PHOTOGRAPHIC EVALUATIONS OF ORTHODONTICALLY TREATED AND UNTREATED FACES AS RELATED TO JOB ATTAINMENT

by

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Abstract

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Nine male and nine female personnel interviewers of managerial type positions were shown 49 standard 2" x 2" projection slides. On each slide were four faces that had been dentally classified by molar relationship as the following: (1) a Class I untreated orthodontic case, (2) a Class I treated orthodontic case, (3) a Class II untreated orthodontic case, and (4) a Class II treated orthodontic case. Of the 49 slides, 24 of them contained male faces and 25 contained female faces. The slides were further subdivided as follows: (1) 9 male frontal views, (2) 9 male profile views, (3) 6 male frontal smile views, (4) 9 female frontal views, (5) 9 female profile views, and (6) 7 female frontal smile views. Each slide consisted of either all males or all females and portrayed the subjects posing in the same view. At the beginning of the study, all of the subjects were between the ages of 14 to 20. None of the subjects wore eyeglasses and they were all dressed appropriately for an interview.

The eighteen personnel managers agreed to participate in

the study without any prior knowledge as to either the nature of the study or the department conducting the study so as not to bias any of their selections. They viewed the slides and ranked the faces from 1 through 4 with 1 being the person they would most likely hire and 4 being the person they would least likely hire. The results were then tabulated and Friedman's two-way analysis of variance by ranks was employed to ascertain the statistical significance, if any.

The findings of this investigation suggest the following conclusions:

1. In the selection of the facial types, the sex of the individuals observed and not the sex of the observers is the important factor.

2. The preference of the personnel managers distinguished a difference between the two contrasting dentally classified types of male faces, but did not distinguish a difference among the young women's faces.

3. Overall, the personnel managers distinguished differences between individuals that tended to coincide with Class I treated, Class I untreated, Class II treated and Class II untreated as separate groups and in that order of preference as to who they would hire.

4. No one view (frontal, profile or frontal smile) emerged as a heavily weighted selection factor.

5. In the Class II faces, there was no clear preference for either the treated or untreated cases. The male observers preferred the Class II treated faces, whereas the female observers preferred the Class II untreated faces.

6. Class I faces were consistently preferred over Class II faces.

7. Personnel managers can tend to unintentionally select persons for positions based on facial appearance.

8. It is concluded that patients can realize an advantage in job attainment as the result of a good esthetic appearance, and orthodontic treatment may be helpful in this endeavor.

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DEDICATION

To my parents, whose guidance and many sacrifices made possible my education

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INTRODUCTION

Facial appearance not only plays a very important role in the socialization process and personal psychological development, but it may be a critical factor in situations which may have lifelong implication. It may be one of the major criteria by which others perceive and/or judge us either consciously or subconsciously.

In orthodontics, facial esthetics is one of the major considerations in the diagnosis and treatment plan involved in the correction of a dentofacial deformity. The question remains, however, as to how much of a factor facial esthetics should be given in planning treatment. On the one hand, pleasing facial esthetics could be viewed as an unplanned sequelae of proper orthodontic treatment aimed primarily at proper function. Or, facial esthetics could be a heavily weighted factor to be planned for and obtained in addition to obtaining a functional result. The degree of weight given to facial esthetics should, like proper function, be determined by the relative advantage, in terms of health (physical, psychological, and perhaps social) that this factor imparts to the patient.

It will be the purpose of the following study to determine whether facial appearance could be a criteria by which people are selected for employment for what might be termed "better jobs." Furthermore, it will be determined whether orthodontic treatment has an effect on this employment process so as to enhance the possibility of job attainment.

LITERATURE REVIEW

Traditionally, orthodontists have evaluated and prescribed treatment plans for their patients based on three orthodontic goals. The goals are: (1) ideal dental function; (2) ideal stability of tooth and jaw position; and (3) ideal esthetics (Proffit, 1973).

Studies of Esthetic Criteria

Research into "esthetics" or as in this investigation, facial esthetics, is a very difficult concept to measure (Graber and Lucker, 1980). It is a purely subjective, judgemental decision based on personal feelings that are very difficult to isolate and test.

Foster (1973) noted that the public shares a common esthetic standard. Iliffe (1960) found a significantly high positive correlation of facial esthetics among 4,355 Britons which also suggests a common basis for judging facial beauty. These findings were again supported by Peck and Peck (1970).

The types of faces that are preferred by various groups or populations have been thoroughly researched. Hambleton (1964) found the straight profile to be preferred. This was supported by Cox and van der Linden (1971) who related that in poor facial esthetics, the subjects in general had very convex facial profiles.

Cohen and Horowitz (1970) conducted a study using drawings of smiling males and females with varied specific orofacial features in each picture. The participants were asked to evaluate and rank the pictures from best to worst. The findings indicated that ideal occlusion, open-bite, mandibular protrusion, and midline deviation were judged superior to those exhibiting cleft lip, excessive dental crowding, bimaxillary protrusion, excessive dental spacing, and maxillary protrusion. Other studies have agreed that the oral region specifically, is extremely influential in the area of facial attractiveness (Kleck, 1974).

Reidel (1957) studied facial patterns of the Seattle "Seafare" princesses (girls selected by judges to represent their communities). He concluded that the general public was in close agreement to already established orthodontic standards. In light of these findings, it has been reported extensively that fuller profiles are generally preferred over accepted orthodontic profile norms (Peck and Peck, 1970; Cox and van der Linden, 1971; Lusterman, 1963).

Psychological Benefits of Esthetics

In interviewing for a position, research has shown that regardless of the interviewer's own sex and attractiveness, attractive candidates are preferred over unattractive candidates (Dipboye et al., 1977). The same author also reported that physically unattractive candidates are routinely discriminated against by interviewer biases (1975). Regardless of the sex of the

interviewer or rater, a definite preference is shown for physically attractive males or females (Byrne and Reeves, 1968; Dion et al., 1972; Cash et al., 1975).

Research has demonstrated that not only do interviewers tend to form early impressions based upon physical attractiveness, but that actually many candidates are rejected prior to (i.e., during the introductions), instead of during the actual job interview (Mayfield, 1964; Mayfield and Carlson, 1966; Dipboye et al., 1975). Adams (1971) supported the previous findings and added that according to his research, physically attractive people are treated differently, are subconsciously assigned different expectation levels and are treated significantly different in social situations.

In another study relating dental appearance to various occupations which had previously been ranked for prestige and visability of occupation, Samuels (1973) found dental appearance to be very important in these types of occupational positions.

Physical Attractiveness Research

In an attempt to examine a proposed relationship between physical facial appearance and psychological characteristics, various physical attractiveness investigations were reviewed. In the literature relating to physical attractiveness and teacher expectations, it has been consistently reported that teachers rate attractive children more favorably (Clifford and Walster, 1973;

Adams and Cohen, 1976a, 1976b). Landy and Sigall (1974), reported that individuals of varying degrees of attractiveness were viewed as differing in their level of task performance. They suggested the "beauty is talent" stereotype wherein:

> If you are ugly you are not discriminated against a great deal as long as your performance is impressive. However, should performance be below par, attractiveness matters. You may be able to get away with inferior work if you are beautiful.

In the legal mileau, Sigall and Astrove (1975) studied physical attractiveness and how it related to a sentence imposed by a jury which tried a case. The findings were clear; jury members viewed attractiveness in a negative manner if the defendent appeared to be taking advantage of a God-given gift of beauty. In the attractiveness-related crimes (e.g., extortion), physically attractive defendents were more harshly punished. The converse, however, can also be true. In attractiveness-unrelated crimes (burglary), the unattractive defendents were more harshly punished.

