leventhal has taken quite a different approach in his studies. He has postulated what he terms a subjective mode of processing which reacts to the total organization of the stimulus array--the interrelatedness of all aspects being preserved. This mode is contrasted with an analytical mode which processes discrete components of information, in a serial fashion. Essentially, these are the same distinctions we have assumed exist between right and left hemisphere modes of processing.

When rating the funniness of cartoons, Leventhal (Panagis, Leventhal and Caputo, 1975) reports that females tend to base their impressions upon the whole of: 1) the quality of the cartoon; 2) their subjective reactions; and 3) any accompanying stimuli such as "canned laughter." Males, on the other hand, tend to view these various components more discretely and place less emphasis upon their own subjective feelings. It would appear that females utilize a holistic mode of processing in making their ratings whereas males utilize an analytic mode.

In another study (Caputo and Leventhal, 1975) subjects were again asked to judge the funniness of cartoons. Half of the subjects heard the cartoon captions, followed by laughter, in their left ear. The other half heard both in the right ear. Control groups heard the captions but no laughter. There was a significant Sex x Ear interaction in that males rated the cartoons funnier when they heard the laughter in the right ear and females rated them funnier when they heard the laughter in the left ear. In this study the interaction was primarily due to males and females who scored high on the Femininity scale of the California Psychological Inventory.

From these studies Leventhal concluded that females utilize a holistic right-hemisphere mode in making their judgments and males utilize an analytic left-hemisphere mode.

This is similar to the conclusion reached by Davidson and Schwartz (1975): "Males, even when experiencing affect, may do so in the control of an analytic propositional framework, while females may process affect in a more global and appositional manner."

Sex and Handedness as Moderating Variables

As we have just seen, the research on emotions suggests that males are left-dominant while females are right-dominant in their mode of processing. Recall also that in research with lateral eye movements left-handers do not display eye movements appropriate to a task as often as do right-handers. It was concluded that, for right-handers, processes are more distinctly lateralized than for left-handers (Gur, Gur, and Harris, 1975). In light of the appearance of both sex and handedness as possible moderating variables, an effort will be made to briefly expand upon the role of each.

Looking first at handedness, most research (cf. Beaumont, 1974) suggests that functions are more distinctly

lateralized in right-handers. This is consistent with the research cited in the present (i.e., McGlone and Davidson, 1973; Gur, Gur, and Harris, 1975).

Right-handers are not only more distinctly lateralized but also more predictably lateralized. For right-handers the speech centers are almost always in the left hemisphere while the right hemisphere is the locus for spatial skills. For left-handers the situation is less predictable. One group, most often characterized by inverted left-handed writing, typically have the speech centers in the left hemisphere. The other group, more often using normal left-handed writing, usually have the speech centers in the right hemisphere (Levy, 1971).

It might be added that regardless of the side in which the speech centers are located, spatial skills need not be located in the contralateral side. Indeed, there seems to be better performance on spatial tasks when the ability is located in the right hemisphere, regardless of where speech is localized (McGlone and Davidson, 1973).

Turning to sex differences, the situation is contradictory, complicated and confusing. Looking first at the degree of lateralization of functions, some researchers (e.g., McGlone and Davidson, 1973; Levy-

Agristi and Sperry, 1968) argue that functions are less distinctly lateralized in women than in men. However, other researchers (Buffery and Gray, 1972) have argued the opposite point of view. There appears to be no clear resolution on this point.

Turning to lateral dominance, males are generally more selective in their attending and are more field-independent than women (Garai and Scheinfeld, 1968). This suggests that men may also be more left-dominant than women.

While males are considered more field-independent females are generally considered to have better linguistic skills. They are more proficient at writing, spelling, grammar, and, in general, are more fluent. Although not as verbally fluent, males do excel in verbal reasoning requiring deductive reasoning (cf., Garai and Scheinfeld, 1968). Thus, with respect to language skills, which are usually considered to be localized in the left hemisphere, the research is equivocal.

Language skills and field-independence are somewhat indirect indices of the lateralization of functions. A more direct study of sex differences is that of Leventhal's (Caputo and Leventhal, 1975) wherein he found that females

perceived cartoons to be funnier when captions were heard in the left ear while males rated them funnier when the caption was heard in the right ear.

In brief, although Leventhal's research suggests a clear distinction between the sexes in their preference for one hemisphere or the other, there is little other research supporting this point of view.

In addition to sex per se, the lateralization of functions may also be related to an individual's sex role. Looking at males, those who are considered more masculine in their physique and behavior generally do more poorly on spatial tasks whereas the more androgynous males perform better on such tasks. Turning to females, the more feminine females generally do more poorly on the spatial tasks while the more androgynous females do better (Maccoby and Jacklin, 1974).

These findings were based primarily upon analytical spatial tasks such as the embedded figures test or the rod and frame test, tasks which are usually felt to measure field-independence. Assuming the left hemisphere to be dominant in these types of tasks (cf., Cchen et al, 1973), it could be inferred that masculine males, doing more poorly on these tasks, would be right-dominant, while androgynous males would be more left-

dominant. The more feminine females, being more field-dependent, would be more right-dominant while the more androgynous females would be more left-dominant.

This interpretation is consistent with an interesting finding of Leventhal's (Caputo and Leventhal, 1975). Recall that he found that females gave higher cartoon ratings when they heard the caption and laughter in their left ear whereas males preferred the right ear. Leventhal concluded that females utilize the right hemisphere while males prefer the left for processing of affective information. More important here, these sex differences were due primarily to those males and females who scored high on a femininity scale. As was noted above, the more androgynous male does appear to be left-dominant, i.e., would prefer the right ear, and the more feminine female appears to be right-dominant and would therefore prefer the left ear.

In summary, functions are more predictable and more distinctly lateralized in right-handers than left-handers. Some research suggests that males are more distinctly lateralized than females while other research argues the opposite. Males are more field-independent and females are field-dependent. Yet, while males do better at analytical spatial tasks, females are more

proficient at verbal skills. Within a given sex, those displaying the traditional gender identity may be more right-dominant while those who are androgynous may be more left-dominant.

Seeing that gazing behavior is reliably related to two very different types of personality, it would seem rewarding to be able to understand and describe these systems. Several researchers studying perception, cognitive styles and personality, seem to have described these same two personality types and some of that work will now be briefly reviewed.

Looking first at perceptual styles, we have already seen that there is a direct relationship between lateralized processes and perception. Field-independent perception is mediated by the left hemisphere while holistic global perception is mediated by the right (cf., Cohen et al, 1973). In order to adequately explain the personality characteristics reliably associated with each perceptual style, Witkin (Witkin et al, 1962) developed the concept of psychological differentiation. The field-independent person was seen to have a more highly differentiated, and hence more complex, psychological system, while the field-dependent person has a less well-differentiated and less complex psychological

system.

Psychological differentiation was seen to be a reflection of a greater separation and specialization of psychological processes, such as feeling from perceiving or thinking from acting. Similarly, differentiation was also seen to lead to a clearer distinction between what is identified as belonging to the self and what is identified as external to the self. This segregation of the self, in turn, leads to a greater determination of functioning from within, as opposed to a reliance upon external nurturance, and is thus associated with a greater sense of autonomy.

Witkin had observed that the field-dependent person was more often dependent upon external social stimuli. These people actively sought friends and advice. By contrast, the field-independent perceivers were much more autonomous and self-reliant. Via the construct of psychological differentiation Witkin sought to relate the differences in perception to these differences in personality.

Aside from the direct relationship between lateralized activity and field independence-dependence pointed out above, as we have just seen there also appears to be a concordance between the personality of the left-gazer and

the field-dependent person and between the right-gazer and the field-independent person.

Shapiro (1965) undertook the study of cognitive styles and proceeded to describe their relationship to certain neurotic styles. Of the neurotic styles that he studied, two are particularly relevant to the present discussion, the obsessive-compulsive and the hysterical.

The hysterical neurotic style utilizes a mode of cognition which is global, relatively diffuse, and lacking in sharpness and detail. Consequently, these people perceive and recall less detail. When asked to recall and describe a person or event, the description often lacks technical detail and, instead, is often very subjective and emotional in nature. These people are easily influenced by the views of others and their primary mechanisms of defense are repression and denial. This type of person, with his emotionality, dependence, and holistic perception, resembles the left-gazer.

The obsessive-compulsive style is described as having a cognitive style distinguished by an acute, intense and narrowly focused style of attending which allows the person to become aware of details. Most often this neurotic type utilizes well-defined defenses

such as intellectualization, isolation and projection, and, in addition, generally experiences a narrowing or estrangement from affective experience with a concomitant loss of spontaneity. In short, this style, with the ability to selectively attend and the lack of emotionality, bears a close resemblance to the right-gazer.

Perhaps the most comprehensive and insightful discussion of the hysterical and obsessive-compulsive neurotic styles has been presented by Angyal (1973). Based primarily upon his clinical experience, Angyal has constructed not only a detailed description of each personality type, but has also presented a perceptive understanding of the bases for the development of each.

The precursor for the development of the hysterical personality is the belief that the true self is unacceptable and worthless and must be hidden at all costs. Early in life such a person did not meet the approval of his parents or some other important authority figure. As a result of these early experiences the person suppresses his genuine personality characteristics and attempts to present a more acceptable substitute personality.

For a number of reasons the hysterical style seeks the companionship of others. For example, relations

with others can provide validation and support for the assumed personality. The feeling of not mattering can itself lead to an urgent need to be noticed by others. The uncertainty of feelings and values often leads to guidance by public opinion. Indeed, the hysterical person feels perfect when he is allied with people of prestige.

All these strategies often lead to a life focused on other people. This compliance and dependence can breed a sense of helplessness, which, in turn, reinforces the feelings of worthlessness and perpetuates the coping strategies.

While the precursor of the hysterical style is generally a feeling of worthlessness or nothingness, an abiding confusion as to whether the world is basically friendly or inimical is the harbinger of the obsessive-compulsive personality style. Generally, the inconsistent behavior of a significant adult has made it impossible for the young person to develop successful behaviors for gaining acceptance. Quite often obsessive-compulsive neurotics suffered from drastic and capricious treatment at the hands of an adult who was also the source of affection.

As a consequence of these early experiences, these

people find it safer to act upon negative impulses rather than be lulled into a false security. Loving impulses become more deeply hidden than hostile impulses. Life is lived without commitment, in that there is only superficial involvement with tasks at hand and with other people. Often, emotions will become dissociated from ideational content in what is generally termed isolation. These are all efforts to reduce confusion--mainly by making clear cut divisions in the aspects of life.

In brief, the hysteric views the world as frustrating and depriving, he fears unfulfilled desire and strives to gain friends. He is subject oriented in that he aims to present a perfect self. He experiences anxiety arising from his fears of nothingness--which can take the form of a fear of death.

The obsessive-compulsive views the world as threatening and fears attack from others. As a consequence he is defensive and strives to develop superior strength, to be strong, self-sufficient and free. This goal is often strived for by an avoidance of commitments. He is object oriented rather than subject oriented and attacks the world for not meeting his desires. His anxiety arises from his uncertainty--from the ambiguity

of human experience.

While the hysteric and obsessive-compulsive are generally viewed as deviations from normal behavior, there are aspects of both personality types in everyone's life. Even though nearly all of the personality research into gazing behavior has been done with normal subjects, usually students, when we inspect the extremes of this normal population, the left-gazers and right-gazers, we begin to see what looks very much like the hysterics and obsessive-compulsives, respectively. Granted, these are very broad personality types which, due to their nature, should overlap somewhat. However, the similarities appear consistently enough to warrant further inquiry. One primary objective of the present study is to clarify these relationships.

Based upon the above hypotheses, a number of specific predictions can be made. First, left-gazers should be more field dependent than right-gazers. Although this has been demonstrated with a number of instruments (cf. Bakan and Shotland, 1969; DeWitt and Averill, 1976), the relationship between field independence-dependence and other aspects of personality will be of interest in the present study.

Similarly, hypnotic susceptibility has been shown

to be reliably related to left-gazing behavior. While it is a tedious task to test for hypnotic susceptibility there are questionnaires available which assess inner phenomenological experiences generally associated with hypnotic susceptibility. It would be of interest to see how these experiences are related to the other personality variables.

Left-gazers should be more extroverted in their social relations and should exhibit more of an external locus of control, while right-gazers should be more introverted and have more of an internal locus of control.

Left-gazers should be more emotional in that they seem to be more subjective and more expressive. The right-gazers, being more detached and objective, should be less emotional. Similarly, in light of the fact that neuroticism usually indicates proneness to emotionality, it seems plausible to assume that left-gazers should display more signs of neuroticism than right-gazers.

Finally, left-gazers should prefer such coping strategies as repression or denial while right-gazers should prefer intellectualization or isolation.

Summary

The two hemispheres of the brain process information quite differently. While the left hemisphere is more adept at tasks requiring the serial processing of discrete parcels of information the right hemisphere is more holistic and parallel in its operation.

In certain situations lateral eye movements can be used as indicators of lateralized cortical activity. In such settings some people consistently gaze in the same direction, either to their left or their right. It has been presumed that these people consistently employ one mode of thought more than the other.

Individuals who consistently gaze to the left (right hemisphere mode), are more field dependent, generally experience hypnosis more easily, have more frequent and vivid daydreams, and tend to employ defenses such as denial or repression.

By contrast, right-gazing individuals (left hemisphere mode) are more field independent, less susceptible to hypnosis, more autonomous, have fewer and less vivid daydreams, and tend to use such defenses as projection or isolation.

There may be sex differences in preferred mode of thought in that research on the experience of emotions

suggests that males prefer an analytical mode of thought while females prefer a holistic mode. While these findings are consistent with the stereotypical view of the sexes there is little other empirical support for such a direct association.

The following study is in two parts. The first part is more descriptive in nature and focuses upon the personality variables noted above. The second part of the study is more experimental in nature and focuses upon the relation between gazing behavior and qualitative asymmetries in information processing.

Turning to this second part, recall that Leventhal found males to rate cartoons funnier when they heard the captions plus canned laughter in their right ear. Females, receiving the same stimuli, rated the cartoons as funnier when they heard the captions and laughter in the left ear. If these differences are due to differences in preferred mode of processing, as Leventhal suggests, and if lateral eye movements are also indicators of preference in mode of thought, then it would follow that differences due to ear of presentation could be controlled for by properly selecting subjects on the basis of gazing behavior.

To this end, Leventhal's study was replicated

with one exception, an additional factor, gazing behavior was included. The specifics of this design will be presented in the next section. In general, an equal number of left-gazers and right-gazers, both males and females were needed for the design.

All subjects participated in one testing session wherein most of the personality variables were assessed as well as gazing behavior. Those who qualified as a left- or right-gazer were asked to return for the second session which focused upon the cartoon experiment.

C H A P T E R I I
Methods and Procedures

It was anticipated that a large number of people would have to be screened in order to find a sufficient number of left and right-gazers for the cartoon aspect of this study. To make optimum use of all these people, the majority of the personality variables were assessed during the initial screening session. For practical reasons, two personality instruments were deferred to the second session; these were the Coping Operations Preference Enquiry (COPE) and Kelly's Repetory Grid Test (REP TEST). Hereafter, the preliminary screening session will be referred to as Session I; the second session, which used only 80 subjects and which focused upon cartoon experiment, will be referred to as Session II.

Copies of all the test instruments used in both sessions have been included in the Appendix.

To facilitate the completion of this study, four people assisted with Session I.¹ These were all males who were either college students or recent graduates. The author was the sole experimenter in Session II.

¹A debt of gratitude is due to Richard Bartlett, James Cuzytek, David Hill, and John McCracken for ably serving as research assistants.

Methods

Subjects

Subjects were recruited from introductory psychology classes and participated for their choice of either class credit or \$3.00. Solicitation continued until the 80 subjects required for Session II had been selected. A total of 186 subjects completed the study with usable data: of these, 74 were males and 112 were females. Only right-handed subjects were used in the study.

Near the end of the study, subjects outside of psychology classes were solicited, via handout information sheets, in both music and art departments of the university. This recruiting resulted in six subjects participating in Session I and, of these, two were also in Session II.

Session I, Subject Selection Variables

Lateral eye movements. Eye movement behavior was assessed with 30 questions; 10 requiring verbal skills, 10 requiring spatial skills, and 10 requiring math skills. The same verbal and spatial questions had been used in previous research and had been found to elicit relatively more right and left gazes, respectively (Schwartz, et al, 1973).