When physical attractiveness is examined in the heterosexual dating context, again it is suggested that beauty has a strong and lasting grip on our perception, expectation and appreciation for others. Cook and Campbell (1975), in their research on the physical attractiveness stereotype, found that beauty was associated with personal and social success, positive personality, teacher and parental expectations, socialization experiences, talent, sex appeal and social desirability.

Since physical attractiveness appears to play such an important role in our daily social interactions, it is quite certain that orthodontists are, in fact, doing more for an individual than merely straightening his or her teeth. The orthodontic procedure might even be considered a secondary gain, when one considers how much an individual's self-worth, self-esteem, and his entire life-long social relationships with others might be affected.

STATEMENT OF THESIS

The purpose of this study is twofold. The first objective is to determine if personnel interviewers hiring for managerial type positions exhibit a definite preference for hiring persons having a specific kind of face when confronted with a choice between two contrasting dentally classified facial types. The two facial types considered in the present study were: that facial type having a Class I dental molar relationship (usually associated with a straight profile), and that having a Class II dental molar relationship (usually associated with a convex profile).

The second objective is to determine whether orthodontic treatment has an effect on the employment process so as to enhance the possibility of job attainment for persons being interviewed.

MATERIALS AND METHODS

Sample

The subjects for this study were 18 Caucasian boys and 25 Caucasian girls aged 14 to 20 years. The photographs were selected from the files of Drs. David D. Hamilton and Charles W. Patton from New Castle, Pennsylvania. The photographs were of three views: frontal, lateral and frontal smiles (Appendix VI).

The criteria used in the selection process of the subjects were:

1. that each subject have both pre- and post-orthodontic photographs;
2. that each subject be between the ages of 14 and 20 at the time of the pre-orthodontic photograph. This was so that any change in the face would take place in conjunction with orthodontic treatment and not solely because of growth;
3. that each subject have either a Class I or Class II molar relationship;
4. that each subject be Caucasion (for reasons to be discussed);
5. that each subject not be wearing eye glasses in the photographs;
6. that each subject's hair style and manner of dress be reasonably appropriate for the purpose of a job interview;

7. that each subject's pre-treatment smile photograph show some obvious type of malocclusion;
8. that all photographs be in color and have a similar background;
9. and, that the non-smiling frontal and lateral pictures not show teeth.

The nature of the study and its significance were explained in detail to each subject and his/her parents. A signed consent form was obtained from each participant (see Appendix I).

Experimental Design

A table of random numbers was used to assign the two malocclusion types to various combinations in each of the four pictures used on each slide. The 49 slides were designed so that each type of malocclusion appeared in all four quadrants as seen on the slide with approximately the same frequency (Table I).

Slide Preparation

The sets of slides were divided into a group of male subjects and a group of female subjects. The slides were then subdivided into profile views, frontal views, and smile views. Teeth were only visible in the smile views. Four different subjects, representing a Class I untreated malocclusion, a Class I treated malocclusion, a Class II untreated malocclusion and a Class II treated malocclusion, appeared on each slide. Each subject appeared a total of six times: in a frontal view, as a pre- and post-orthodontically treated case, in a profile view, as a pre- and

TABLE I

TREATMENT PROTOCOL

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	IU	IT	IIU	IIT	26	IT	IIU	IU	IIT
2	IIT	IU	IT	IIU	27	IIT	IU	IT	IIU
3	IIU	IIT	IU	IT	28	IU	IT	IIU	IIT
4	IT	IIU	IIT	IU	29	IIT	IU	IT	IIU
5	IIT	IU	IIU	IT	30	IIU	IIT	IU	IT
6	IIU	IT	IIT	IU	31	IT	IIU	IIT	IU
7	IU	IIT	IIU	IT	32	IIT	IU	IIU	IT
8	IT	IIU	IU	IIT	33	IIU	IT	IIT	IU
9	IIT	IU	IT	IIU	34	IU	IIT	IIU	IT
10	IU	IT	IIU	IIT	35	IT	IIU	IU	IIT
11	IIT	IU	IT	IIU	36	IIT	IU	IT	IIU
12	IIU	IIT	IU	IT	37	IU	IT	IIU	IIT
13	IT	IIU	IIT	IU	38	IIT	IU	IT	IIU
14	IIT	IU	IIU	IT	39	IIU	IIT	IU	IT
15	IIU	IT	IIT	IU	40	IT	IIU	IIT	IU
16	IU	IIT	IIU	IT	41	IIT	IU	IIU	IT
17	IT	IIU	IU	IIT	42	IIU	IT	IIT	IU
18	IIT	IU	IT	IIU	43	IU	IT	IIU	IIT
19	IU	IT	IIU	IIT	44	IIT	IU	IT	IIU
20	IIT	IU	IT	IIU	45	IIU	IIT	IU	IT
21	IIU	IIT	IU	IT	46	IT	IIU	IIT	IU
22	IT	IIU	IIT	IU	47	IIT	IU	IIU	IT
23	IIT	IU	IIU	IT	48	IIU	IT	IIT	IU
24	IIU	IT	IIT	IU	49	IU	IIT	IIU	IT
25	IU	IIT	IIU	IT					

Key: I = Class I; II = Class II; U = Untreated; T = Treated.

post-orthodontically treated case, and in a smile view, as a pre- and post-orthodontically treated case. Forty-nine sets of photographs were made into standard 2" x 2" projection slides.

Data Collection

Personnel managers from various companies were contacted and asked if they would agree to participate in a study from Case Western Reserve University. They were not informed as to the purpose of the project, or department that was involved with the study. This was done so the personnel managers would not be biased (i.e., key to a specific part of the face) when viewing the slides. There were 18 personnel recruiters (nine males and nine females) who participated in this survey as judges. Each was instructed to rank order from 1-4 the photographs of the various potential job candidates with number 1 being the person whom they would most likely hire, and number 4 being the person they would least likely hire. So as not to influence selections, the rationale for the study was not revealed to the judges until after the survey was completed.

Instructions Given to the Judges

Just before the judges viewed the slides, they were read the following instructions:

> You are in charge of hiring someone for a training program that would eventually lead to a managerial position. Each slide that will be shown represents four potential candidates for the same position. For the purpose of this study, you are to assume that their education, experience and backgrounds are identical. For each slide, I would like you to rank who you would pick first through last.

Number 1 would be the person that you would most likly hire and number 4 would be the person you would least likely hire.

Data Reduction

After the eighteen observers had ordinally ranked the candidates, the results were tabulated as the sum of the four ratings. The Friedman two-way analysis of variance by ranks was used to determine if there was a significant difference among the groups of potential job applicants. The test statistic, χ^2_r, is computed as follows:

$$\chi^2_r = \frac{12}{nk(k+1)} \sum_{j=1}^{k} (R_j)^2 - 3n(k+1),$$

where,

N = the number of slides (cases) shown, k = number of choices on each slide, and R_j = sum of the rankings for each slide. The statistic has an approximate χ^2 distribution with k-1 degrees of freedom (Siegel, 1956).

It was felt the following variables could have influenced the selection process: Class I, Class II, treated, untreated, frontal view, profile view, frontal smiling view, male judge, female judge, male subject, and female subject. In order to detemine whether these factors could influence the selection process, the data was further subdivided and appropriately tested according to the following groups:

Male personnel managers ranking males--frontal view.

Male personnel managers ranking males--profile view.

Male personnel managers ranking males--frontal smiling view.

Male personnel managers ranking males--frontal, profile and frontal smiling views.

Male personnel managers ranking females--frontal view.

Male personnel managers ranking females--profile view.

Male personnel managers ranking females--frontal smile view

Male personnel managers ranking females--frontal, profile and frontal smiling views.

Female personnel managers ranking males--frontal view.

Female personnel managers ranking males--profile view.

Female personnel managers ranking males--frontal smiling view.

Female personnel managers ranking males--frontal, profile and frontal smiling views.

Female personnel managers ranking females--frontal view.

Female personnel managers ranking females--profile view.

Female personnel managers ranking females--frontal smiling view.

Female personnel managers ranking females--frontal, profile and frontal smiling views.

Male and female personnel managers ranking males--frontal, profile and frontal smiling views.

Male and female personnel managers ranking females--frontal, profile and frontal smiling views.

RESULTS

The results of the present study are summarized in Tables II through XXII.

Table II displays a compilation of results derived from all of the judges from their observations of the photographs of both the male and female subjects for every type of view. This Table points out the following aspects: the Class I treated face was most preferred, followed by the Class I untreated face, the Class II treated face, and the Class II untreated face.

Table III, which lists the combined judges rankings of just the male subjects, indicates once again that the order of preference in the rankings was: the Class I treated face, the Class I untreated face, the Class II treated face and the Class II untreated face.

In Table IV (the combined judges rankings of the female subjects) the same order of preference holds true for the Class I faces (Class I treated followed by Class I untreated) but no one face emerges as the clear choice in the Class II faces.

Tables V, VI, and VIII reiterate the clear order of choice among the judges. That is, the Class I treated face was ranked first, followed by the Class I untreated face, the Class II treated face and the Class II untreated face.

TABLE II

TOTAL RATINGS OF MALES AND FEMALES AS SCORED BY NINE MALE AND NINE FEMALE PERSONNEL MANAGERS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	49 (2)[a]	54 (3)	55 (4)	22 (1)
2	62 (4)	41 (2)	50 (3)	27 (1)
3	22 (1)	46 (2)	62 (4)	52 (3)
4	56 (4)	33 (1)	35 (2)	54 (3)
5	36 (2)	34 (1)	55 (3.5)	55 (3.5)
6	25 (1)	49 (3)	46 (2)	60 (4)
7	35 (2)	25 (1)	59 (3)	61 (4)
8	58 (4)	24 (1)	44 (2)	54 (3)
9	27 (1)	45 (2)	51 (3)	57 (4)
10	56 (4)	39 (2)	51 (3)	34 (1)
11	22 (1)	50 (2)	52 (3)	54 (4)
12	61 (4)	21 (1)	48 (2)	50 (3)
13	38 (2)	61 (4)	48 (3)	33 (1)
14	56 (3)	29 (1)	62 (4)	33 (2)
15	35 (1)	58 (4)	52 (3)	39 (2)
16	27 (1)	63 (4)	44 (2)	46 (3)
17	46 (3)	45 (2)	47 (4)	42 (1)
18	66 (4)	22 (1)	44 (2)	48 (3)
19	28 (1)	62 (4)	50 (3)	40 (2)
20	48 (4)	44 (2)	45 (3)	43 (1)
21	38 (2)	31 (1)	66 (4)	45 (3)
22	38 (2)	19 (1)	59 (3)	64 (4)
23	45 (2)	49 (3)	29 (1)	57 (4)
24	41 (2)	28 (1)	60 (4)	51 (3)
25	39 (2)	38 (1)	46 (3)	57 (4)
26	49 (2)	24 (1)	60 (4)	59 (3)
27	34 (1)	40 (2)	48 (3)	58 (4)

TABLE II continued

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
28	37 (2)	41 (3)	34 (1)	68 (4)
29	39 (1)	49 (4)	46 (2.5)	46 (2.5)
30	48 (2)	19 (1)	60 (4)	53 (3)
31	56 (4)	23 (1)	55 (3)	47 (2)
32	40 (2)	58 (4)	53 (3)	29 (1)
33	57 (4)	31 (1)	54 (3)	38 (2)
34	32 (2)	29 (1)	56 (3)	63 (4)
35	57 (3)	37 (1)	45 (2)	61 (4)
36	26 (1)	38 (2)	51 (3)	63 (4)
37	44 (2)	36 (1)	52 (4)	48 (3)
38	42 (3)	35 (1)	41 (2)	62 (4)
39	32 (1)	51 (3)	42 (2)	58 (4)
40	46 (3)	22 (1)	67 (4)	45 (2)
41	41 (2)	32 (1)	56 (4)	51 (3)
42	48 (3)	33 (1)	39 (2)	60 (4)
43	60 (4)	42 (3)	40 (2)	38 (1)
44	60 (4)	53 (3)	39 (2)	28 (1)
45	41 (2)	26 (1)	65 (4)	45 (3)
46	54 (4)	42 (2)	40 (1)	44 (3)
47	57 (4)	36 (1.5)	51 (3)	36 (1.5)
48	57 (4)	43 (2)	51 (3)	29 (1)
49	29 (1)	46 (3)	45 (2)	60 (4)
T+j	2120	1896	2450	2367
$\bar{X}$	43.27	38.69	50.00	48.31
Rank Total	120	94.5	140	135.5
Case Mean Rank	2.45	1.93	2.86	2.77

[a] Numbers in parentheses are within case ranks

$\chi^2_r = 15.495$, statistical significance ($p < .005$)

TABLE III

COMBINED RANKINGS OF MALES AND FEMALES AS SCORED BY NINE MALE PERSONNEL MANAGERS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	23 (2)[a]	26 (3)	30 (4)	11 (1)
2	29 (4)	19 (2)	27 (3)	15 (1)
3	11 (1)	23 (3)	36 (4)	22 (2)
4	33 (4)	18 (2)	17 (1)	23 (3)
5	16 (1.5)	16 (1.5)	31 (4)	27 (3)
6	11 (1)	23 (2)	27 (3)	29 (4)
7	17 (2)	12 (1)	29 (3)	32 (4)
8	28 (4)	13 (1)	22 (2)	27 (3)
9	13 (1)	22 (2)	28 (4)	27 (3)
10	28 (4)	18 (1.5)	26 (3)	18 (1.5)
11	10 (1)	27 (3.5)	27 (3.5)	26 (2)
12	29 (4)	9 (1)	25 (2)	27 (3)
13	18 (2)	31 (4)	24 (3)	17 (11)
14	28 (3)	17 (2)	30 (4)	15 (1)
15	14 (1)	29 (4)	28 (3)	19 (2)
16	15 (1)	29 (4)	25 (3)	21 (2)
17	21 (2)	17 (1)	26 (3.5)	26 (3.5)
18	30 (4)	12 (1)	22 (2)	26 (3)
19	13 (1)	29 (4)	23 (2)	25 (3)
20	27 (4)	18 (1)	25 (3)	20 (2)
21	19 (2)	16 (1)	34 (4)	21 (3)
22	19 (2)	9 (1)	27 (3)	35 (4)
23	26 (3)	21 (2)	13 (1)	30 (4)
24	21 (3)	16 (1)	33 (4)	20 (2)
25	19 (1.5)	20 (3)	19 (1.5)	32 (4)
26	18 (2)	13 (1)	31 (4)	28 (3)
27	19 (2)	18 (1)	26 (3)	27 (4)