The same math problems had also been used in previous

research (DeWitt and Averill, 1976) and had been found to elicit significantly more gazes to the right than to the left. It was expected, however, that the math questions would fall between the verbal and spatial tasks in terms of demands for lateralized processing, and, hence, in terms of observable lateral eye movements. The list of 30 questions is presented in the Appendix.

Handedness. In light of the fact that handedness appears to be a moderating variable in the lateralization of functions, data for only right-handed subjects (N = 186) is reported in the present study. Subjects completed an 11-item handedness questionnaire (Humphrey, 1951) which asked which hand is used for simple daily tasks. A person was classified as right-handed if he routinely used his right hand for at least nine of these tasks.

Session I, Personality Variables

Leventhal reported that the ear x sex interaction he observed in the rating of cartoons was due primarily to those males and females who scored higher on the Femininity Scale of the California Psychological Inventory. For this reason it seemed fitting to assess sex roles in the present study.

The Femininity Scale. The Femininity Scale used was

a subscale from the California Psychological Inventory (Gough, 1964). This scale treats masculinity and femininity as opposite poles of the same dimension. Using the scoring key accompanying the test, a higher score reflects greater femininity in attitudes and behavior.

Bem Sex Role Inventory. Whereas the Femininity Scale just mentioned treats masculinity and femininity as opposite poles of a single dimension, the Bem Sex Role Inventory (Bem, 1974) treats masculinity and femininity as two independent dimensions. While the Gough instrument consists of a series of questions, e.g., "I like mechanics magazines", or "I am terrified of windstorms", the Bem instrument more closely resembles an adjective check-list. On the Bem instrument a person may score high on traditional masculine traits, such as dominance and self-sufficiency, and simultaneously score high on feminine traits, such as soft-spokenness and compassion.

For this study a derived score suggested by Bem was used. This score was the difference between the Feminine and Masculine scores (F-M). Thus, a positive value reflects more feminine traits while a negative value reflects more masculine traits.

Embedded Figures Test. The Embedded Figures

Test, typically used a measure of field independence-dependence, is a series of complex figures made up of simpler figures. The subject's task is to find a specified component figure and to simultaneously ignore the irrelevant aspects of the complex figure. The particular test used (Educational Testing Service, 1962) contains 16 complex figures and the subject is allowed 10 minutes to find as many simple figures as possible. The score is the total number of figures solved and thus represents greater field-independence. It was expected that right-gazers would be more field-independent.

As Experience Inventory. The As Experience Inventory (As, O'Hara, and Munger, 1962) contains 60 items which represent inner phenomenological experiences characterized by role absorption and tolerance for unusual experiences. The items cover nine major areas: tolerance for regressive experiences, altered states, tolerance for logical inconsistencies, role-taking, dissociation, willingness to relinquish ego control constructive use of regression, peak experiences, and basic trust. Subjects read each item, which is the description of an experience, and answer whether or not they have had such experiences. A "yes" response was given the score of zero. An average score was computed for each of the

subscales.

This inventory was constructed to assess inner experiences predictive of hypnotic susceptibility. On this basis left-gazers were expected to have more of the experiences described on the nine subscales.

Eysenck Personality Inventory. This inventory (Eysenck and Eysenck, 1964) consists of three subscales measuring introversion-extroversion, neuroticism, and social desirability. All items on the test require true-false responses and the test was scored as keyed.

Left-gazers, being more dependent upon others and being sensitive to social acceptance, were expected to score higher on extroversion and social desirability. Because of their apparent emotionality, left-gazers were also expected to score higher on neuroticism.

Internal-External Locus of Control. This instrument was developed by Rotter (1966) to determine the extent to which a person feels autonomous in the determination of his own behavior, i.e., has an internal locus of control. Conversely, a person may feel that his life is structured more by external stimuli and, thus, perceives an external locus of control.

Left-gazers were expected to have more an external locus of control while right-gazers should have more an

internal locus of control.

Emotion Rating Scale. In order to determine whether or not left and right-gazers differ in their phenomenological experience of emotions, a set of emotion rating scale was constructed. In total, six emotions were studied: anger, sadness, loneliness, anxiety, joy, and guilt.

Two aspects of the experience of each emotion were studied. The first focused upon a person's sense of control while experiencing the given emotions. Four bipolar scales were used to assess this dimension: controlled-uncontrolled, deliberate-spontaneous, reflective-impulsive, and logical-irrational. An average score on these four scales yielded a Control score of each emotion.

Four other bipolar scales sought to determine the depth of feeling or impact upon the individual of each emotion. The scales used were: strong-weak, powerful-powerless, big-little, and deep-shallow. An average score on these scales yielded a Depth score for each emotion.

In the construction of the Emotion Rating Scales, the anchor words for each scale were printed at the opposite ends of a 100mm line. The subjects were

instructed to make a slash on the line at the point which best reflected their typical experience during each emotion. The score on each scale was, for the Control scales, the distance from the "uncontrolled" end of the scales; thus, a higher score implies greater control. Similarly, the scores on the Depth scales are the distances from the "weak" ends of the scales; thus higher scores on these scales reflect a greater depth of experience.

Lastly, the semantic directions of the scales for each emotion were counter-balanced in order to avoid response biases.

Session II, Personality Variables

In light of the fact that they required a great deal more instruction, two personality tests were deferred to Session II wherein the experimenter could devote more time to each individual. These two tests were Kelly's Repetory Grid Test and the Coping Operations Preference Enquiry. In addition, lateral eye movement behavior was also tested again, using the same questions and procedures as in Session I.

Kelly's Repetory Grid Test (REP TEST). Kelly's REP TEST (Kelly, 1955) was developed to determine people's perception of others and, specifically, to determine the

dimensions or "constructs" by which one views others.

In completing the test, the subject first writes down the names of fourteen people whom he knows. The test specifies who these people must be, e.g., "A teacher you like" or "The most intelligent person you know personally", etc.

After listing these people the subject is next given groups of three of these people and is asked to compare the people within each group. For a given group the subject must choose two of the people who are similar to each other but different from the third person. The quality which made the two people similar is one pole of a construct the subject is using to perceive people; the quality which made the third person different is the other pole of the construct.

In this study, the primary concern was the number of different constructs used by each subject. This number has been used as an indicator of cognitive complexity in that a person who views the world with a larger number of different constructs is said to have a more complex cognitive system than a person who consistently uses only a few constructs.

It was expected that right-gazers would have a more complex cognitive system than left-gazers.

Coping Operations Preference Enquiry (COPE). The COPE test (Schutz, 1962) contains a series of short stories, concerning stressful situations, followed by a series of responses which represent different ways of coping with the situations. The subject gives the response he thinks the main character in the story would have chosen, and, in this sense, the instrument can be considered to be a projective test. From his responses, each subject receives a rank ordering of preference for five different modes of coping: denial, isolation, projection, regression-dependency, and turning-to-self.

It was expected that left-gazers would prefer defenses such as denial or regression-dependency while right-gazers would prefer projection or isolation.

Session II, Cartoon Study

The primary objective in this part of the study was to explore the relationships between sex, lateralized hemispheric processes, and the perceived humor of the cartoons.

The design of the study, which required 40 males and 40 females, is illustrated in Figure 1. The figure is labeled for males, but the exact same design was used for females and thus is not illustrated.

Figure 1 about here

The males and females were divided into two groups, left-gazers and right-gazers, on the basis of Session I data. If a subject gazed in a given direction on over 70% of the scorable questions, then he was assigned to the appropriate gazing group. Within each gazing group, half the subjects heard laughter accompanying each cartoon caption, the other half did not. For the subjects hearing laughter, no explanation was given for the presence of the laughter. The order of presentation of the captions was counterbalanced so that half the subjects heard the first 12 captions in the left ear and the second 12 in the right ear. The other half of the subjects heard the captions in the right ear and then the left. At the end of the first 12 cartoons there was a brief rest period, three minutes, during which subjects could remove their headphones. If, after the rest period, a subject noted a switch in the ear of presentation, the experimenter would jiggle the wires of the tape recorder and suggest that if this did not make any difference then the study should continue.

Cartoons. The cartoons, all illustrated in black

Figure 1

Design of Cartoon Study*

		<u>N</u>	<u>Order of Presentation</u>
males	right-gazers	group 1	5 left ear, right ear
		group 2	5 right ear, left ear
	caption plus laughter	group 3	5 left ear, right ear
		group 4	5 right ear, left ear
left-gazers	caption only	group 5	5 left ear, right ear
		group 6	5 right ear, left ear
	caption plus laughter	group 7	5 left ear, right ear
		group 8	5 right ear, left ear

*Females constituted groups 9 through 16

and white, were selected from a larger sample of 50 cartoons on the basis of data collected in a preliminary testing session (not to be confused with Session I). There were 18 males and 15 females in the preliminary session and they rated each cartoon on the same rating scale as was used in the present study (see below).

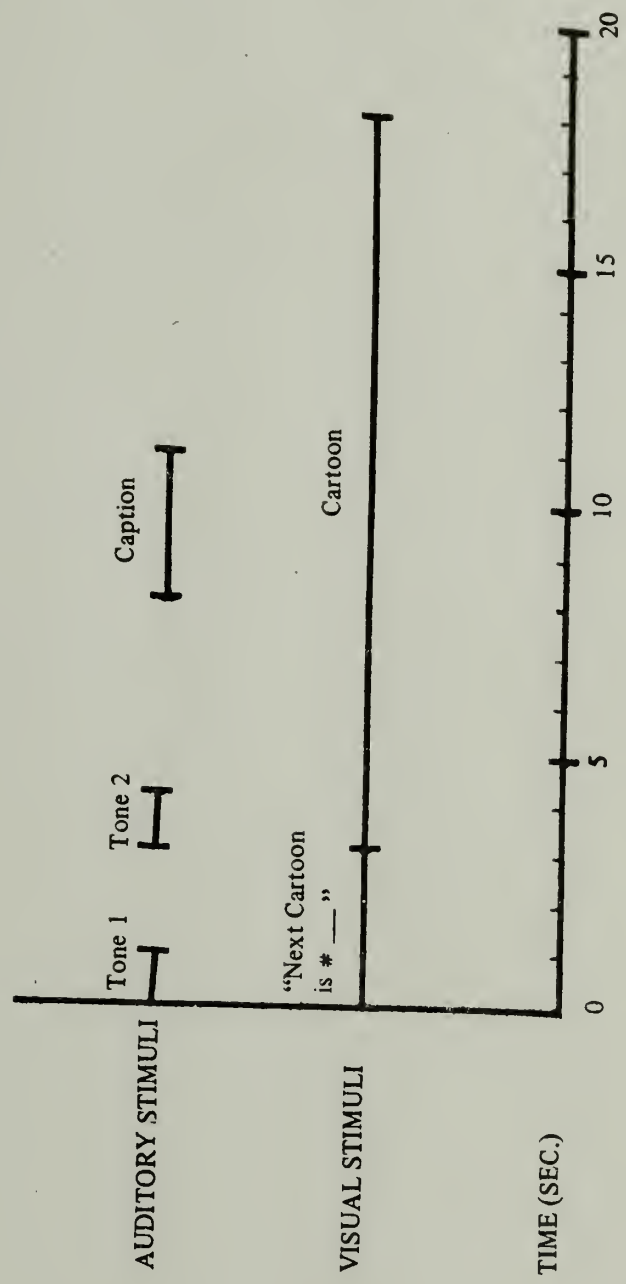
On the basis of these preliminary data, two sets of 12 cartoons were chosen in such a way that (1) both groups were approximately equal in affective value, and (2) that there were no sex differences associated with the ratings of the cartoons.

Captions and Laughter. The cartoon captions were recorded on magnetic tape, the format of which is best seen in Figure 2. There were two audio cuing tones associated with each cartoon. Tone 1 was a cue for the experimenter to display a lantern slide stating the sequence number of the next cartoon to be shown, e.g., "The next cartoon is number two." Tone 2 was a cue for the experimenter to show the slide of that next cartoon.

Figure 2 about here

Five seconds after the cartoon had been presented the caption was heard. Ten seconds after the onset of

Figure 2
Timing of Presentation of Stimuli



the caption (which lasted approximately three seconds), Tone 1 would again be heard, signaling the beginning of the cycle for the next cartoon. Subjects used this ten second period to make their cartoon ratings.

When one magnetic tape containing the captions and cueing tones had been created, the tape was duplicated and "canned laughter" was dubbed onto it. The laughter began just as the caption was ending, and continued for approximately three seconds.

In actuality only four segments of laughter were used. These same four were used in the same order for all 24 cartoons. That is, cartoon number five had the same laughter as did cartoon number one, etc. There was nothing idiosyncratic in any laughter segment which would allow subjects to become aware of this manipulation and in pretests of the tapes this repetition was not detected.

Cartoon Rating Scales. Each cartoon was rated on an 11-point scale which ranged from "Not At All Funny" at the low end to "Extremely Funny" at the high end. The subjects were instructed to circle the number which best reflected how funny they perceived the cartoon to be.

CHAPTER III

Results

Lateral Eye Movement Behavior

Differences between question types. For each question type, the majority of the eye movements were to the right. The percentage of gazes to the right was 0.63 for verbal questions, 0.60 for the math questions, and 0.57 for the spatial questions. Using the Wilcoxon Matched Pairs Signed-Ranks Test, the gazing responses to each question type were found to deviate significantly from a chance (0.50) gazing behavior ($z = -5.18$, $p < .001$, for verbal, $z = -4.36$, $p < .001$ for math, and $z = -3.42$, $p < .001$ for spatial questions).

In spite of the fact that most gazing was to the right the relationships between question types were as predicted. Verbal questions elicited the most gazes to the right, followed by the math and then the spatial questions. Specific comparisons found no significant differences between the percentage of gazes to the right elicited by verbal and math questions, or by the math and spatial questions. There was, however, a significant difference between the gazing elicited by verbal and spatial questions ($F[1,185] = 6.63$, $p = .011$).

Reliability of gazing behavior. In light of the fact that there were five different people assessing

lateral eye movement behavior, any coefficient of reliability in behavior is confounded with inter-rater reliability as well. Nevertheless, such a coefficient is informative. For the 80 subjects who returned for Session II, the correlation between their Session I and II eye movement scores was $r=.61$ ($p < .001$).

Personality Variables

Sex and sex roles. Of the subjects volunteering for this study, the females showed a slightly, but not significantly, greater tendency to gaze to the right (average percent to right = 0.62) than did the males (average percent to right = 0.57).

Using a median split of the derived masculinity-femininity scale of the Bem Sex Role Inventory, there was no significant main effect upon gazing behavior due to sex role nor was there a significant interaction with sex. Nor were there significant effects when subjects were similarly grouped using the Femininity Scale from the California Psychological Inventory.

A series of two-way analyses of variance were performed on the remaining Session I personality data, the two factors being Sex and Gazing behavior. (The Emotional Experience Scales were analyzed slightly differently and that difference will be discussed when those results are

presented.) In light of the fact that gazing was not evenly distributed (see Figure 3), subjects were classified into gazing categories on the basis of criteria rather than by means of a norm-referenced procedure, such as a media split. Subjects showing gazes to the

Figure 3 about here

right or the left more than 66% of the time when tested during Session I were classified as right-gazers and left-gazers respectively; the remaining subjects, those between these two criteria, were placed in the neutral-gazing group. In addition, only subjects who had at least 15 scorable eye movements were used in the analyses. This latter procedure led to the utilization of 169 of the 186 subjects who participated in Session I. The distribution of subjects across the two factors, Sex and Gazing, can be seen in Table 1.

Table 1 about here

Embedded Figures Test. There were no significant effects due to Sex or Gazing upon performance on the Embedded Figures Test. There was, however, a trend for males to find more figures than females.

Figure 3

Distribution of Gazing Behavior by Sex

(n=169)

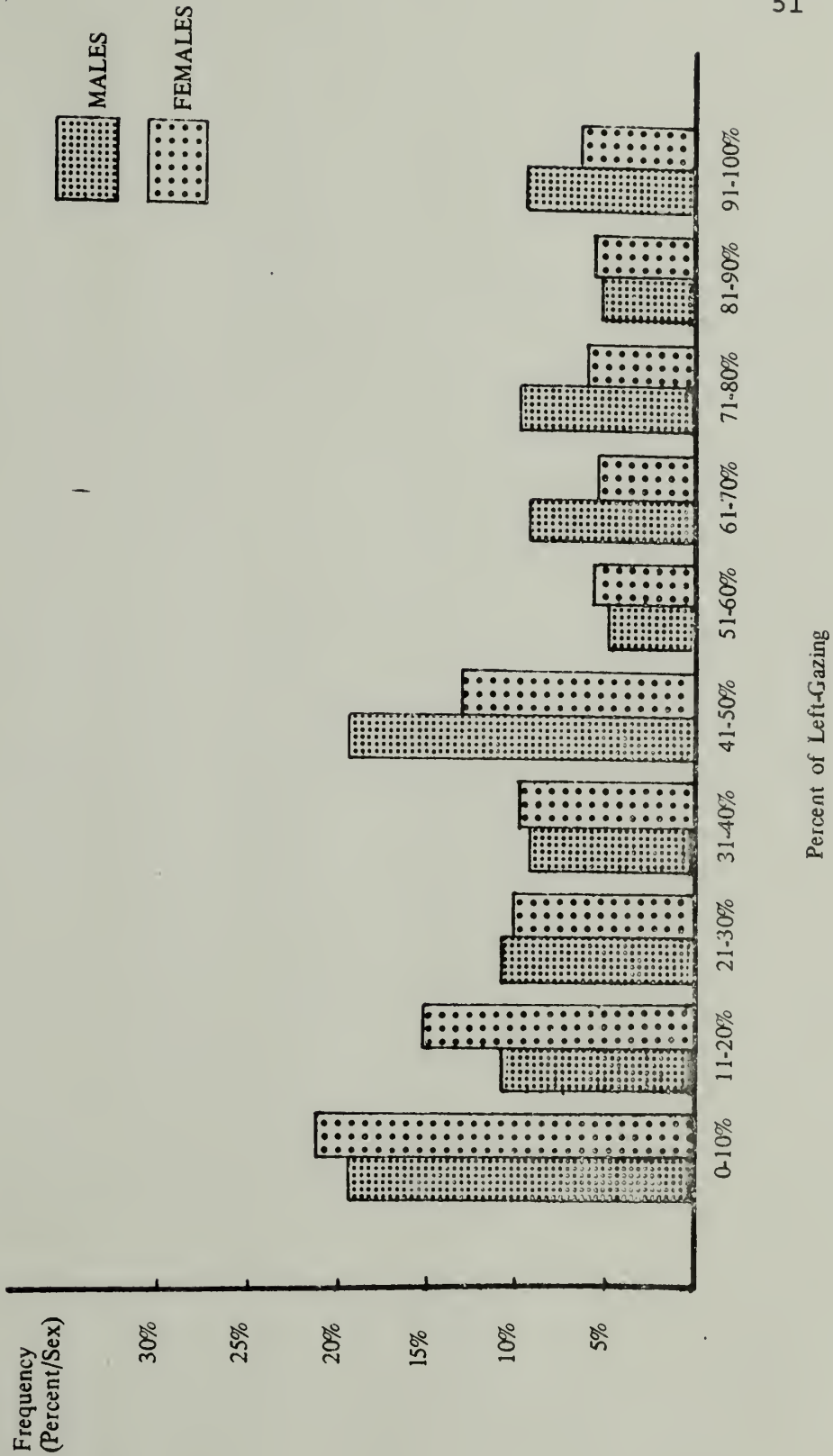


Table 1

Distribution of Subjects by Sex and Gazing Behavior

<u>Sex</u>	<u>Gazing Behavior</u>		
	<u>Right-Gazers</u>	<u>Neutral-Gazers</u>	<u>Left-Gazers</u>
Males	n = 28	n = 18	n = 20
Females	n = 57	n = 24	n = 22

Internal-External Locus of Control. Females scored significantly higher on this scale (see Table 2) than did males ($F[1,163]=7.50, p=.007$), indicating more of an external locus of control for females. But there was

Table 2 about here

no significant effect as a function of gazing.

Eysenck's Personality Inventory. Of the three scales of this inventory (Neuroticism, Introversi-
on-Extroversi-
on, and Lie scale) significant results were found only for the neuroticism scale. As is generally the case, females scored higher on this scale than did the males ($F[1,163]=4.48, p=.034$, see Table 3).

Table 3 about here

Emotional Experience Scales. Recall that the experience of Depth of feeling and the sense of Control were assessed for six emotions: anger, sadness, loneliness, anxiety, joy and guilt. These emotions were not of any particular interest individually, but rather were felt to be representative of the various types of emotions commonly experienced.

Before computing the average Control and Depth scores

Table 2
 Internal-External Locus of Control:
 Breakdown of Scores by Sex and Gazing Behavior*

<u>Sex</u>	<u>Gazing Behavior</u>			<u>\bar{x}</u>
	<u>Right- Gazers</u>	<u>Neutral- Gazers</u>	<u>Left- Gazers</u>	
Males	13.18	12.50	13.75	13.17
Females	15.51	14.87	13.40	14.91
\bar{x}	14.74	14.86	13.57	14.23

* Higher score reflects a more external locus of control.

Table 3
Neuroticism:
Breakdown of Scores by Sex and Gazing Behavior

<u>Sex</u>	<u>Gazing Behavior</u>			
	<u>Right- Gazers</u>	<u>Neutral- Gazers</u>	<u>Left- Gazers</u>	<u>\bar{x}</u>
Males	12.21	11.17	11.25	11.63
Females	13.16	14.21	12.68	12.20
\bar{x}	12.84	12.90	12.00	11.65

for each emotion the intercorrelations of the four component scales of each score were computed. Table 4 presents the Pearson Product-Moment correlation coefficients for all the scales used. The mean correlation among the four Control scales was 0.25; and that among the four Depth scales was 0.65. The mean correlation of the four Control scales with the four Depth scales was 0.01.

Table 4 about here

The mean of the four scales within each group was used as the Control and Depth scores for each emotion. In addition, an average Control and Depth score, averaged across all emotions, was computed for each subject. Higher scores on these scales reflect greater feelings of Control or Depth.

Three-way analyses of variance were done, using the Control and Depth scores as dependent variables. The three factors were Sex, Gazing Behavior, and Type of Emotion.

For the experience of Control, there were significant main effects due to Sex ($F[1,18]=0.10$, $p=.017$) and Type of Emotion ($F[5,900]=54.44$, $p < .001$). Referring to Table 5, males expressed a greater feeling of Control

Table 4

Pearson Product-Moment Correlations of
Individual Emotion Rating Scales

(N = 186)

	1	2	3	4	5	6	7	8
1. controlled-uncontrolled	1							
Control Scales								
2. deliberate-spontaneous	0.34*	1						
3. reflective-impulsive	0.17	0.39*	1					
4. logical-irrational	0.43*	0.07	0.10	1				
5. strong-weak	-0.04	-0.12§	0.02	0.14	1			
Depth Scales								
6. powerful-powerless	-0.07	0.00	0.11	0.04	0.76*	1		
7. big-little	-0.05	-0.10	0.05	0.06	0.79*	0.80*	1	
8. deep-shallow	-0.22†	-0.21†	0.14	0.03	0.47*	0.51*	0.58*	1

§ p < .05

† p < .01

*p < .001

than did females. Turning to the specific emotions, the greatest sense of control was felt for the emotions of Loneliness and Guilt while the least control was experienced with Joy.

Table 5 about here

With regards to the Depth of experience, there was a significant main effect due to Type of Emotion ($F[5,900]=24.48, p < .001$). Also, there was a significant Emotion x Gaze interaction ($F[10,900]=1.99, p=.032$). Looking at the differences in the Type of Emotion (see Table 6), Joy was the emotion which was experienced with the greatest Depth while Anger and Loneliness were least. Turning to the interaction, left-gazers experienced Anger and Joy with more depth than did right-gazers who felt more Depth in the experience of Loneliness, and Guilt. However, specific comparisons indicated that the simple main effect due to Gazing was significant only for Loneliness ($F[2,168]=3.35, p=.036$). Right-gazers reported experiencing this emotion with more depth than did neutral or left-gazers.

Table 6 about here

Table 5
Experience of Control:
Breakdown of Scores by Sex and by Emotion*

Sex	<u>Emotion</u>						\bar{x}
	Anger	Sadness	Loneliness	Anxiety	Joy	Guilt	
Males	43.94	59.04	65.56	45.92	42.77	64.86	53.68
Females	42.52	55.96	63.94	42.16	37.65	63.19	50.90
\bar{x}	43.07	57.16	63.96	43.63	39.65	63.84	51.99

*Higher score reflects greater sense of Control.

Table 6

Experience of Depth:

Breakdown of Scores by Gazing and Emotions*

Gazing	<u>Emotion</u>						\bar{x}
	Anger	Sadness	Loneliness	Anxiety	Joy	Guilt	
Right-gazers	56.28	62.51	60.87	60.93	73.28	63.00	62.81
Neutral-gazers	57.27	58.59	52.49	57.53	73.63	55.46	59.16
Left-gazers	62.64	59.49	51.68	63.89	78.38	57.98	62.34
\bar{x}	57.96	60.88	56.78	60.77	74.52	60.05	61.82

* Higher score reflects greater sense of Depth.

As Experience Inventory. Significant results due to Sex and Gazing were obtained with seven of the nine subscales of the As Experience Inventory. These seven scales represented experiences of: Altered States, Tolerance of Logical Inconsistencies, Role-taking, Dissociation, Tolerance of Regressive Experiences, Peak Experiences, and Basic Trust. The two scales which yielded no significant results were 1) Willingness to Relinquish Ego Control, and 2) Constructive Use of Regression.

Essentially the same relationships with respect to Sex and Gazing were observed in all nine scales. Therefore, in order to avoid redundancy, only the results of the average scores (over all scales) will be presented.

There were significant main effects due to Sex and Gazing ($F[1,163]=5.52, p=.019$ and $F[2,163]=11.27, p < .001$, respectively). Looking at the sex differences (see Table 7) females scored higher on the inventory than did males, indicating a tendency to have more of the experiences characterized by the scales. With regards to gazing, left and right-gazers were equal in their scores while the neutral-gazing group scored significantly higher.

Table 7 about here

Table 7
 As Experience Inventory:
 Breakdown by Sex and Gazing Behavior*

Sex	<u>Gazing Behavior</u>			\bar{x}
	Left-Gazers	Neutral-Gazers	Right-Gazers	
Males	0.76	0.91	0.71	0.78
Females	0.74	0.91	0.82	0.83
\bar{x}	0.75	0.91	0.78	0.81

* Each subscale was standardized to a scale of zero to one. The above scores reflect the average over subscales. Higher scores reflect more reported experiences.

Kelly's Repetory Grid Test. Kelly's Repetory Grid Test and the Coping Operations Enquiry were administered in Session II. Thus, the results reflect a subsample of 80 people who were categorized as either left-gazers or right-gazers. With regards to the Rep Test, right-gazers employed a larger number of unique constructs to describe relationships between given acquaintances than did left-gazers, however, this was not statistically significant.

Coping Operations Enquiry. There was a significant effect ($F[1,76]=4.46, p=.036$) due to Gazing for Denial as a defense and a significant main effect due to Sex for Turning to Self as a coping strategy ($F[1,76]=4.53, p=.034$).

Referring to Tables 8 and 9, as was expected, left-gazers ranked denial higher, i.e., were more likely to use it, than did right-gazers. In stressful situations females were more likely to introspect and review their own behavior than were males.

Tables 8 and 9 about here

Summarizing the results of the personality variables, females--in contrast to males--tended to be more emotional (higher scores on the neuroticism scale), to

Table 8
 Denial as a Coping Strategy:
 Breakdown by Sex and Gazing Behavior*

Sex	<u>Gazing Behavior</u>		\bar{x}
	Right-Gazers	Left-Gazers	
Males	4.41	3.79	4.10
Females	4.39	4.32	4.36
\bar{x}	4.40	4.06	4.23

* Five different coping strategies were rank ordered for six different types of situations. The score reflects the average ranking over the six situations. A lower score reflects a greater usage of the strategy.

Table 9
 Turning-to-Self as a Coping Strategy:
 Breakdown by Sex and Gazing Behavior

Sex	<u>Gazing Behavior</u>		\bar{x}
	Right-Gazers	Left-Gazers	
Males	1.90	2.34	2.12
Females	1.86	1.94	1.80
\bar{x}	1.88	2.04	1.96

have more experiences characterized by altered states and high involvement, and tended toward more of an external locus of control. Also, females more often preferred to reflect upon their own behavior when coping with a stressful situation.

A total of 14 tests were performed for main effects due to gazing behavior and a like number for interactions with sex. Of these, two significant main effects were observed and one significant interaction. Moreover, of the main effects, one was observed only for the subsample of 80 subjects tested in Session II (where left-gazers ranked denial as a preferred coping strategy). In the other significant main effect, left and right-gazers did not differ from one another, but both reported fewer unusual experiences than did neutral gazers.

From these results it seems safe to conclude that any personality differences which distinguish left from right-gazers are subtle in nature. The clearest finding of the present study was a lack of a clear distinction between the two groups. We will return to discuss this lack of results in a later section.

Cartoon Study Results

Comparability of Subject Samples

Among the subjects volunteering for Session I, right-gazers outnumbered left-gazers by a ratio of two to one. As a consequence, by the time a sufficient number of left-gazers had been recruited for Session II many more right-gazers had participated in Session I. Therefore, the right-gazers who participated in Session II were only a subsample of the right-gazers who participated in Session I. On the other hand, nearly all of the left-gazers who participated in Session I were in Session II also.

In order to determine the degree of similarity between Session I and II samples of right-gazers, a series of T-tests were done comparing the right-gazers who were recalled with those who were not. The significant differences are presented in Table 10. The right-gazers who were recalled for Session II had a slightly higher percentage of gazes to the left than did the other Session I subjects. The recalled subjects found more figures on the Embedded Figures Test, felt more Depth in the experience of emotions in general, and had fewer of the experiences assessed by the As Experience Inventory.

Table 10 about here

While these differences do not seem to point toward any systematic difference between those recalled and those not, they do indicate the need for caution in generalization from the right-gazers who participated in Session II to right-gazers in the general population.

Analyses and Results of Cartoon Data

The primary analysis (Table 11) of the cartoon data was an analysis of variance which reflected the design originally proposed for the study; the factors were Sex of subject, Gazing behavior, Laughter or non-laughter condition, Ear of Presentation, Order of presentation (i.e., left ear or right ear first), and Degree of humor of the cartoons. Subjects were classified as left-gazers or right-gazers on the basis of the following criteria: at least 70% of all scorable eye movements were in one direction and at least half (15) of all eye movements were scorable.¹

Table 11 about here

Recall that two groups of twelve cartoons were used in the study and that all subjects viewed the same cartoons in the same order. The ear of presentation was

¹This is a more stringent criterion for the classification of gazing behavior than was used in Session I.

Table 10
 Comparison of Right-Gazers Recalled to Session II
 With Those Not Recalled

Variables with Significant Differences

	<u>Percent Left Gazes</u>	<u>Embedded Figures Test</u>	<u>Depth of Feeling</u>	<u>As Inventory, Average Score</u>
Recalls: (n=44)	0.17	5.77	65.94	0.67
Others: (n=44)	0.10	4.16	60.25	0.89
t-test:	3.89	2.04	2.22	7.98
p	.001	.045	.029	.001

Table 11

Analyses of Variance: Cartoon Data

Effect	df	F	p
Sex	1,64	1	ns
Order of Presentation	1,64	1	ns
Laughter	1,64	1.44	.235
Gazing Behavior	1,64	2.22	.141
Ear of Presentation	1,64	1	ns
Degree of Humor	2,128	109.5	.001
S x O	1,64	3.56	.064
S x L	1,64	3.68	.059
O x L	1,64	1.00	.321
S x G	1,64	1	ns
O x G	1,64	1	ns
L x G	1,64	1	ns
E x S	1,64	1	ns
E x O	1,64	3.33	.073
E x L	1,64	2.45	.122
E x G	1,64	1	ns
D x S	2,128	2.53	.084
D x O	2,128	1.03	.362
D x L	2,128	3.74	.026
D x G	2,128	1	ns
S x O x L	1,64	1	ns
S x O x G	1,64	1	ns
S x L x G	1,64	1.17	.283
O x L x G	1,64	1.09	.301
E x S x O	1,64	1	ns
E x S x L	1,64	10.76	.002
E x O x L	1,64	1	ns
E x S x G	1,64	1	ns
E x O x G	1,64	1	ns
E x L x G	1,64	1	ns
D x S x O	2,128	3.44	.035
D x S x L	2,128	1	ns
D x O x L	2,128	1.16	.316
D x S x G	2,128	1	ns
D x O x G	2,128	1.76	.177
D x L x G	2,128	3.29	.040

counterbalanced within subjects, i.e., a subject heard the captions for the first group of cartoons in one ear and the captions for the second group in the other ear. In addition, the order of ear of presentation was counterbalanced between subjects. The two groups of cartoons were chosen on the basis of pilot data so as to be equal in affective value. Although one group of cartoons was slightly funnier ($\bar{x}=5.58$) than was the other ($\bar{x}=5.38$), there was no significant difference between subject's ratings of the groups.