TABLE III continued

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
28	18 (2)	20 (3)	17 (1)	35 (4)
29	17 (1)	20 (2)	31 (4)	22 (3)
30	23 (2)	9 (1)	32 (4)	26 (3)
31	28 (4)	13 (1)	27 (3)	22 (2)
32	20 (2)	27 (3)	28 (4)	15 (1)
33	28 (4)	19 (2)	27 (3)	16 (1)
34	17 (2)	13 (1)	30 (3.5)	30 (3.5)
35	15 (1)	19 (2)	24 (3)	32 (4)
36	15 (1)	22 (2)	25 (3)	28 (4)
37	22 (2)	18 (1)	26 (4)	24 (3)
38	22 (2.5)	16 (1)	22 (2.5)	30 (4)
39	13 (1)	30 (4)	18 (2)	29 (3)
40	23 (3)	10 (1)	36 (4)	21 (2)
41	18 (2)	17 (1)	29 (4)	26 (3)
42	25 (2.5)	13 (1)	25 (2.5)	27 (4)
43	34 (4)	23 (3)	14 (1)	19 (2)
44	28 (4)	24 (2.5)	24 (2.5)	14 (1)
45	18 (2)	16 (1)	34 (4)	22 (3)
46	24 (3)	19 (1)	25 (4)	22 (2)
47	28 (3)	15 (1)	30 (4)	17 (2)
48	27 (4)	25 (3)	23 (2)	15 (1)
49	13 (1)	20 (2)	26 (3)	31 (4)
$T + j$	1031	929	1284	1169
$\bar{X}j$	21.04	18.96	26.20	23.86
Rank Total	116	94	148.5	131.5
Case Mean Rank	2.37	1.92	3.03	2.68

[a] Numbers in parentheses are with case ranks

$\chi^2_r = 19.732$, statistical significance (p .005)

TABLE IV

COMBINED RATINGS OF MALES AND FEMALES AS SCORED BY NINE FEMALE PERSONNEL MANAGERS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	26 (3)[a]	28 (4)	25 (2)	11 (1)
2	33 (4)	22 (2)	23 (3)	12 (1)
3	11 (1)	23 (2)	26 (3)	30 (4)
4	24 (3)	15 (1)	18 (2)	31 (4)
5	20 (2)	18 (1)	24 (3)	28 (4)
6	14 (1)	26 (3)	19 (2)	31 (4)
7	18 (2)	13 (1)	30 (4)	29 (3)
8	30 (4)	11 (1)	22 (2)	27 (3)
9	14 (1)	23 (2.5)	23 (2.5)	30 (4)
10	28 (4)	21 (2)	25 (3)	16 (1)
11	12 (1)	23 (2)	25 (3)	28 (4)
12	32 (4)	12 (1)	23 (2.5)	23 (2.5)
13	20 (2)	30 (4)	24 (3)	16 (1)
14	28 (3)	12 (1)	32 (4)	18 (2)
15	21 (2)	29 (4)	24 (3)	20 (1)
16	12 (1)	34 (4)	19 (2)	25 (3)
17	25 (3)	28 (4)	21 (2)	16 (1)
18	36 (4)	10 (1)	22 (2.5)	22 (2.5)
19	15 (1.5)	33 (4)	27 (3)	15 (1.5)
20	21 (2)	26 (4)	20 (1)	23 (3)
21	19 (2)	15 (1)	32 (4)	24 (3)
22	19 (2)	10 (1)	32 (4)	29 (3)
23	19 (2)	28 (4)	16 (1)	27 (3)
24	20 (2)	12 (1)	27 (3)	31 (4)
25	20 (2)	18 (1)	27 (4)	25 (3)
26	31 (3.5)	11 (1)	29 (2)	31 (3.5)
27	15 (1)	22 (2.5)	22 (2.5)	31 (4)

Table IV continued

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
28	19 (2)	21 (3)	17 (1)	33 (4)
29	22 (2)	29 (4)	15 (1)	24 (3)
30	25 (2)	10 (1)	28 (4)	27 (3)
31	27 (3)	10 (1)	28 (4)	25 (2)
32	20 (2)	31 (4)	25 (3)	14 (1)
33	29 (4)	12 (1)	27 (3)	22 (2)
34	15 (1)	16 (2)	26 (3)	33 (4)
35	22 (3)	18 (1)	21 (2)	29 (4)
36	11 (1)	20 (2)	26 (3)	33 (4)
37	22 (2)	18 (1)	26 (4)	24 (3)
38	20 (3)	19 (1.5)	19 (1.5)	32 (4)
39	19 (1)	21 (2)	24 (3)	29 (4)
40	23 (2)	12 (1)	31 (4)	24 (3)
41	23 (2)	15 (1)	27 (4)	25 (3)
42	23 (3)	20 (2)	14 (1)	33 (4)
43	26 (3.5)	19 (1.5)	26 (3.5)	19 (1.5)
44	32 (4)	29 (3)	15 (2)	14 (1)
45	26 (3)	10 (1)	31 (4)	23 (2)
46	30 (4)	23 (3)	15 (1)	22 (3)
47	29 (4)	21 (2.5)	21 (2.5)	19 (1)
48	30 (4)	18 (2)	28 (3)	14 (1)
49	16 (1)	26 (3)	19 (2)	29 (4)
T + j	1092	971	1166	1196
$\bar{X}j$	22.29	19.82	23.80	24.41
Rank Total	119.5	103.5	132.5	134.5
Case Mean Rank	2.24	2.11	2.70	2.74

[a] Numbers in parentheses are within case ranks.

$\chi^2_r = 7.518$, not statistically significant

TABLE V

MALE PERSONNEL MANAGERS RANKING MALES--FRONTAL VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	23 (2)	26 (3)	30 (4)	11 (1)
2	29 (4)	19 (2)	27 (3)	15 (1)
3	11 (1)	23 (3)	36 (4)	22 (2)
4	33 (4)	18 (2)	17 (1)	23 (3)
5	16 (1.5)	16 (1.5)	31 (4)	27 (3)
6	11 (1)	23 (2)	27 (3)	29 (4)
7	17 (2)	12 (1)	29 (3)	32 (4)
8	28 (4)	13 (1)	22 (2)	27 (3)
9	13 (1)	22 (2)	28 (4)	27 (3)
Rank Total	20.5	17.5	28	24

χ_r^2 = 4.1, not statistically significant

TABLE VI

MALE PERSONNEL MANAGERS RANKING MALES--PROFILE VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
28	18 (2)	20 (3)	17 (1)	35 (4)
29	17 (1)	20 (2)	31 (4)	22 (3)
30	23 (2)	9 (1)	32 (4)	26 (3)
31	28 (4)	13 (1)	27 (3)	22 (2)
32	20 (2)	27 (3)	28 (4)	15 (1)
33	28 (4)	19 (2)	27 (3)	16 (1)
34	17 (2)	13 (1)	30 (3.5)	30 (3.5)
35	15 (1)	19 (2)	24 (3)	32 (4)
36	15 (1)	22 (2)	25 (3)	28 (4)
Rank Total	19	17	28.5	25.5

χ^2_r = 5.83, not statistically significant

TABLE VIII

MALE PERSONNEL MANAGERS RANKING MALES--

FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	23 (2)	26 (3)	30 (4)	11 (1)
2	29 (4)	19 (2)	27 (3)	15 (1)
3	11 (1)	23 (3)	36 (4)	22 (2)
4	32 (4)	18 (2)	17 (1)	23 (3)
5	16 (1.5)	16 (1.5)	31 (4)	27 (3)
6	11 (1)	23 (2)	27 (3)	29 (4)
7	17 (1)	12 (2)	29 (3)	32 (4)
8	28 (4)	13 (1)	22 (2)	27 (3)
9	13 (1)	22 (2)	28 (4)	27 (3)
28	18 (2)	20 (3)	17 (1)	35 (4)
29	17 (1)	20 (2)	31 (4)	22 (3)
30	3 (2)	9 (1)	32 (4)	26 (3)
31	29 (4)	13 (1)	27 (3)	22 (2)
32	20 (2)	27 (3)	28 (4)	15 (1)
33	28 (4)	19 (2)	27 (3)	16 (1)
34	17 (2)	13 (1)	30 (3.5)	30 (3.5)
35	15 (1)	19 (2)	24 (3)	32 (4)
36	15 (1)	18 (2)	25 (3)	30 (4)
37	22 (2)	18 (1)	26 (4)	24 (3)
38	22 (2.5)	16 (1)	22 (2.5)	30 (4)
39	13 (1)	30 (4)	18 (2)	29 (3)
40	23 (3)	10 (1)	36 (4)	21 (2)
41	18 (2)	17 (1)	29 (4)	26 (3)
42	25 (2.5)	13 (1)	25 (2.5)	27 (4)
Rank Total	52.5	43.5	75.5	68.5

χ^2_r = 17.025, statistically significant ($p < .001$ level)

Table VII has the Class I faces ranked in the same order as previously shown but has ranked the Class II faces as equal.