There was a significant main effect due to the Degree of humor of the cartoons ($F[2,128]=109.5, p=.001$). Recall that cartoons were divided, on the basis of the pilot data, into three groups according to humor level, i.e., Low, Medium, and High. The average humor rating of the Low group was 4.53, of the Medium group it was 5.55, and for the High group it was 6.35.

Degree by Order by Sex Interaction

Order of ear of presentation was intended to be merely a counterbalancing manipulation; thus, it was surprising to find it involved in a significant interaction. In the preliminary analyses there was a significant Degree x Order x Sex interaction ($F[2,128]=3.44, p=.035$). Closer inspection of the data showed this three-way interaction

to be the result of a Sex x Order interaction ($F[1,76]=9.88, p=.015$) existing within the Medium-humor cartoons.

Referring to Table 12, males tended to rate the cartoons funnier when they heard the captions in the right ear first, then the left; females found the cartoons funnier when they heard the captions in the left ear first, then the right. A specific comparison of the Group 1 and Group 2 cartoons of the Medium-humor level found no significant difference. Hence the Order effect cannot be attributed to differences between the two groups of cartoons.

This Order by Sex interaction, in spite of its level of significance, should be greeted cautiously in light of the small subset of cartoons for which it appeared. If the finding is reliable it may be concluded that the processing of information by one hemisphere may "prime" or foster a cognitive set. That is, the type of processing initially used in a task may predispose the person to maintain that mode for the duration of the task. In turn, it must be assumed, to yield the results reported here, that one mode of processing lends itself to greater perceived humor than does the other.

Table 12 about here

Table 12

Degree by Order by Sex Interaction

Breakdown of Funniness Ratings of the Medium

Humor Cartoons by Sex and by Order of Presentation

Order of Presentation

	Left ear- Right ear	Right ear- Left ear
Males:	5.34	6.00
Females:	5.96	4.93

Degree by Laughter by Gaze Interaction

There was no significant main effect due to the Laughter manipulation, but surprisingly the cartoons were rated funnier ($\bar{x}=5.63$) when there was no laughter than when there was ($\bar{x}=5.33$). There was a significant Degree x Laughter interaction ($F[2,128]=3.74, p=.026$) and as can be seen in Figure 4, although the cartoons were consistently rated funnier when there was no laughter, this difference was especially marked for the High humor group of cartoons ($t[78]=2.21, p=.030$).

Turning to the Degree x Laughter x Gaze interaction ($F[2,218]=3.29, p=.040$) the difference in ratings of the high humor cartoons was due primarily to the ratings of the left-gazers. Referring to Figure 5, (see also Table 13) it can be seen that while the laughter made a significant difference in the left-gazers' ratings of the High humor cartoons ($t[39]=-3.59, p=.001$) there was no difference in the ratings of the right-gazers.

Figures 4 and 5 and Table 13 about here

It can be concluded that left-gazers were affected more by the presence of the laughter, albeit negatively. Left-gazers may be more attuned to the contextual appropriateness of emotional stimuli.

Quality of Cartoon x Laughter
Interaction for Humor Ratings

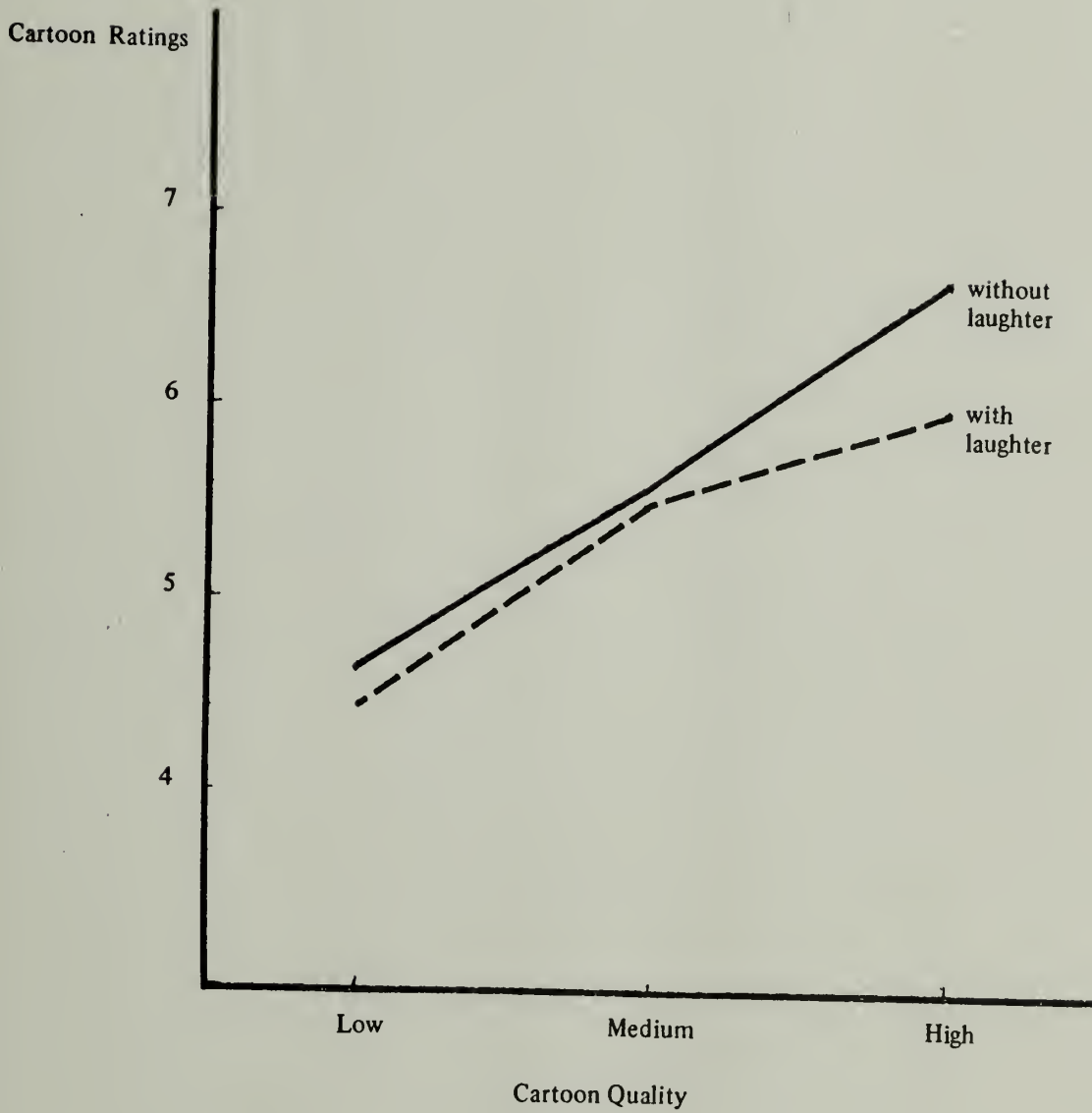


Figure 5

Laughter x Gaze x Degree of Humor of Cartoon

Interaction

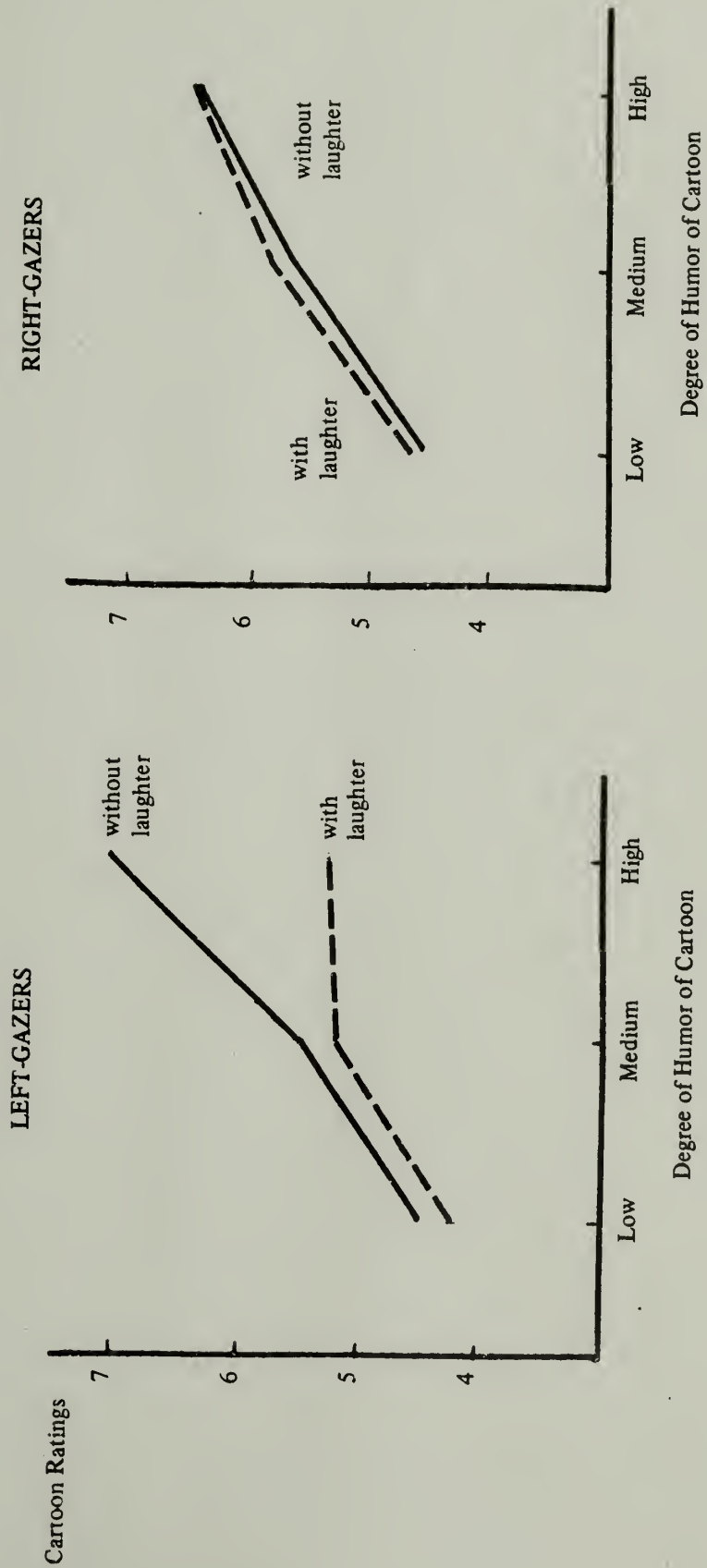


Table 13
 Degree by Laughter by Gaze Interaction
 Breakdown of Funniness Ratings by Gazing,
 Laughter, and Degree of Humor

	<u>Humor Level</u>		
	<u>Low</u>	<u>Medium</u>	<u>High</u>
<u>Left-Gazers</u>			
With Laughter	4.17	5.21	5.51
Without Laughter	4.57	5.39	6.91
<u>Right-Gazers</u>			
With Laughter	4.72	5.86	6.51
Without Laughter	4.67	5.77	6.48

If such were the case, they may have perceived the laughter as inappropriate and, in turn, perceived the cartoons as less funny.

Ear x Sex x Laughter Interaction

The most significant interaction found in the cartoon data was an Ear x Sex x Laughter interaction ($F[1,64]=10.76, p=.002$). Referring to Figure 6, see also Table 14, under the laughter condition the males rated the cartoons funnier when they heard the captions and laughter in the left ear. When there was no laughter, males gave higher ratings when the captions were heard in the right ear. In both cases the opposite results were found for females. Yet, when the sexes were analyzed separately, there was a significant Ear x Laughter interaction for males only ($F[1,24]=6.34, p=.019$).

Figure 6 and Table 14 about here

Figure 7 depicts the above results for each laughter condition separately, highlighting the differences between sexes. When the data for each laughter condition were analyzed separately there was a significant Sex x Ear interaction ($F[1,32]=8.34, p=.007$) for the no-laughter group and a nearly significant Sex x Ear interaction ($F[1,32]=3.79, p=.060$) for the laughter group.

Figure 6

Sex x Laughter x Ear Interaction

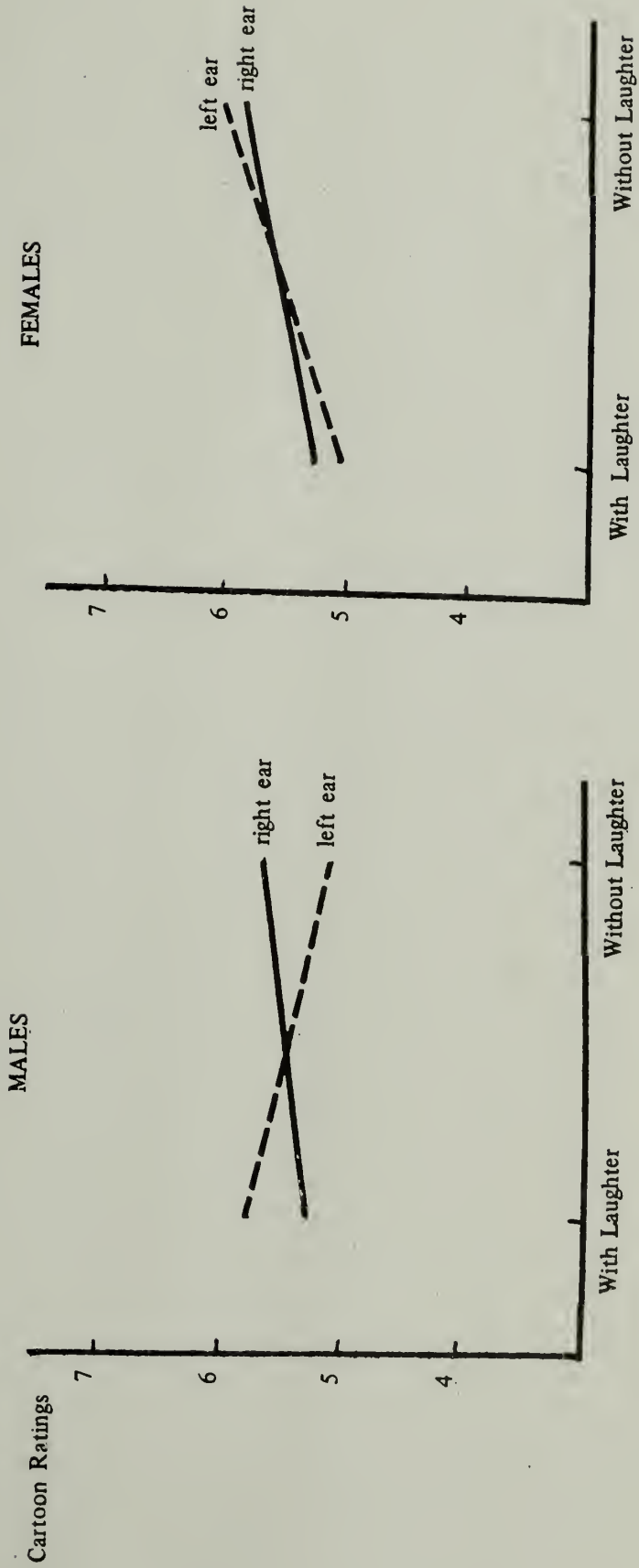


Table 14
Ear by Sex by Laughter Interaction
Breakdown of Funniness Ratings
by Ear of Presentation, Sex, and Laughter

	<u>With Laughter</u>	<u>Without Laughter</u>
<u>Males</u>		
Left Ear	5.77	5.04
Right Ear	5.27	5.63
<u>Females</u>		
Left Ear	5.04	6.02
Right Ear	5.24	5.83

Figure 7 about here

One conclusion that might be drawn from these results is that males are more discretely lateralized in their functioning, as shown by greater differences due to ear of presentation, than are females (see also Gur and Gur, 1974 and McGlone and Davidson, 1973).

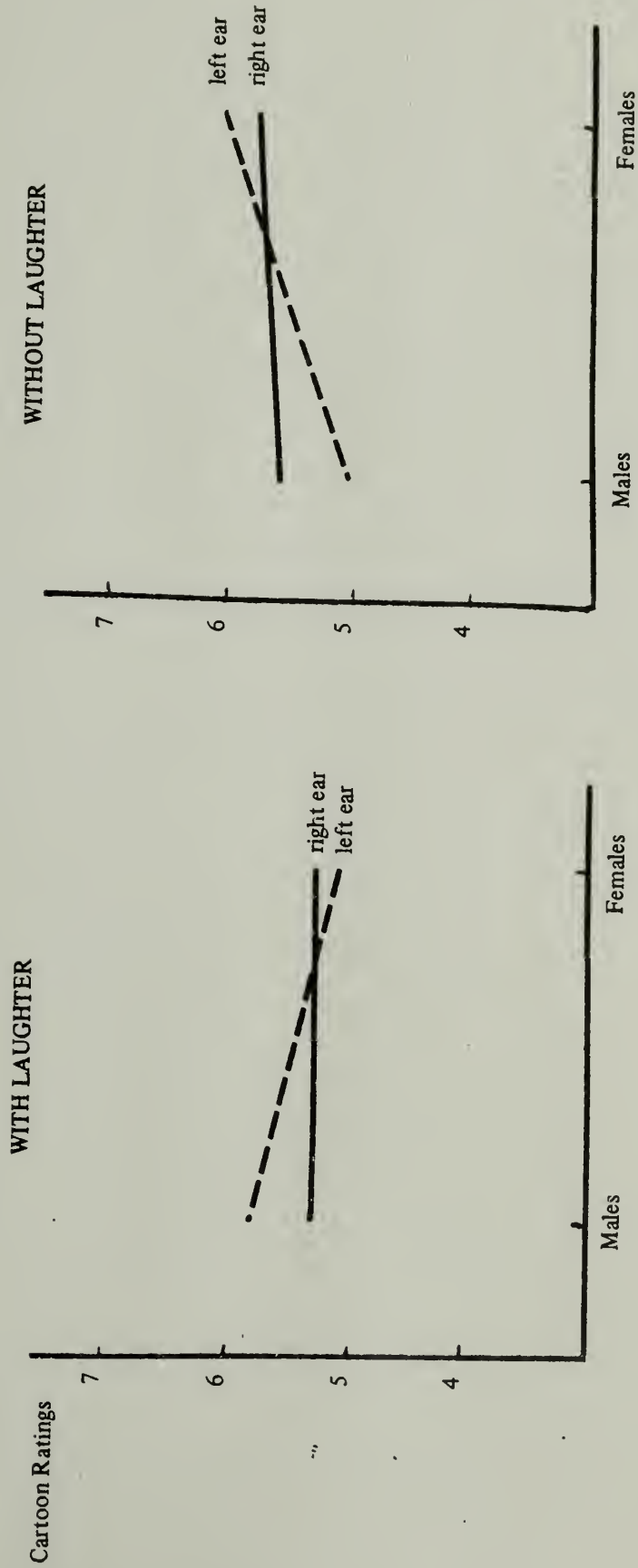
Gender Identity and Perceived Humor

In light of Leventhal's reports of sex role as a possible moderating variable, additional analyses were done wherein subjects in each sex were classified as masculine or feminine according to a median split on the CPI femininity scale and the Bem androgyny scale. Analyses of variance were then done for each sex separately with the independent variables being Order, Ear, Gaze, Degree, Laughter, and Sex Role. The dependent variables were the cartoon ratings.

No significant results were found for the Bem androgyny scale. Thus, the following discussion will focus upon the CPI femininity scale. There were no effects due to sex role upon the ratings of the males but for females there was a significant Ear x Gaze x Femininity interaction ($F[1,24]=4.97, p=.035$).

For the more feminine females the ear associated

Figure 7
Sex x Laughter x Ear Interaction



with the higher cartoon ratings was ipsilateral to the direction of gaze ($F[1,18]=3.62, p=.073$). That is, right-gazers preferred (gave higher ratings to) the right ear presentations while left-gazers preferred the left ear (see Table 15). This is what would be expected assuming gazing behavior and responses to dichotic presentations to both be indicators of lateralized functioning.

Table 15 about here

The pattern of results for the most masculine subjects tended to the opposite, but the relationship was less distinct ($F[1,18]=1.33, p=.263$). As can be seen in Figure 8, there was less difference due to ear of presentation yet still a trend for the preferred ear to be contralateral to the direction of gaze, i.e., left-gazers preferred the right ear and right-gazers preferred the left ear.

Figure 8 about here

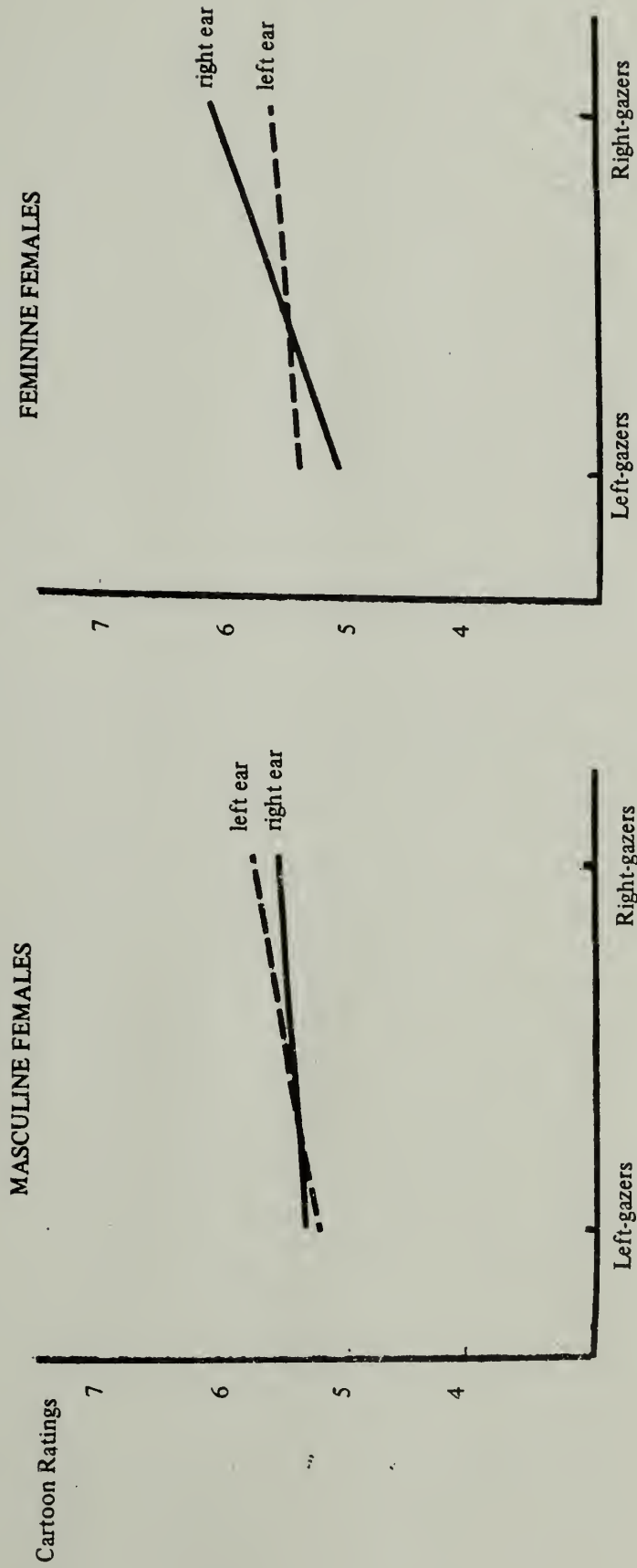
Although the analyses of variance did not reveal any significant Ear x Gaze x Sex Role interactions for the male subjects, the same relationships appear to be present as for females. To show this, a "preferred ear" score was computed for each subject. This consisted of left-ear ratings minus right-ear ratings (L-R). A high

Table 15
 Ear by Gaze by Sex Role Interaction for Females
 Breakdown of Females' Cartoon Ratings
 by Ear of Presentation, Gaze, and Sex Role

	<u>Ear of Presentation</u>	
	<u>Left Ear</u>	<u>Right Ear</u>
<u>Masculine Women</u>		
Left-Gazers	5.21	5.32
Right-Gazers	5.85	5.43
<u>Feminine Women</u>		
Left-Gazers	5.46	5.09
Right-Gazers	5.68	6.13

Figure 8

Ear x Gaze x Sex Role Interaction for Females



score reflects a left ear preference while a low score reflects a right ear preference. Pearson product-moment correlations were then computed between the Preferred Ear scores and gazing behavior (see Table 16). As would be expected the more feminine females display a significant positive correlation between gazing behavior and preferred ear ($r=.39, p=.04$) while the more masculine women showed a negative correlation ($r=-.17, p=.23$). While the results were not statistically significant for males, they showed the same relationships. Indeed, the one group which displayed the greatest inverse relationship between gazing behavior and preferred ear were the more masculine males ($r=-.23, p=.18$).

Table 16 about here

In summary, the laughter manipulation did have an effect upon the ratings of the cartoons, albeit an unexpected one. The cartoons were rated funnier when there was no laughter than when there was. This effect was most pronounced for the left-gazers' ratings of the High humor cartoons. In general, the left-gazers seemed to be more sensitive to the laughter manipulation than did the right-gazers.

For at least one group of cartoons, the Medium humor

Table 16
 Correlations of Preferred Ear Scores
 With Gazing Behavior*

	<u>Sex Role</u>	
	<u>Masculine</u>	<u>Feminine</u>
Males	$r = -.23, p = .18$	$r = .13, p = .28$
Females	$r = -.17, p = .23$	$r = .39, p = .04$

* Preferred Ear Scores consist of left-ear ratings of cartoons minus right-ear ratings. The gazing behavior score was the percent of total gazes to the left.

group, the order of ear of presentation appears to have had an effect upon the cartoon ratings. Males gave higher ratings to these cartoons when they heard captions (whether or not accompanied by laughter) in the right ear first, then the left. Females gave higher ratings when the captions were presented to the left ear first. In light of the fact that this effect was observed for only a subset of the cartoons, these results should, at best, be greeted with caution.

With regards to the Ear x Sex x Laughter interaction, firstly, there were significantly different left and right ear ratings for the males only. The ear of presentation did not make a significant difference for women. For males, the cartoons were rated significantly funnier when the captions and laughter came to the left ear. When there was no laughter, males rated the right-ear presentations funnier.

Lastly, subjects with more feminine gender identities showed a positive concordance between indicators of lateralized processing. Left-gazers preferred left-ear presentations and right-gazers preferred the right ear. More masculine subjects, on the other hand, displayed a trend toward an inverse relationship, i.e., left-gazers preferred the right ear and vice versa.

CHAPTER IV

Discussion

Gazing Behavior

On the average subjects volunteering for this study displayed a predominance of right-gazing. This appears to be a reliable finding in light of the fact that a previous study found similar results (DeWitt and Averill, 1975). Since subjects in both these studies were volunteers, it is not clear whether this gazing behavior is representative of the university students in general, of a volunteering sample in particular, or is due to the laboratory setting which may have induced an analytic set.

Gazing does appear to be a valid indicator of lateralized mental activity. In spite of the above-mentioned bias in gazing behavior, there were clear differences due to question type with verbal tasks eliciting significantly more right-gazes than spatial tasks.

There also appear to be reliable ($r=.61$, $p < .001$) individual differences in gazing behavior as seen in the test-retest reliability. Again, it must be noted that this measure of reliability was confounded with inter-rated reliability as well. Yet, since this confounding should have only introduced variance, the coefficient is more than likely a conservative estimate of

the true reliability of the behavior.

Personality Variables

By and large the most obvious result of this study was the lack of clear-cut personality differences between left and right-gazers. Indeed, considering the number of statistical tests involved and considering the few significant results, it is entirely likely that the significant results were themselves due merely to chance. This lack of results is noteworthy in light of the personality characteristics associated with lateralized functioning. Some findings do deserve further consideration however.

Field-independence. The lack of results with regards to the Embedded Figures Test may not have been a function so much of the hypothesis in question as of the means of assessing field-independence. In a previous study (DeWitt and Averill, 1976), using both the Embedded Figures Test and the Stroop Color Word Test, a moderate but significant correlation ($r=.30, p=.05$) was found between left-gazing and Stroop interference. However, no significant correlation was found between gazing behavior and performance on the Embedded Figures Test. Although both the Embedded Figures Test and the Stroop Test are felt by some (Bloomery, 1969) to be tests of field-independence,

others (Huckabee and McGown, 1971) have not found support for this view. Indeed, there is enough unique variance in the different measures of field-independence to lead some researchers to question the validity of their use as measures of a single construct (cf. Wachtel, 1972).

Yet Cohen's (Cohen, et al, 1973) demonstration of the different competencies of the hemispheres on the rod and frame test strongly suggests that the construct of field-independence is a valid one, i.e., the lateralized modes of thought lend themselves to different perceptual abilities. Conversely, it seems reasonable to conclude that the various measures of field-independence each reflect, more or less accurately, individual differences in these modes of perception.

If this is correct, then we have a basis of comparison for the various measures of field-independence. Since measures of field-independence should, when presented unilaterally, reflect differences in mode of thought, those tests showing the greatest lateral discrimination could be assumed to be the most valid measures of the underlying cognitive styles. Alternatively, gazing behavior could be used as an index of preferred lateralized activity and measures of field-independence could be compared with gazing behavior. Such procedures

allow a rank ordering of the various measures of field-independence in terms of their ability to discriminate between lateralized modes of thought. In this way the relative "purenness" of the various measures of field-independence could be determined.

Coping strategies. The individual differences found in coping strategies are very significant in light of the fact that they replicate the findings of Gur and Gur (1975) who found left-gazers to predominantly use what they termed reversal, which is "characterized by an immediate reaction of denial of reality, repression of the emotions provoked by external stress, and reaction formation." Similarly, in the present study left-gazers were found to more often employ denial, to profess that there was no need for concern, no problem existed.

Although the right-gazers did not rate projection as significantly a preferred mode of coping, the results were in that direction.

These findings are also consistent with those of Day (1964, 1968) who found left-gazers to report anxiety as being a tension, an internally perceived impulse feeling. In contrast, right-gazers reported anxiety as a panic feeling with a perceived external cause.

General considerations. Some interpretations of the

results of this study are tempting yet only tentative at best. For example, looking at the interaction between gazing behavior and the depth of experience of emotions, it was seen that left-gazers experienced more depth with the emotions of joy and anger while right-gazers experienced more depth with the emotions of loneliness and guilt.

In retrospect these differences could be expected given the hypotheses introduced in this study. Left-gazers should experience more depth of feeling for emotions which are characterized by a high degree of involvement. Such abandonment or loss of self-awareness is often seen in displays of joy or anger. By contrast the emotions which most touch the right-gazers, loneliness and guilt, each represent an acute awareness of one's self; they are reflective in nature. As noted, such post hoc hypotheses as these are tentative at best without replication.

In general, this study of personality characteristics suggests that there has been a gross over-generalization of the research findings dealing with the lateralization of cerebral functions. The popular notions of individual differences associated with lateral dominance may have to be tempered drastically. Save for hypnotic

susceptibility, coping strategies, and perhaps perceptual style, very few variables appear to be reliably associated with lateral dominance.

In defense of the popular notions, it might be argued that either the present sample was inappropriate and not representative of the population or that the measures used were not appropriate for the theoretical constructs studied.

In response to the first point, it must be noted that, in terms of gazing behavior, the present sample showed the same pattern of gazing behavior as was found in a previous study (DeWitt and Averill, 1976) which also utilized volunteer subjects. Also, the sex differences in the present study were the same as those typically found in personality research. Lastly, the sample utilized in this study is much larger than any reported to date in this area of research. These factors lend strong support to the view that the present sample was representative of at least the student population as a whole, both in terms of personality and gazing behavior.