In the male judges ranking of the female subjects using a frontal view (Table IX), the Class II treated faces emerged as the first choice closely followed by the Class I faces, which were ranked equally. The Class II untreated faces ranked last.

Table X lists the Class I treated faces ranked first, followed by the Class I untreated faces, Class II untreated faces and Class II treated faces.

In Table XI (male judges ranking females--frontal smiles), again the Class I treated face is preferred, followed by the Class II treated face, the Class II untreated face, with the Class I untreated face being chosen last.

In the male judges ranking of all of the female views (Table XII), the order of preference is: Class I treated faces, Class II treated faces, Class I untreated faces and Class II untreated faces.

In Tables XIII, XIV, XV and XVI, again it is clear that the Class I faces were preferred over the Class II faces.

The data in Table XVII, which summarizes rankings by female judges for frontal view female subjects, the Class II treated faces were ranked first, followed by Class I treated faces, Class I untreated faces, and lastly, Class II untreated faces.

The first choice in Table XVIII, which summarizes female judges rankings of female subjects' profiles, is the Class I untreated face. This in turn is followed by the Class I treated face, the Class II untreated face and finally the Class II treated face.

TABLE VII

MALE PERSONNEL MANAGERS RANKING MALES--FRONTAL SMILING VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
37	22 (2)	18 (1)	26 (4)	24 (3)
38	22 (2.5)	16 (1)	22 (2.5)	30 (4)
39	13 (1)	30 (4)	18 (2)	29 (3)
40	23 (3)	10 (1)	36 (4)	21 (2)
41	18 (2)	17 (1)	29 (4)	26 (3)
42	25 (2.5)	13 (1)	25 (2.5)	27 (4)
Rank Total	13	9	19	19

χ^2_r = 7.2, not statistically significant

TABLE IX

MALE PERSONNEL MANAGERS RANKING FEMALES--FRONTAL VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
10	28 (4)	18 (1.5)	26 (3)	18 (1.5)
11	10 (1)	27 (3.5)	27 (3.5)	26 (2)
12	29 (4)	9 (1)	25 (2)	27 (3)
13	18 (2)	31 (4)	24 (3)	17 (1)
14	28 (3)	17 (2)	30 (4)	15 (1)
15	14 (1)	29 (4)	28 (3)	19 (2)
16	15 (1)	29 (4)	25 (3)	21 (2)
17	21 (2)	17 (1)	26 (3.5)	26 (3.5)
18	30 (4)	12 (1)	22 (2)	26 (3)
Rank Total	22	22	27	19

$\chi_r^2 = 2.2$, not statistically significant

TABLE X

MALE PERSONNEL MANAGERS RANKING FEMALES--PROFILE VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
19	13 (1)	29 (4)	23 (2)	25 (3)
20	27 (4)	18 (1)	25 (3)	20 (2)
21	19 (2)	16 (1)	34 (4)	21 (3)
22	19 (2)	9 (1)	27 (3)	35 (4)
23	26 (3)	21 (2)	13 (1)	30 (4)
24	21 (3)	16 (1)	33 (4)	20 (2)
25	19 (1.5)	20 (3)	19 (1.5)	32 (4)
26	18 (2)	13 (1)	31 (4)	28 (3)
27	19 (2)	18 (1)	26 (3)	27 (4)
Rank Total	20.5	15	25.5	29

χ_r^2 = 7.43, not statistically significant

TABLE XI

MALE PERSONNEL MANAGERS RANKING FEMALES--FRONTAL SMILES

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
43	34 (4)	23 (3)	14 (1)	19 (2)
44	28 (4)	24 (2.5)	24 (2.5)	14 (1)
45	18 (2)	16 (1)	34 (4)	22 (3)
46	24 (3)	19 (1)	25 (4)	22 (2)
47	28 (3)	15 (1)	30 (4)	17 (2)
48	27 (4)	25 (3)	23 (2)	15 (1)
49	13 (1)	20 (2)	26 (3)	31 (4)
Rank Total	21	13.5	20.5	15

$\chi_r^2 = 3.72$, not statistically significant

TABLE XII

MALE PERSONNEL MANAGERS RANKING FEMALES--
FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
10	26 (4)	18 (1.5)	26 (3)	18 (1.5)
11	10 (1)	27 (3.5)	27 (3.5)	26 (2)
12	29 (4)	9 (1)	25 (2)	27 (3)
13	18 (2)	31 (4)	24 (3)	17 (1)
14	28 (3)	17 (2)	30 (4)	15 (1)
15	14 (1)	29 (4)	28 (3)	19 (2)
16	15 (1)	29 (4)	25 (3)	21 (2)
17	21 (2)	17 (1)	26 (3.5)	26 (3.5)
18	30 (4)	12 (1)	22 (2)	26 (3)
19	13 (1)	29 (4)	23 (2)	25 (3)
20	27 (4)	18 (1)	25 (3)	20 (2)
21	19 (2)	16 (1)	34 (4)	21 (3)
22	19 (2)	9 (1)	27 (3)	35 (4)
23	26 (3)	21 (2)	13 (1)	30 (4)
24	21 (3)	16 (1)	33 (4)	20 (2)
25	19 (1.5)	20 (3)	19 (1.5)	32 (4)
26	18 (2)	13 (1)	31 (4)	28 (3)
27	19 (2)	18 (1)	26 (3)	27 (4)
43	34 (4)	23 (3)	14 (1)	19 (2)
44	28 (4)	24 (2.5)	24 (2.5)	14 (1)
45	15 (1)	16 (2)	34 (4)	22 (3)
46	24 (3)	19 (1)	25 (4)	22 (2)
47	28 (3)	15 (1)	30 (4)	17 (2)
48	27 (4)	25 (3)	23 (2)	15 (1)
49	13 (1)	20 (2)	26 (3)	31 (4)
Rank Total	63.5	50.5	73	63

χ_r^2 = 6.132, not statistically significant

TABLE XIII

FEMALE PERSONNEL MANAGERS RANKING MALES--FRONTAL VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	26 (3)	28 (4)	25 (2)	11 (1)
2	33 (4)	22 (2)	23 (3)	12 (1)
3	11 (1)	23 (2)	26 (3)	30 (4)
4	24 (3)	15 (1)	18 (2)	31 (4)
5	20 (2)	18 (1)	24 (3)	28 (4)
6	14 (1)	26 (3)	19 (2)	31 (4)
7	18 (2)	13 (1)	30 (4)	29 (3)
8	30 (4)	11 (1)	22 (2)	27 (3)
9	14 (1)	23 (2.5)	23 (2.5)	30 (4)
Rank Total	21	17.5	23.5	28