With respect to the appropriateness of the measures, the construct validity of nearly all the instruments has been demonstrated more than adequately. The emotional experience scales were unique to this study but

the procedures used in their development were not without sound empirical methodological bases (cf. Osgood, 1969; Averill, 1975).

Granted, various measures of a construct may assess different manifestations of that construct. Where prior research suggests that effort should be invested in trying various instruments, as in the case of field-independence, then that should be done. However, the lack of significant results with the other personality instruments suggests that no strong relationships exist and provide scant bases for further research in those areas.

Even though the results of this study question currently popular notions, it cannot however be concluded from these results that there are not clear personality differences between left and right-gazers. It may be more accurate to conclude that the variables assessed in the present study were not, for the most part, germane to the personality differences which might exist. Gazing behavior may be providing a naturally occurring fundamental distinction between individuals. Yet it remains to be seen how well gazing behavior correlates with other indicators of lateralized cognitive activity.

Assuming that gazing behaviors are indicative of

different modes of thought and perception then we must conclude that these differences should be reflected in personality. Obviously the traditional psychometric measures used in the present study were, for the most part, inappropriate. They illuminated few aspects of personality associated with gazing behavior. What are needed are new constructs to unite the few significant results into an understanding of the personality differences associated with lateral dominance.

Cartoon Study

By way of a series of studies, H. Leventhal has presented support for the notion that males prefer a serial analytic mode of processing while females are more global and subjective in their commerce with the world. Studying primarily students' judgments of cartoon humor, Leventhal focused upon how subjects utilize such components as the setting of the cartoon, its caption, audience response, and the subject's own expressive behavior. From these studies he concluded that:

"... female subjects appear to base their ratings of the cartoons on their subjective emotional reactions to the stimuli, and the intensity of this subjective reaction is a product of the combined impact of the cartoon cues and the cues from the audience laughter. Because the intensity of the subject's overt expressive response is intimately related to the intensity of her subjective feelings, females' funniness ratings appear to be directly

related to the intensity of their expressive reactions. Males, on the other hand, do not seem to base their judgments on an intervening subjective feeling; instead, they seem to independently evaluate each of the three sources of information and then use a weighted average of these evaluations to rate the cartoons." (Caputo and Leventhal, 1975)

The present study found little support for the Ear x Sex interaction reported by Leventhal. In general, significant ear differences were found only for the males, supporting the view (cf. Gur and Gur, 1974, McGlone and Davidson, 1973) that functions are more discretely lateralized within males than females. The Ear x Sex x Laughter interaction was primarily due to ear differences in males. In that interaction males preferred the left ear when the captions were accompanied by laughter and the right ear when there was not laughter.

Since males rated the cartoons funnier when there was laughter ($\bar{x}=5.52$) than when there wasn't ($\bar{x}=5.34$) it can be assumed that they found the laughter situation to be more emotional. In this regards the present results do support the view that emotional experience is mediated by the right hemisphere yet no support was found for the view that females prefer the right hemisphere mode.

The Sex x Order interaction interestingly displayed

some characteristics consistent with Leventhal's hypotheses. Females gave higher cartoon ratings when the captions were presented to the left ear first, then the right. Males gave higher ratings when captions were heard in the right ear first. Assuming females to naturally prefer the left ear in the perception of humor, these findings suggest that when the preferred mode of processing is activated it tends to perpetuate throughout a task--even when the manner of presentation of information does not favor that mode. Kinsbourne (1972) has shown how cognitive set can affect task performance, e.g., when humming a melody performance on a visual detection task is better in the left visual field while the right visual field is favored during a verbal mental task. No research has shown a carry-over effect or persistence of a cognitive mode once it has been initiated, however such may be the case.

Turning to gazing behavior, the left-gazers were more responsive to the presence of laughter; their ratings were significantly lower when the laughter was present than when it was not. If left-gazers are indeed more subjective then they should also be more adept at

interpreting affective stimuli. Such discernment may have lead to a perception that the canned laughter was in some way inappropriate for the situation and, hence, a more critical analysis of the situation and cartoons resulted.

The effects of the experimental setting are not to be underestimated in research of this type. Leventhal notes:

"Although our studies in the past indicated that sex differences in the cartoon rating task are substantial and consistent, we have also shown that factors which change task-orientation can modify or eliminate these differences by encouraging females to use a differentiated, serial-rating strategy." (Caputo and Leventhal, 1975)

In the first study in which the Sex x Ear interaction was found a female experimenter was utilized. In subsequent studies, which were not all successful in finding the interaction, male experimenters were employed. Thus, among other things, the sex of the experimenter may be one factor influencing subjects' mode of perception. In the present study all experimenters were males. Moreover, aside from being conducted in typical research laboratory rooms, no special efforts were made to create an atmosphere conducive to emotional expression. Recall also that there was a two-to-one ratio of right-gazers to left-gazers in the students

volunteering for this study. Rather than being indicative of gazing behavior in the population as a whole, this ratio may reflect a cognitive set induced by the experimental setting.

If the setting did induce an analytical cognitive set the effects should have affected the ratings of the females more than of the males (who presumably already prefer the analytical set). Hence, the lack of sex differences in the present study could possibly have resulted from the technical ambiance of the study.

Leventhal's Sex x Ear interaction was due primarily to those males and females who scored higher on the CPI Femininity Scale. Although no support for this was evident in the present study there were some interesting sex role differences. Within the female subjects there was a significant Ear x Gaze x Sex Role interaction wherein, for the more feminine women, the right-gazers preferred the right ear; left-gazers preferred the left ear. For the more masculine women the ear of preference was contralateral to the direction of gaze. These same sex role relationships were evident in the ratings of the males although not statistically significant.

The fact that lateral eye movements and performance on the cartoon rating task were not consistent in their

indication of a dominant or preferred hemisphere suggests that they are perhaps reflecting different cognitive or affective domains, albeit still lateralized. Taking this into consideration, the sex role differences just noted might make more sense if viewed in terms of intelligence or education rather than gender identity. Assuming one result of education to be a shift toward a more feminine sex role, i.e., towards sensitivity, an appreciation of the arts, etc., it may be that intelligence is associated with a more consistent utilization of lateralized functions.

Summarizing, there appear to be lateral differences in the perception of emotion; the right hemisphere being regnant. Males found cartoons funnier when accompanied by laughter than when not. When there was laughter the males preferred the left ear over the right. There were no ear differences for females' ratings. Although no Ear x Sex interaction was found, females did rate the cartoons funnier when the captions came to the left ear first while males rated them funnier when the captions came to the right ear first (regardless of whether or not laughter was present). Lastly, left-gazers were most sensitive to the presence or absence of the laughter with the presence of the laughter leading to decreased

perceived humor. It is possible that the conditions of the study fostered an analytical mode of thought which could have masked sex differences.

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APPENDIX

SAMPLE QUESTIONNAIRES

Verbal, Spatial and Math Questions Used to
Determine Eye Movement Behavior

1.
 - a. What is meant by the proverb: "One today is worth two tomorrows."?
 - b. Envision the keyboard of a typewriter, in which corner of the keyboard is the letter "p"?
 - c. Multiply 14 by 3.
2.
 - a. Make up a sentence using the words "code" and "mathematics".
 - b. Imagine a rectangle. Draw a line from the upper left hand corner to the lower right hand corner. What two figures do you now have?
 - c. Divide 115 by 5.
3.
 - a. What is the primary difference between the meanings of the words "flexible" and "reasonable"?
 - b. Visualize the Chapel and Goodell, which one is taller?
 - c. Multiply 5 by 18.
4.
 - a. Do you use the word "logical" or "rational" more often?
 - b. Envision walking through your house and tell me how many doors there are.
 - c. Multiply 15 by 11.
5.
 - a. What is meant by the proverb "The more cost, the more honor"?
 - b. On the face of the quarter does George Washington face to the left or the right?
 - c. Divide 81 by 3.
6.
 - a. What is the primary difference between the meanings of the words "recognize" and "remember"?
 - b. Picture the Statue of Liberty and tell me in which hand she is holding the torch.
 - c. Multiply 16 by 6.
7.
 - a. What is meant by the proverb: "All's well that ends well"?
 - b. Visualize a circle being drawn on top of a square. What is the maximum number of points at which the two figures can intersect?
 - c. Multiply 23 by 8.
8.
 - a. Make up a sentence using the words "present" and "quest".
 - b. Picture a circular telephone dial. As you face the dial, which number appears furthest to the left?
 - c. Divide 64 by 4.
9.
 - a. What is meant by the proverb: "Easy come, easy go"?
 - b. Envision walking through your house, tell me how many windows there are.
 - c. Divide 85 by 5.

10. a. What is the meaning of the word "time"?
- b. In the painting "Whistler's Mother", is the woman facing to the left or right?
- c. Multiply 45 by 3.

Name: _____

The As
EXPERIENCE INVENTORY

A great many phenomena are considered common and everyday in one culture and bizarre or even pathological in another. Hallucinations, for example, are eventually experienced by every male Crow Indian during his maturation process-- he must see his Guardian Spirit in order to become a man. In our society, however, when an individual has such an experience, he rarely reports it since he feels it is at best peculiar. Yet the Yogi and Zen Buddhist deliberately seeks mystical or transcendental experiences which are considered in their culture among the highest expressions of the human intellect.

As in the case of sexual behavior, it is hard to get honest reports on things which are sometimes intensely personal. In the present questionnaire there are several questions about experiences which probably are rather common even though rarely spoken of. Other questions ask for your personal attitudes and opinions on different matters which you are familiar with. Please take this questionnaire seriously as we are concerned with getting a true approximation of the frequency of some of these experiences in a normal college population.

When asking about specific experiences we are interested in such experiences which have happened spontaneously in the natural course of living and not as a result of special techniques such as hypnosis, or by means of drugs.

Please indicate your replies by circling 'yes' or 'no' as appropriate, using the '?' only if the question does not apply to you or you feel you cannot answer 'yes' or 'no'. Some questions may be vague, but whatever help you can give will be appreciated. Try to answer every question.

1. Have you ever been lulled into a groggy state or put to sleep by a lecture or concert even though you were not otherwise fatigued or tired? yes ? no
2. Have you ever carried on real conversations with another person while you were asleep? yes ? no
3. Have you ever had the experience of doing some task in the middle of the night with no memory the next morning of having done so? . . . yes ? no
4. Do you know if you, at any time, have walked in your sleep? yes ? no
5. Have you ever had the impression that the walls or the ceiling were moving or changing size or state, even though you knew that this was impossible? yes ? no
6. As you participate in different situations do you feel that you somehow change from the one situation to the other, and that you are not the same person in the different situations? yes ? no

7. Have you ever felt your 'mind' or 'consciousness' going apart from your body? Or flowing out of your body? Or flowing into different parts of your body? yes ? no
8. Have you ever been completely immersed in nature or in art and had a feeling of awe, inspiration, and grandeur sweep over you so that you felt as if your whole state of consciousness was somehow temporarily altered? yes ? no
9. Would you enjoy a contest in a carnival in which you had to break a pile of dishes? yes ? no
10. Can you see humor in awkward situations in which you find yourself? yes ? no
11. Would you rather stick to your own ideas and not be pushed around by others? yes ? no
12. Have there been persons in your life outside your family whom you feel have influenced you a great deal or who have had a certain 'grip' on you? yes ? no
13. Have you ever wandered off into your own thoughts while doing a routine task so that you actually forgot you were doing the task, and then found, a few minute later, that you had completed it without even being aware that you were doing it? yes ? no
14. Do you think there are events and things which cannot ultimately be explained logically? yes ? no
15. Do you recall ever having had an imaginary playmate? yes ? no
16. Do you find it difficult to forget failures, mistakes, humiliation, etc., so that they tend to disturb you when you are faced with new tasks? yes ? no
17. Do you like to take risks and experience things that are different from the usual? yes ? no
18. Would it be fun to throw darts at a picture of someone you dislike? yes ? no
19. Do you think you are regarded by others as a person with a strong sense of humor? yes ? no
20. Do you think a child ought to be taught so as to foster his own individuality and independence even though his standards differ from the group in which he finds himself? yes ? no
21. Have you usually found it easy to yield to orders and discipline asked by others? yes ? no
22. Have you ever focused at something so hard that your went into a kind of benumbed state of consciousness? or a state of extraordinary calm and serenity? yes ? no

23. Do you think that unidentified flying objects from outer space have been sighted? yes ? no
24. Have you ever participated in a crowd action and found yourself doing and feeling things that you would not normally do or feel? . yes ? no
25. Have you ever had the feeling that a part of your body was not really a part of you? yes ? no
26. Have you ever had the experience of being caught up by music or dancing so that you became enraptured by it and had it live and express itself through you so that you as yourself seemed to cease to be during it? yes ? no
27. Do you think it is all right to hit someone who makes you angry? . yes ? no
28. Do you always want to have knowledge and information about what you are doing or taking part in, so that you are not lured into something over which you have no control? yes ? no
29. Do you think it is the duty of the citizens of a country to accept the hardships and restrictions imposed by the state for the sake of common goals? yes ? no
30. Have you ever actively stared at something and had it slowly become very strange before your eyes? yes ? no
31. Do you think that many people in our culture have visions at some time or other? yes ? no
32. Do you feel that regardless of what happens around you, you stay and feel pretty much the same? yes ? no
33. Have you ever experienced a part of your body move and have the feeling that it was moving without your volition? yes ? no
34. Have you been without any strange and wierd experiences? yes ? no
35. Would you like to get beyond the world of logic and reason and experience something new and different? yes ? no
36. Would you like to find a great purpose, goal or leader in your life, to which you could feel dedicated? yes ? no
37. Do you prefer to keep a certain 'distance' from most other people? yes ? no
38. Do you think that miracles are impossible? yes ? no

39. Have you ever had the experience of reading a novel (or watching a play) and while doing so, actually forgetting yourself, your surroundings, and even the fact that you are reading (or watching) and begin to actually live the story with such great reality and vividness that it becomes temporarily almost reality for you? Or actually seemed to become reality for you? yes ? no
40. When there are sounds that you do not want to listen to, can you block them from your mind so that they are no longer important to you? yes ? no
41. Have you experienced moments of inspiration and creativity, when artistic expression, ideas, or the solutions to problems you have struggled with came to you with a special intensity and clarity? . yes ? no
42. Do you think one should be on guard against obscuring rational thought by beliefs in mystical experiences? yes ? no
43. Have you ever found a sort of fulfillment of yourself in creating something, as in crafts, science, writing, art or music? yes ? no
44. Do you think that in our culture there is too much emphasis on foresight and self-control, and too little emphasis on spontaneity, creativity, and impulsivity? yes ? no
45. Are your feelings toward one or both of your parents usually negative? yes ? no
46. Have you ever had the experience of telling a story with elaborations to make it sound better and then having the elaborations seem as real to you as the actual incidents? yes ? no
47. Are you able to change easily from one task to another, excluding ideas, associations, and actions of the former task, for the sake of the one you are presently concentrating on? yes ? no
48. Do you enjoy roller-coasters, ferris wheels and similar 'thrills' at amusement parks? yes ? no
49. Would you like to indulge in emotions and sensations with the feeling of just 'letting go'? yes ? no
50. Being honest, would you say that most things people laugh at are no really very funny? yes ? no
51. Would you say that, by and large, you are a pessimist rather than an optimist? yes ? no

52. Have you ever felt an enormous sense of inner authority and illumination, full of revelation and significance? With your own will in abeyance, perhaps grasped and held by a superior power? With a higher control, a Presence, or a surrender of self? yes ? no
53. Do you find it immature and childish when adult persons display emotion and behave impulsively? yes ? no
54. Have you ever been so strongly in love with somebody that you somehow felt that your own self was fading and you felt at one with the beloved person? yes ? no
55. Do you enjoy 'wild' parties? yes ? no
56. In writing an essay question on an examination, have you ever found it more helpful to start by beating around the bush rather than to begin writing according to an orderly plan? yes ? no
57. Do you feel that, by and large, other people are to be trusted? . . yes ? no
58. Have you ever had the experience of recollecting a past experience in your life with such clarity and vitality that it was almost like living it again? Or so that it actually seemed identical with living it again? yes ? no
59. Have you ever thought or heard something (e.g., the telephone ring, someone speak to you) and then found it was just your imagination? yes ? no
60. Have you ever acted in a play? If so, did you ever find that you really felt the emotions of the character, and 'became' him (her) for the time being, forgetting both yourself and the audience? . . yes ? no

Thank you for your cooperation.

Instructions:

On each of the following pages you will be given an emotion, grief for example. First, think for a moment and try and recall what it is like for you to experience grief.

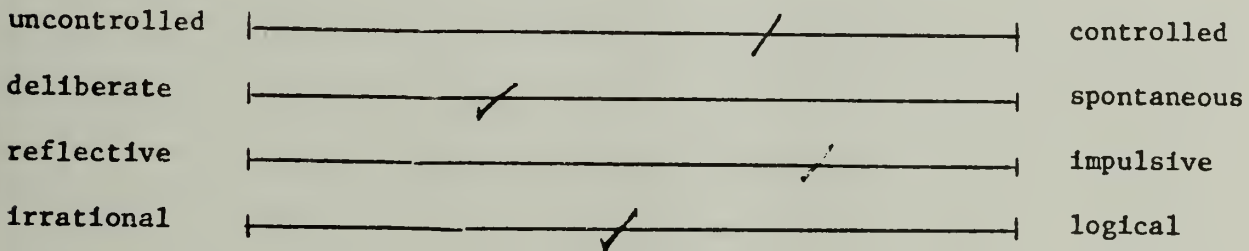
Then, using the first group of scales provided, rate how you feel when you experience grief. This may be very different from how you act. For example, you might act very spontaneous but in your thoughts and feelings you could feel a great deliberateness. We are interested in your thoughts and feelings.

Using the second group of scales, rate the effect the emotion has upon you. Again using the example of grief, the effect upon you might be very strong... causing you to feel very weak. We are interested in the effect of the emotion upon you. In this case the effect would have been strong.

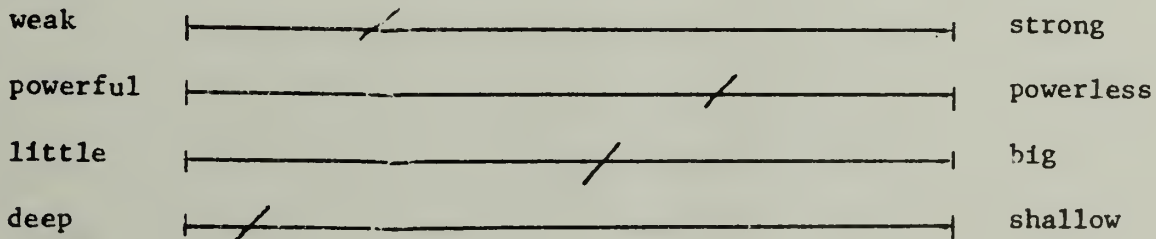
For each of the scales, place a dash along the line in the place which best describes your feelings.

Example.

Please rate on the scales below how you feel when you experience grief. Rate your thoughts and feelings, these may be different from your overt behavior.



Using the scales below, rate how grief affects you. In its action upon you, grief is:



Please rate on the scales below how you feel when you are angry. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	-----	controlled
deliberate	-----	spontaneous
reflective	-----	impulsive
irrational	-----	logical

Using the scales below, rate how anger affects you. In its action upon you, anger is:

weak	-----	strong
powerful	-----	powerless
little	-----	big
deep	-----	shallow

* * * * *

Please rate on the scales below how you feel when you are sad. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	-----	controlled
deliberate	-----	spontaneous
reflective	-----	impulsive
irrational	-----	logical

Using the scales below, rate how sadness affects you. In it action upon you, sadness is:

weak	-----	strong
powerful	-----	powerless
little	-----	big
deep	-----	shallow

Please rate on the scales below how you feel when you are joyful. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	_____	controlled
deliberate	_____	spontaneous
reflective	_____	impulsive
irrational	_____	logical

Using the scales below, rate how joyfulness affects you. In its action upon you, joyfulness is:

weak	_____	strong
powerful	_____	powerless
little	_____	big
deep	_____	shallow

Please rate on the scales below how you feel when you are feeling guilt. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	_____	controlled
deliberate	_____	spontaneous
reflective	_____	impulsive
irrational	_____	logical

Using the scales below, rate how guilt affects you. In its action upon you, guilt is:

weak	_____	strong
powerful	_____	powerless
little	_____	big
deep	_____	shallow

Please rate on the scales below how you feel when you are lonely. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	-----	controlled
deliberate	-----	spontaneous
reflective	-----	impulsive
irrational	-----	logical

Using the scales below, rate how loneliness affects you. In its action upon you, loneliness is:

weak	-----	strong
powerful	-----	powerless
little	-----	big
deep	-----	shallow

Please rate on the scales below how you feel when you are anxious. Rate your thoughts and feelings, these may be different from your overt behavior.

uncontrolled	-----	controlled
deliberate	-----	spontaneous
reflective	-----	impulsive
irrational	-----	logical

Using the scales below, rate how anxiety affects you. In its action upon you, anxiety is:

weak	-----	strong
powerful	-----	powerless
little	-----	big
deep	-----	shallow

Eysenck Personality Inventory

- | | | |
|-----------------------------------------------------------------------------------------------------------------------|-----|----|
| 1. Do you often long for excitement? | Yes | No |
| 2. Do you often need understanding friends to cheer you up? | Yes | No |
| 3. Are you usually carefree? | Yes | No |
| 4. Do you find it very hard to take no for an answer? | Yes | No |
| 5. Do you stop and think things over before doing anything? | Yes | No |
| 6. If you say you will do something do you always keep your promise, no matter how inconvenient it might be to do so? | Yes | No |
| 7. Does your mood often go up and down? | Yes | No |
| 8. Do you generally do and say things quickly without stopping to think? | Yes | No |
| 9. Do you ever feel "just miserable" for no good reason? | Yes | No |
| 10. Would you do almost anything for a dare? | Yes | No |
| 11. Do you suddenly feel shy when you want to talk to an attractive stranger? | Yes | No |
| 12. Once in a while do you lose your temper and get angry? | Yes | No |
| 13. Do you often do things on the spur of the moment? | Yes | No |
| 14. Do you often worry about things you should not have done or said? | Yes | No |
| 15. Generally do you prefer reading to meeting people? | Yes | No |
| 16. Are your feelings rather easily hurt? | Yes | No |
| 17. Do you like going out a lot? | Yes | No |
| 18. Do you occasionally have thoughts and ideas that you would not like other people to know about? | Yes | No |
| 19. Are you sometimes bubbling over with energy and sometimes very sluggish? | Yes | No |
| 20. Do you prefer to have few but special friends? | Yes | No |
| 21. Do you daydream a lot? | Yes | No |

- | | | |
|------------------------------------------------------------------------------------------------------------------------|-----|----|
| 22. When people shout at you, do you shout back? | Yes | No |
| 23. Are you often troubled about feelings of guilt? | Yes | No |
| 24. Are all your habits good and desirable ones? | Yes | No |
| 25. Can you usually let yourself go and enjoy yourself a lot at a gay party? | Yes | No |
| 26. Would you call yourself tense or "highly-strung"? | Yes | No |
| 27. Do other people think of you as being very lively? | Yes | No |
| 28. After you have done something important, do you often come away feeling you could have done better? | Yes | No |
| 29. Are you mostly quiet when you are with other people? | Yes | No |
| 30. Do you sometimes gossip? | Yes | No |
| 31. Do ideas run through your head so that you cannot sleep? | Yes | No |
| 32. If there is something you want to know about, would you rather look it up in a book than talk to someone about it? | Yes | No |
| 33. Do you get palpitations or thumping in your heart? | Yes | No |
| 34. Do you like the kind of work that you need to pay close attention to? | Yes | No |
| 35. Do you get attacks of shaking or trembling? | Yes | No |
| 36. Would you always declare everything at the customs, even if you knew that you could never be found out? | Yes | No |
| 37. Do you hate being with a crowd who play jokes on one another? | Yes | No |
| 38. Are you an irritable person? | Yes | No |
| 39. Do you like doing things in which you have to act quickly? | Yes | No |
| 40. Do you worry about awful things that might happen? | Yes | No |
| 41. Are you slow and unhurried in the way you move? | Yes | No |
| 42. Have you ever been late for an appointment or work? | Yes | No |
| 43. Do you have many nightmares? | Yes | No |
| 44. Do you like talking to people so much that you would never miss a chance of talking to a stranger? | Yes | No |

- | | | |
|-------------------------------------------------------------------------------------|-----|----|
| 45. Are you troubled by aches and pains? | Yes | No |
| 46. Would you be very unhappy if you could not see lots of people most of the time? | Yes | No |
| 47. Would you call yourself a nervous person? | Yes | No |
| 48. Of all the people you know are there some whom you definitely do not like? | Yes | No |
| 49. Would you say you were fairly self-confident? | Yes | No |
| 50. Are you easily hurt when people find fault with you or your work? | Yes | No |
| 51. Do you find it hard to really enjoy yourself at a lively party? | Yes | No |
| 52. Are you troubled with feelings of inferiority? | Yes | No |
| 53. Can you easily get some life into a rather dull party? | Yes | No |
| 54. Do you sometimes talk about things you know nothing about? | Yes | No |
| 55. Do you worry about your health? | Yes | No |
| 56. Do you like playing pranks on others? | Yes | No |
| 57. Do you suffer from sleeplessness? | Yes | No |

Bem Sex Role Inventory

On the page below are a large number of personality characteristics. We would like you to use these characteristics to describe yourself. That is, indicate, on a scale from 1 to 7, how true of you these various characteristics are. Please do not leave any characteristics blank. Using the scale below, place the appropriate number in the box beside each characteristic.

1	2	3	4	5	6	7
never or almost never true	usually not true	sometimes but infrequently true	occasionally true	often true	usually true	always or almost always true

self reliant		reliable		warm	
yielding		analytical		solemn	
helpful		sympathetic		willing to take a stand	
defends own beliefs		jealous		tender	
cheerful		has leadership abilities		friendly	
moody		sensitive to the needs of others		aggressive	
independent		truthful		gullible	
shy		willing to take risks		inefficient	
conscientious		understanding		acts as a leader	
athletic		secretive		childlike	
affectionate		makes decisions easily		adaptable	
theatrical		compassionate		individualistic	
assertive		sincere		does not use harsh language	
flatterable		self-sufficient		unsystematic	
happy		eager to soothe hurt feelings		competitive	
strong personality		conceited		loves children	
loyal		dominant		tactful	
unpredictable		soft-spoken		ambitious	
forceful		liable		gentle	
feminine		masculine		conventional	

California Psychological Inventory

Femininity Scale

This questionnaire contains a series of statements. Read each one, decide how you feel about it, and then mark your answer. If you agree with a statement, or feel that it is true about you, answer TRUE. If you disagree with a statement, or feel that it is not true about you, answer FALSE. Please do not omit any questions. Circle the desired response.

- | | | |
|----------------------------------------------------------------------------------------------|------|-------|
| 1. I am very slow in making up my mind. | True | False |
| 2. I think I would like the work of a building contractor. | True | False |
| 3. I think I would like the work of a dress designer. | True | False |
| 4. I become quite irritated when I see someone spit on the sidewalk. | True | False |
| 5. It is hard for me to start a conversation with a stranger. . . . | True | False |
| 6. I must admit that I enjoy playing practical jokes on people. . . | True | False |
| 7. I get very tense and anxious when I think other people are
disapproving of me. | True | False |
| 8. A windstorm terrifies me. | True | False |
| 9. I think I would like the job of a clerk in a large department
store. | True | False |
| 10. I get excited very easily. | True | False |
| 11. I like to boast about my achievements every now and then. . . . | True | False |
| 12. I think I would like the work of garage mechanic. | True | False |
| 13. I like adventure stories better than romantic stories. | True | False |
| 14. I prefer a shower to a bathtub. | True | False |
| 15. The average person is not able to appreciate art and music very
well. | True | False |
| 16. The thought of being in an automobile accident is very
frightening to me. | True | False |
| 17. At times I feel like picking a fist-fight with someone. | True | False |
| 18. Sometimes I have the same dream over and over. | True | False |

19. I think I am stricter about right and wrong than most people. . . . True False
20. I think I would like to drive a race car. . . . True False
21. I like to be with a crowd who play jokes on one another. . . . True False
22. I am somewhat afraid of the dark. . . . True False
23. I think I could do better than most of the politicians if I were
in office. . . . True False
24. I always try to make the best school grades that I can. . . . True False
25. I am inclined to take things hard. . . . True False
26. I would like to be a soldier. . . . True False
27. I like to go to parties and toher affairs where there is lots of
loud fun. . . . True False
28. I very much like hunting. . . . True False
29. I think I would like the work of a librarian. . . . True False
30. Sometimes I feel that I am about to go to pieces. . . . True False
31. I would like to be a nurse. . . . True False
32. If I were a reporter I would like very much to report news of
the theater. . . . True False
33. I like mechanics magazines. . . . True False
34. I want to be an important person in the community. . . . True False
35. I must admit I feel sort of scared when I move to a new place. . . True False
36. I'm pretty sure I know how we can settle the international
problems we now face. . . . True False
37. If I get too much change in a store I always give it back. . . . True False

Go on to the next page and answer all the questions there.

This is a questionnaire to find out the way in which certain important events in our society affect different people. Each item consists of a pair of alternatives lettered a or b. Please select the one statement of each pair (and only one) which you more strongly believe to be the case as far as you're concerned. Be sure to select the one you actually believe to be more true rather than the one you think you should choose or the one you would like to be true. This is a measure of personal belief: obviously there are no right or wrong answers. Circle your desired response for each set of statements.

1. a. Children get into trouble because their parents punish them too much.
b. The trouble with most children nowadays is that their parents are too easy with them.
2. a. Many of the unhappy things in people's lives are partly due to bad luck.
b. People's misfortunes result from the mistakes they make.
3. a. One of the major reasons why we have wars is because people don't take enough interest in politics.
b. There will always be wars, no matter how hard people try to prevent them.
4. a. In the long run people get the respect they deserve in this world.
b. Unfortunately, an individual's worth often passes unrecognized no matter how hard he tries.
5. a. The idea that teachers are unfair to students is nonsense.
b. Most students don't realize the extent to which their grades are influenced by accidental happenings.
6. a. Without the right breaks one cannot be an effective leader.
b. Capable people who fail to become leaders have not taken advantage of their opportunities.
7. a. No matter how hard you try some people just don't like you.
b. People who can't get others to like them don't understand how to get along with others.
8. a. Heredity plays the major role in determining one's personality.
b. It is one's experiences in life which determine what they are like.
9. a. I have often found that what is going to happen will happen.
b. Trusting to fate has never turned out as well for me as making a decision to take a definite course of action.

10. a. In the case of the well prepared student there is rarely if ever such a thing as an unfair test.
- b. Many times exam questions tend to be so unrelated to course work that studying is really useless.
11. a. Becoming a success is a matter of hard work, luck has little or nothing to do with it.
- b. Getting a good job depends mainly on being in the right place at the right time.
12. a. The average citizen can have an influence in government decisions.
- b. This world is run by the few people in power, and there is not much the little guy can do about it.
13. a. When I make plans, I am almost certain that I can make them work.
- b. It is not always wise to plan too far ahead because many things turn out to be a matter of good or bad fortune anyhow.
14. a. There are certain people who are most no good.
- b. There is some good in everybody.
15. a. In my case getting what I want has little or nothing to do with luck.
- b. Many times we might just as well decide what to do by flipping a coin.
16. a. Who gets to be the boss often depends on who was lucky enough to be in the right place first.
- b. Getting people to do the right thing depends upon ability, luck has little or nothing to do with it.
17. a. As far as world affairs are concerned, most of us are the victims of forces we can neither understand, nor control.
- b. By taking an active part in political and social affairs the people can control world events.
18. a. Most people don't realize the extent to which their lives are controlled by accidental happenings.
- b. There really is no such thing as luck.
19. a. One should always be willing to admit mistakes.
- b. It is usually best to cover up one's mistakes.