$\chi_r^2 = 3.9$, not statistically significant

TABLE XIV

FEMALE PERSONNEL MANAGERS RANKING MALES--PROFILE VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
28	19 (2)	21 (3)	17 (1)	33 (4)
29	22 (2)	29 (4)	15 (1)	24 (3)
30	25 (2)	10 (1)	28 (4)	27 (3)
31	27 (3)	10 (1)	28 (4)	25 (2)
32	20 (2)	31 (4)	25 (3)	14 (1)
33	29 (4)	12 (1)	27 (3)	22 (2)
34	15 (1)	16 (2)	26 (3)	33 (4)
35	22 (3)	18 (1)	21 (2)	29 (4)
36	11 (1)	20 (2)	26 (3)	33 (4)
Rank Total	20	19	24	27

χ^2_r = 2.73, not statistically significant

TABLE XV

FEMALE PERSONNEL MANAGERS RANKING MALES--FRONTAL SMILES

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
37	22 (2)	18 (1)	26 (4)	24 (3)
38	20 (3)	19 (1.5)	19 (1.5)	32 (4)
39	19 (1)	21 (2)	24 (3)	29 (4)
40	23 (2)	12 (1)	31 (4)	24 (3)
41	23 (2)	15 (1)	27 (4)	25 (3)
42	23 (3)	20 (2)	14 (1)	33 (4)
Rank Total	13	8.5	17.5	21

$\chi_r^2 = 8.85$, not statistically significant

TABLE XVI

FEMALE PERSONNEL MANAGERS RANKING MALES--

FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	26 (3)	28 (4)	25 (2)	11 (1)
2	33 (4)	22 (2)	23 (3)	12 (1)
3	11 (1)	23 (2)	26 (3)	30 (4)
4	24 (3)	15 (1)	18 (2)	31 (4)
5	20 (2)	18 (1)	24 (3)	28 (4)
6	14 (1)	26 (3)	19 (2)	31 (4)
7	18 (2)	13 (1)	30 (4)	29 (3)
8	30 (4)	11 (1)	22 (2)	27 (3)
9	14 (1)	23 (2.5)	23 (2.5)	30 (4)
28	19 (2)	21 (3)	17 (1)	33 (4)
29	22 (2)	29 (4)	15 (1)	24 (3)
30	25 (2)	10 (1)	28 (4)	27 (3)
31	27 (3)	10 (1)	28 (4)	25 (2)
32	20 (2)	31 (4)	25 (3)	14 (1)
33	29 (4)	12 (1)	27 (3)	22 (2)
34	15 (1)	16 (2)	26 (3)	33 (4)
35	22 (3)	18 (1)	21 (2)	29 (4)
36	11 (1)	20 (2)	26 (3)	33 (4)
37	22 (2)	18 (1)	26 (4)	24 (3)
38	20 (3)	19 (1.5)	19 (1.5)	32 (4)
39	19 (1)	21 (2)	24 (3)	29 (4)
40	23 (2)	12 (1)	31 (4)	24 (3)
41	23 (2)	15 (1)	27 (4)	25 (3)
42	23 (3)	20 (2)	14 (1)	33 (4)
Rank Total	54	45	65	76

χ_r^2 = 13.55, statistically significant ($p < .01$)

TABLE XVII

FEMALE PERSONNEL MANAGERS RANKING FEMALES--FRONTAL VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
10	28 (4)	21 (2)	25 (3)	16 (1)
11	12 (1)	23 (2)	25 (3)	28 (4)
12	32 (4)	12 (1)	23 (2.5)	23 (2.5)
13	20 (2)	30 (4)	24 (3)	16 (1)
14	28 (3)	12 (1)	32 (4)	18 (2)
15	21 (2)	29 (4)	24 (3)	20 (1)
16	12 (1)	34 (4)	19 (2)	25 (3)
17	25 (3)	28 (4)	21 (2)	16 (1)
18	36 (4)	10 (1)	22 (2.5)	22 (2.5)
Rank Total	24	23	25	18

$\chi_r^2 = 1.93$, not statistically significant

TABLE XVIII

FEMALE PERSONNEL MANAGERS RANKING FEMALES--PROFILE VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
19	15 (1.5)	33 (4)	27 (3)	15 (1.5)
20	21 (2)	26 (4)	20 (1)	23 (3)
21	19 (2)	15 (1)	32 (4)	24 (3)
22	19 (2)	10 (1)	32 (4)	29 (3)
23	19 (2)	28 (4)	16 (1)	27 (3)
24	20 (2)	12 (1)	27 (3)	31 (4)
25	20 (2)	18 (1)	27 (4)	25 (3)
26	31 (3.5)	11 (1)	29 (2)	31 (3.5)
27	15 (1)	22 (2.5)	22 (2.5)	31 (4)
Rank Total	18	19.5	24.5	28

χ_r^2 = 4.23, not statistically significant

Table XIX, which summarizes rankings of female judges for female subjects in smiling views, has the Class II treated faces ranked first, the Class I treated faces ranked second, the Class II untreated faces ranked third and the Class I untreated faces ranked fourth.

When the female judges rank-ordered the female subjects (Table XX), the treated faces (both Class I and Class II) were ranked evenly, followed by the Class I untreated faces and then the Class II untreated faces.

In Table XXI (all of the judges ranking the males in all views combined) the first choice again is the Class I treated face followed by the Class I untreated face, the Class II untreated face and the Class II treated face.

Finally, in Table XXII, again the clear choice of preference is the Class I treated face, with the Class II treated face and Class I untreated face almost equally preferred. The Class II untreated faces again were the least preferred.

TABLE XIX

FEMALE PERSONNEL MANAGERS RANKING FEMALES--FRONTAL SMILING VIEW

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
43	26 (3.5)	19 (1.5)	26 (3.5)	19 (1.5)
44	32 (4)	29 (3)	15 (2)	14 (1)
45	26 (3)	10 (1)	31 (4)	23 (2)
46	30 (4)	23 (3)	15 (1)	22 (2)
47	29 (4)	21 (2.5)	21 (2.5)	19 (1)
48	30 (4)	18 (2)	28 (3)	14 (1)
49	16 (1)	26 (3)	19 (2)	29 (4)
Rank Total	23.5	16	18	12.5

χ_r^2 = 5.442, not statistically significant

TABLE XX

FEMALE PERSONNEL MANAGERS RANKING FEMALES--

FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
10	28 (4)	21 (3)	25 (3)	16 (1)
11	12 (1)	23 (2)	25 (3)	28 (4)
12	32 (4)	12 (1)	23 (2.5)	23 (2.5)
13	20 (2)	30 (4)	24 (3)	16 (1)
14	28 (3)	12 (1)	32 (4)	18 (2)
15	21 (2)	29 (4)	24 (3)	20 (1)
16	12 (1)	34 (4)	19 (2)	25 (3)
17	25 (3)	28 (4)	21 (2)	16 (1)
18	36 (4)	10 (1)	22 (2.5)	22 (2.5)
19	15 (1.5)	33 (4)	27 (3)	15 (1.5)
20	21 (2)	26 (4)	20 (1)	23 (3)
21	19 (2)	15 (1)	32 (4)	24 (3)
22	19 (2)	10 (1)	32 (4)	29 (3)
23	19 (2)	28 (4)	16 (1)	27 (3)
24	20 (2)	12 (1)	27 (3)	31 (4)
25	20 (2)	18 (1)	27 (4)	25 (3)
26	31 (3.5)	11 (1)	29 (2)	31 (3.5)
27	15 (1)	22 (2.5)	22 (2.5)	31 (4)
43	26 (3.5)	19 (1.5)	26 (3.5	19 (1.5)
44	32 (4)	29 (3)	15 (2)	14 (1)
45	26 (3)	10 (1)	31 (4)	23 (2)
46	30 (4)	23 (3)	15 (1)	22 (2)
47	29 (4)	21 (2.5)	21 (2.5)	19 (1)
48	30 (4)	18 (2)	28 (3)	14 (1)
49	16 (1)	26 (3)	19 (2)	29 (4)
Rank Total	65.5	58.5	67.5	58.5

χ^2_r = 1.584, not statistically significant

TABLE XXI

MALE AND FEMALE PERSONNEL MANAGERS RANKING MALES--

FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
1	49 (2)	54 (3)	55 (4)	22 (1)
2	62 (4)	41 (2)	50 (3)	27 (1)
3	22 (1)	46 (2)	62 (4)	52 (3)
4	56 (4)	33 (1)	35 (2)	54 (3)
5	36 (2)	34 (1)	55 (3.5)	55 (3.5)
6	25 (1)	49 (3)	46 (2)	60 (4)
7	35 (2)	25 (1)	59 (3)	61 (4)
8	58 (4)	24 (1)	44 (2)	54 (3)
9	27 (1)	45 (2)	51 (3)	57 (4)
28	37 (2)	41 (3)	34 (1)	68 (4)
29	39 (1)	49 (4)	46 (2.5)	46 (2.5)
30	48 (2)	19 (1)	60 (4)	53 (3)
31	56 (4)	23 (1)	55 (3)	47 (2)
32	40 (2)	58 (4)	53 (3)	29 (1)
33	57 (4)	31 (1)	54 (3)	38 (2)
34	32 (2)	29 (1)	56 (3)	63 (4)
35	37 (3)	37 (1)	45 (2)	61 (4)
36	26 (1)	38 (2)	51 (3)	63 (4)
37	44 (2)	36 (1)	52 (4)	48 (3)
38	42 (3)	35 (1)	41 (2)	62 (4)
39	32 (1)	51 (3)	42 (2)	58 (4)
40	46 (3)	22 (1)	67 (4)	45 (2)
41	41 (2)	32 (1)	56 (4)	51 (3)
42	48 (3)	33 (1)	39 (2)	60 (40)
Rank Total	56	42	69	73

χ_r^2 = 14.75, statistically significant (p .01)

TABLE XXII

MALE AND FEMALE PERSONNEL MANAGERS RANKING FEMALES--

FRONTAL, PROFILE AND FRONTAL SMILING VIEWS

Case #	Ranking			
	Cl I U	Cl I T	Cl II U	Cl II T
10	56 (4)	39 (2)	51 (3)	34 (1)
11	22 (1)	50 (2)	52 (3)	54 (4)
12	61 (4)	21 (1)	48 (2)	50 (3)
13	38 (2)	61 (4)	48 (3)	33 (1)
14	56 (3)	29 (1)	62 (4)	33 (2)
15	35 (1)	58 (4)	52 (3)	39 (2)
16	27 (1)	63 (4)	44 (2)	46 (3)
17	46 (3)	45 (2)	47 (4)	42 (1)
18	66 (4)	22 (1)	44 (2)	48 (3)
19	28 (1)	62 (4)	50 (3)	40 (2)
20	48 (4)	44 (2)	45 (3)	43 (1)
21	38 (2)	31 (1)	66 (4)	45 (3)
22	38 (2)	19 (1)	59 (3)	64 (4)
23	34 (2)	49 (3)	29 (1)	57 (4)
24	41 (2)	28 (1)	60 (4)	51 (3)
25	39 (2)	38 (1)	46 (3)	57 (4)
26	49 (2)	24 (1)	60 (4)	59 (3)
27	34 (1)	40 (2)	48 (3)	58 (4)
43	60 (4)	42 (3)	40 (2)	38 (1)
44	60 (4)	53 (3)	39 (2)	28 (1)
45	41 (2)	26 (1)	65 (4)	45 (3)
46	54 (4)	42 (2)	40 (1)	44 (3)
47	57 (4)	36 (1.5)	51 (3)	36 (1.5)
48	57 (4)	43 (2)	51 (3)	29 (1)
49	29 (1)	46 (3)	45 (2)	60 (4)
Rank Total	64	52.5	71	62.5

χ_r^2 = 4.188, not statistically significant

DISCUSSION

It is apparent from the orthodontic literature that esthetics plays a role in the orthodontic diagnosis and treatment planning regardless of the esthetic criteria employed; likewise, the literature points to the conclusion that facial esthetics plays some role in life situations either to the benefit or the detriment of a person, personally as well as socially. The present study sought to investigate what relationship was present between certain faces and any possible advantages or disadvantages this might impart to a person who was seeking a "white collar" type job. Further it was important to ascertain whether orthodontic treatment might further enhance the possibilities of employment.

The results of this study indicate that the overall ranking of the various facial types is: Class I treated faces, Class I untreated faces, Class II treated faces, Class II untreated faces (see Table XXIII). It is quite evident that the Class I faces are preferred over the Class II faces. However, while it is easy to discern that the Class I treated face is clearly preferred over the Class I untreated face, it is not clear as to which type of Class II face is preferred. Thus, it became evident that the judges had little trouble selecting the most balanced face but had a great deal of difficulty in selecting the least balanced type of face. Throughout the investigation, whenever any of the views were

TABLE XXIII

STATISTICAL SIGNIFICANCE

Sex of Personnel Manager	Sex of Photo-graphs	Table/View*	χ^2_r	p Level	Statistically Significant	Rankings**			
						IU	IT	IIU	IIT
1M + F	M + F	II - F,P,FS	15.495	p <.005	Yes	2	1	3	4
2M	M + F	III - F,P,FS	19.732	p <.005	Yes	2	1	4	3
3F	M + F	IV - F,P,FS	7.518	--	No	2	1	3	4
4M	M	V - F	4.100	--	No	2	1	4	3
5M	M	VI - P	5.830	--	No	2	1	4	3
6M	M	VII - FS	7.200	--	No	2	1	3.5	3.5
7M	M	VIII - F,P,FS	17.025	p <.001	Yes	2	1	4	3
8M	F	IX - F	2.200	--	No	2.5	2.5	4	1
9M	F	X - P	7.430	--	No	2	1	3	4
10M	F	XI - FS	3.720	--	No	4	1	3	2
11M	F	XII - F,P,FS	6.132	--	No	3	1	4	2
12F	M	XIII - F	3.900	--	No	2	1	3	4
13F	M	XIV - P	2.730	--	No	2	1	3	4
14F	M	XV - FS	8.850	--	No	2	1	3	4
15F	M	XVI - F,P,FS	13.550	p <.01	Yes	2	1	3	4
16F	F	XVII - F	1.930	--	No	3	2	4	1

TABLE XXIII continued

Sex of Personnel Manager	Sex of Photo-graphs	Table/View*	χ^2_r	p Level	Statistically Significant	Rankings**			
						IU	IT	IIU	IIT
17F	F	XVII - P	4.230	--	No	1	2	3	4
18F	F	XIX - FS	5.442	--	No	4	2	3	1
19F	F	XX - F,P,FS	1.584	--	No	3	1.5	4	1.5
20M + F	M	XXI - F,P,FS	14.750	$p < .01$	Yes	2	1	3	4
21M + F	F	XXII - F,P,FS	4.188	--	No	3	1	4	2

* F = Frontal
P = Profile
FS = Frontal Smiling

** IU = Class I Untreated
IT = Class I Treated
IIU = Class II Untreated
IIT = Class II Treated

ranked alone (i.e., female profile views), there was no statistical significance.