20. a. It is hard to know whether or not a person really likes you.
b. How many friends you have depends upon how nice a person you are.
21. a. In the long run the bad things that happen to us are balanced by the good ones.
b. Most misfortunes are the result of lack of ability, ignorance, laziness or all three.
22. a. With enough effort we can wipe out political corruption.
b. It is difficult for people to have much control over the things politicians do in office.
23. a. Sometimes I can't understand how teachers arrive at the grades they give.
b. There is a direct connection between how hard I study and the grades I get.
24. a. A good leader expects people to decide for themselves what they should do.
b. A good leader makes it clear to everybody what their jobs are.
25. a. Many times I feel that I have little influence over the things that happen to me.
b. It is impossible for me to believe that chance or luck plays an important role in my life.
26. a. People are lonely because they don't try to be friendly.
b. There's not much use in trying too hard to please people, if they like you, they like you.
27. a. There is too much emphasis on athletics in high school.
b. Team sports are an excellent way to build character.
28. a. What happens to me is my own doing.
b. Sometimes I feel that I don't have enough control over the direction my life is taking.
29. a. Most of the time I can't understand why politicians behave the way they do.
b. In the long run the people are responsible for bad government on a national as well as on a local level.

Kelly's Repetory Grid Test

I. Listed below are the descriptions of 14 different people. Read each of these descriptions and then decide upon someone whom you know who fits each. Then write the name of that person in the space provided beside the description. After completing this, continue to part II.

1. _____ Your mother.
2. _____ Your father.
3. _____ Your brother nearest your age or a male childhood friend near your age.
4. _____ Your sister nearest your age or a female childhood friend near your age.
5. _____ A teacher you liked, or the teacher of a subject you liked.
6. _____ A teacher you disliked, or of a subject you disliked.
7. _____ Your closest girl/boy friend prior to the present one.
8. _____ Your spouse or present closest girl/boy friend.
9. _____ A person who for some unexplained reason appeared to dislike you.
10. _____ A person you have met within the last six months, who you would like to know better.
11. _____ A person who you would most like to help, who you feel sorry for.
12. _____ The most intelligent person whom you know personally.
13. _____ The most successful person whom you know personally.
14. _____ The most interesting person whom you know personally.

Turn the page and continue with Part II.

Kelly's Repetory Grid Test, Part II

In each row of the grid below there are three circles. For example, in row 1, there is a circle in columns 9, 10, and 11. Compare the people who were described by the descriptions 9, 10, and 11. Decide how two of these people are alike and, hence, different from the third. To the right of each row is a column labeled "similar" and another labeled "different". In the first column write, in one or two words, how the two people are similar. In the second column write how the third person is different.

If you have any questions, please ask.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	Similar	Different
								○	○	○					
					○						○	○			
		○										○	○		
			○					○			○				
				○		○	○								
○			○			○									
		○		○							○				
							○			○		○			
			○	○									○		
○	○						○								
	○	○				○									
○					○			○							

Coping Operations Preference Enquiry

DIRECTIONS: The following questionnaire is designed to see how you would guess certain kinds of people might feel in various situations. Several situations are described here by a person who has observed an incident. You are to guess which of the five alternatives best describes the way the person in the story feels. In the space beside each choice, rank your guesses: Place a 1 beside that alternative you feel is most likely, a 2 beside the one next most likely, down to 5 for the alternative least likely to apply in the situation. You can use each number only once. (If you are a female, assume that all of the people described are women instead of men.)

EXAMPLE:

Harassed Harry

- 3 a.
- 1 b. (most likely)
- 2 c.
- 5 d. (least likely)
- 4 e.

ACTIVE ALEX

"Yesterday something happened to Alex which seemed to make him feel disturbed. Alex usually does everything together with people, and when others do things, he tends to join them.

"Yesterday a group of friends came over and asked him to go out with them. Alex seemed not to want to go, but went anyway. He appeared to realize that he might enjoy himself more if he didn't always join people but spent more time by himself.

"He still appears to be concerned about this. How would you guess he really feels now?"

- a. He's not worried. He feels this isn't a very important problem.
- b. He may do too many things with others, but he doesn't feel this has much to do with how much he enjoys people.
- c. Although he may do too many things with others, he feels that this is because other people expect him to.
- d. He feels that he may do too many things with others, but with help from someone more experienced, he could change.
- e. He realizes that the fault for doing too many things with others lies completely with himself and with no one else.

COOL CLYDE

"Yesterday Clyde realized something about himself which appeared to disturb him. When he is with people, he usually acts rather cool and reserved. He is the kind of person who doesn't get very close to people or confide to them his feelings and worries.

"During a long conversation yesterday, Clyde seemed to want to confide in a friend the things he worries about and how he feels—but he didn't. It appears that he became aware for the first time of the fact that he might enjoy his relations with people more if he were not so cool and reserved; if he were warmer and more personally involved with his friends.

"Today Clyde still appears concerned about his realization of yesterday. How would you guess he really feels now?"

- a. He realizes that the fault for being cool toward others is completely his own and no one else's.
- b. He feels that this isn't a very important problem. He isn't worried.
- c. He feels that he may be cool toward others, but with help from someone more experienced, he could change.
- d. Although he may be cool toward others, he feels that this is because other people behave that way toward him.
- e. He may be cool toward others, but he doesn't feel this has much to do with how much he enjoys people.

DOMINANT DAN

"During a club meeting yesterday, Dan appeared to realize something about himself which seemed to disturb him. When he is with people, he is usually quite domineering. He takes charge of things and makes most of the decisions.

"After volunteering for the role of chairman, it occurred to him that he would have been happier just being a committee member. He seemed to realize for the first time that he would enjoy people more if he were not so domineering; not always making decisions for people.

"Today Dan still appears concerned about his new realization of yesterday. How would you guess he really feels now?"

- a. He realizes that the fault for being too domineering lies completely with himself and with no one else.
- b. He isn't worried. He feels this isn't a very important problem.
- c. He may be too domineering, but he doesn't feel this has much to do with how much he enjoys people.
- d. Although he may be too domineering, he feels that this is because other people expect this of him.
- e. He feels that he may be too domineering, but with help from someone more experienced, he could change.

PERSONAL PAUL

"Paul is a very outgoing type of person. He tends to become very close and personally involved with others. He confides to them his innermost feelings and worries.

"Yesterday, he spoke to a friend and told him a great deal about himself. After thinking over his talk, he seemed to feel that he would have felt more comfortable if he had not confided so much. Perhaps he would enjoy his relations with people more if he didn't become so close and personal; if he were more cool and reserved.

"This morning Paul still appears concerned. How would you guess he really feels now?"

- a. He may be too personal toward others, but he doesn't feel that this has much to do with how much he enjoys people.
- b. He realizes that the fault for being too personal with others lies with himself and with no one else.
- c. He feels that this isn't a very important problem. He isn't worried.
- d. He feels that he may be too personal with others but that with help from someone more experienced, he could change.
- e. Although he may be too personal toward others, he feels that this is mainly because other people behave that way toward him.

SUBMISSIVE SAM

"In a group meeting yesterday, Sam, who rarely takes charge of things even when it might be appropriate, appeared to be very disturbed. When a request was made for volunteers for the chairmanship, Sam suddenly seemed to realize that he might like the job. He appeared to feel that he might enjoy his relations with people more if he were not so reluctant to be more assertive.

"Today he appears to be still concerned. How would you guess he really feels now?"

- a. Although he may take too little responsibility, he feels that this is mainly because other people expect this of him.
- b. He feels that he may take less responsibility than he should, but with help from someone more experienced, he could change.
- c. He may take less responsibility than he should, but he doesn't feel this has much to do with how much he enjoys people.
- d. He feels this isn't a very important problem. He isn't worried.
- e. He realizes that the fault for taking too little responsibility lies completely with himself and with no one else.

WITHDRAWN WALTER

"Last night Walter was thinking over the fact that he usually does things by himself and hardly ever includes other people in his activities.

"Some time later a group of students from one of his classes came by and asked him to go out with them. Almost automatically, he refused. After they left, he seemed to realize that he would enjoy his relations with others more if he didn't always do things by himself; if he spent more time with people.

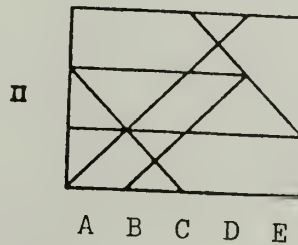
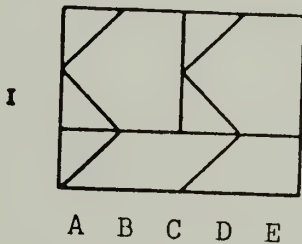
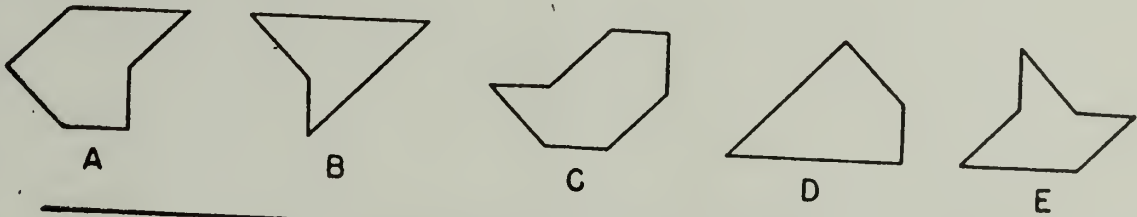
"This morning he still seems concerned. How would you guess he really feels now?"

- a. He feels that he may do too many things by himself, but that with help from someone more experienced he could change.
- b. Although he may do too many things by himself, he feels that this is mainly because other people are too busy to include him.
- c. He realizes that the fault for doing too many things by himself lies completely with him and no one else.
- d. He may do too many things by himself, but he doesn't feel that this has much to do with how much he enjoys people.
- e. He feels this isn't a very important problem. He isn't worried.

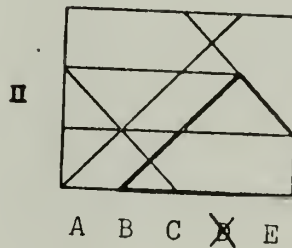
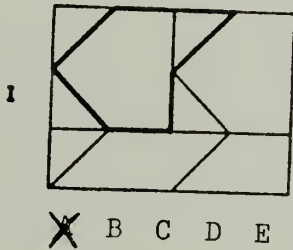
This is a test of your ability to tell which one of five simple figures can be found in a more complex pattern. At the top of each page in this test are five simple figures lettered A, B, C, D, and E. Beneath each row of figures is a page of patterns. Each pattern has a row of letters beneath it. Indicate your answer by putting an X through the letter of the figure which you find in the pattern.

NOTE: There is only one of these figures in each pattern, and this figure will always be right side up and exactly the same size as one of the five lettered figures.

Now try these 2 examples.



The figures below show how the figures are included in the problems. Figure A is in the first problem and figure D in the second.



Your score on this test will be the number marked correctly minus a fraction of the number marked incorrectly. Therefore, it will not be to your advantage to guess unless you are able to eliminate one or more of the answer choices as wrong.

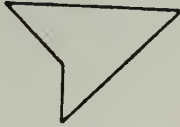
DO NOT TURN THIS PAGE UNTIL ASKED TO DO SO.

Part 1 (10 minutes)

140



A



B



C

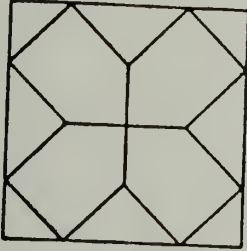


D



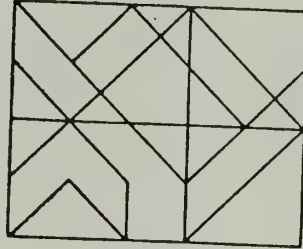
E

1.



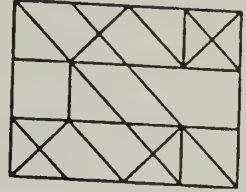
A B C D E

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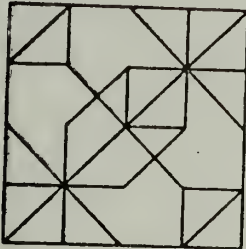
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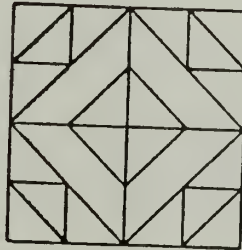
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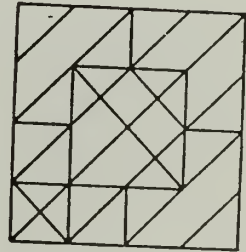
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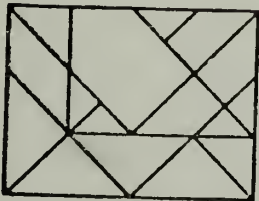
A B C D E

6.



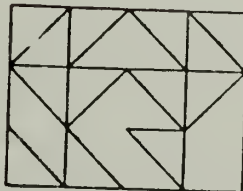
A B C D E

7.



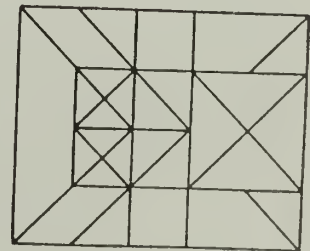
A B C D E

8.



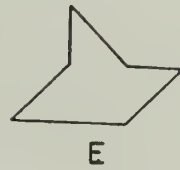
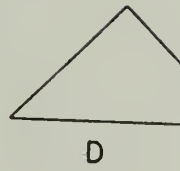
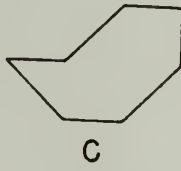
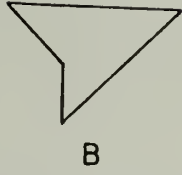
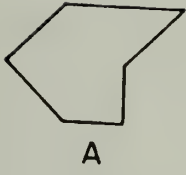
A B C D E

9.

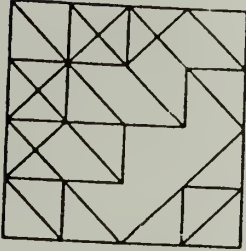


A B C D E

GO ON TO THE NEXT PAGE

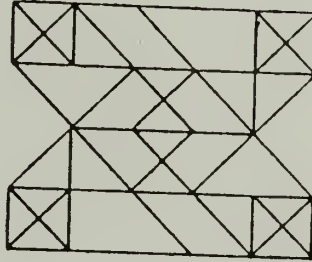


10.



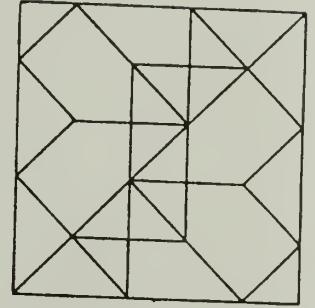
A B C D E

11.



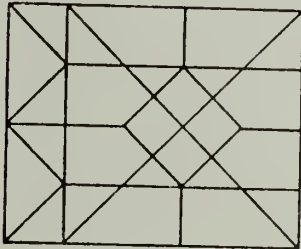
A B C D E

12.



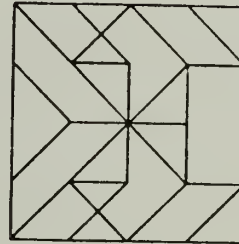
A B C D E

13.



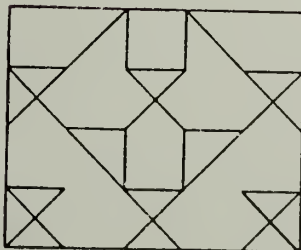
A B C D E

14.



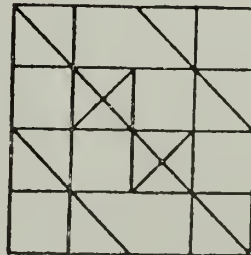
A B C D E

15.



A B C D E

16.



A B C D E

Handedness Questionnaire

141

Instructions: Note which hand, left or right, you habitually use, or prefer to use, for the acts listed below.

LEFT RIGHT

- () () 1. With which hand do you throw?
 - () () 2. With which hand do you write?
 - () () 3. With which hand do you draw?
 - () () 4. With which hand do you play games such as tennis, squash, badminton, etc.
 - () () 5. With which hand do you use a pair a scissors?
 - () () 6. With which hand do you use a comb?
 - () () 7. With which hand do you use a toothbrush?
 - () () 8. With which hand do you use a knife, for purposes other than eating (e.g., cutting string, sharpening a pencil, etc.).
 - () () 9. With which hand do you use a spoon for eating?
 - () () 10. With which hand do you use a hammer?
 - () () 11. With which hand do you use a screwdriver?
-