Probably the most intriguing question of the experiment deals with why the personnel managers were able to discriminate so highly among the males but not among the females. Here again, the viewpoint is purely a subjective one. I feel that as a whole, the male faces showed more contrast than the female faces because of factors such as hair style, complexion, and the male's facial hair as related to maturation and growing. Also, there was more variance in the mature facial appearance of the males in the 14-20 year age range than in the females of this age range. Many of the males were approximately 14 years old when in their pre-orthodontic photograph. In the post-orthodontic photograph, many of the males still appeared to be maturing. The faces of the females, however, appeared more mature in their pre-orthodontic photographs. Another subjective factor was the general appearance of the males as compared to the females. I feel that, overall, the females were more esthetically pleasing than the males. This factor could in part be due to better grooming.

There were many problems involved in obtaining the sample due to the nature of the criteria for the sample. The frontal and profile view photographs were accessable but inclusion of the smiling views introduced yet another difficulty in assembling the photograph collection. Other problems with obtaining the photographs were whether or not the photographs were in black and white or color, whether they were slides or pictures and

whether they were the same size photographs or not. The appropriate dress, hair styles, eyeglasses, beards and mustaches had to all be taken into account. The study tried to rank order faces; any of the above factors might have influenced the observer thus adding another variable to the investigation.

Class I and Class II malocclusions were used simply because they are the most common. It would have been extremely difficult to obtain enough Class III photographs due to the small percentage of cases when compared to the number of Class I and Class II cases.

Ideally, the sample would have been improved by obtaining photographs of older subjects as more likely candidates for this type of job situation. However, this probably would have led to less distinction among the groups due to the limitations of orthodontic correction in the adult population (i.e., Class II faces are most difficult to alter toward a more Class I type because the active growth period has ceased).

Although many more adults are now receiving treatment than in past years, it still was a problem obtaining older patient records. The reason for desiring adult faces is quite simple. When treating an adult orthodontic case, growth is not a factor. By using adult faces, any molar and/or facial change could be attributed to orthodontics and not growth.

Caucasians were chosen because of the relative ease in obtaining the desired pictures of subjects from this group. Only

Caucasians were used so as to eliminate another variable in the study.

The type of facial preferences in this study, clearly indicate that the Class I faces are more desirable than the Class II faces. Class II type faces can supposedly be made to look more like a Class I type face through orthodontics. The study also clearly suggests that the treated orthodontic faces were judged superior to the untreated faces. Therefore, it would appear that orthodontic treatment might give some selective advantage to those seeking jobs with companies who are interviewing relatively equal candidates.

Whether orthodontists use facial appearance as an admitted criteria in treatment planning or not, facial appearance should be a valid and admitted consideration of the total health (physical, psychological, and social) of the patient based on the results of this study. It is also increasingly evident from this investigation and others (Graber, 1980), that the goal of an esthetic result should be given some status as a valid treatment goal by those determining the necessity of and authorizing treatments (insurance carriers).

The question still remains as to what constitutes esthetics. Not only is the definition yet to be more clearly defined, but the question of who should judge what constitutes good esthetics is also still unanswered. The orthodontists, the dentists, and the public all have their own ideas in this regard. It would help immensely if

all of these various ideas could be channeled into a common point of view.

Again another question still unanswered is the question of what standards of esthetics should be used. The various races (Caucasian, Negroe, etc.) all have their own idiosyncracies regarding facial esthetics. It would be helpful if an appropriate standard could be defined for unique groups thus helping the orthodontist to seek an acceptable treatment goal.

It must be understood that facial esthetics is not the sole criteria by which people are selected to employment. However, it is apparent that consciously or subconsciously, the judges of the present study displayed the ability to classify faces with preference for hiring given to those people which might be considered more esthetically pleasing. Since studies have shown that esthetics in no way is related to IQ and thus job performance, people in charge of hiring perhaps should be made aware that they are making value judgements which may be inappropriate. The implications of this study are extreme; in certain instances a very small group may hire for a very large company, and unknown biases, may be manifest and surface in the area of managerial leadership within the company perhaps to the advantage or detriment of the company.

SUMMARY AND CONCLUSIONS

It was the purpose of the present study to determine whether facial appearance could be a criteria by which people are selected for employment for what might be termed "better jobs." Furthermore, it was determined whether orthodontic treatment has an effect on this employment process so as to enhance the possibility of job attainment.

Nine male and nine female personnel managers of business executives were shown 49 standard 2" x 2" projection slides. On each slide were four faces that had been dentally classified by molar relationship as the following: (1) a Class I untreated orthodontic case, (2) a Class I treated orthodontic case, (3) a Class II untreated orthodontic case, and (4) a Class II treated orthodontic case. Of the 49 slides, 24 of them contained male faces and 25 contained female faces. Each slide consisted of either all males or all females and portrayed the subjects posing in the same view. At the beginning of the study, all of the subjects were between the ages of 14 to 20.

The personnel managers agreed to participate in the study without any prior knowledge as to either the nature of the study or purpose of the study. They viewed the slides and ranked the faces from 1 through 4 with 1 being the person they would most likely hire and 4 being the person they would least likely hire.

The rank orders were then subjected to Friedman's two-way analysis of variance. The findings of this investigation suggest the following conclusions:

1. In the selection of the facial types, the sex of the individuals observed and not the sex of the observers is the important factor.

2. The preference of the personnel managers showed a difference between the two contrasting dentally classified types of male faces, but did not distinguish such a difference among the young women's faces.

3. Overall, the personnel managers distinguished differences between the Class I untreated, Class I treated, Class II treated and Class II untreated as separate groups, and in that order of preference as to who they would hire.

4. No one view (frontal, profile or frontal smile) emerged as a heavily weighted selection factor.

5. In the Class II faces, there was no clear preference for either the treated or untreated cases. The male observers preferred the Class II treated faces, whereas the female observers preferred the Class II untreated faces.

6. Class I faces were consistently preferred over Class II faces.

7. Personnel managers can tend to unintentionally select persons for positions based on facial appearance.

8. It is concluded that patients can realize an advantage in job attainment as the result of a good esthetic appearance, and orthodontic treatment may be helpful in this endeavor.

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APPENDIX I

I, the undersigned, understand that my child has been asked to be a participant in a research project conducted through the School of Dentistry at Case Western Reserve University in Cleveland, Ohio. The photographic study and its benefits have been thoroughly explained to me by the Project Investigator, Dr. Donald D. Gustovich. I understand that names and personal information will be kept confidential. I therefore agree to have my child participate in this study.

Signature of Parent _____ Date_____
(or of participant if of legal age)
Name of Child _____

CHARLES W. PATTON, D. D. S.
DAVID C. HAMILTON, D. D. S.
Practice Limited to Orthodontics

April 8, 1980

APPENDIX I continued

TO WHOM IT MAY CONCERN:

Our office has been cooperating with Case Western Reserve Graduate School in Orthodontics in a research study regarding facial changes resulting from orthodontic treatment.

Your son or daughter has been selected as one of the patients whose photographs they would like to use in this research study. There is some outside possibility that the photographs would be published in the orthodontic research literature.

Dr. Donald Gustovich, a graduate student at the University, will be in touch with you shortly regarding the signing of a release form permitting him to use the photographs in this fashion. I would hope that in the interests of the advancement of orthodontics and what might be helpful to some other orthodontist in determining methods of treatment that you might cooperate with this program. If you have any additional questions, we would be pleased to attempt to answer them.

Sincerely,

David C. Hamilton

dev

401-403 north jefferson street / new castle, pennsylvania 16101 / area code 412, 658-4545

APPENDIX II

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #1

Case #	Picture			
	A	B	C	D
1	3	2	4	1
2	1	4	2	3
3	3	2	1	4
4	3	1	2	4
5	4	1	3	2
6	2	4	3	1
7	2	3	4	1
8	1	2	4	3
9	4	1	2	3
10	3	2	1	4
11	3	1	4	2
12	3	4	2	1
13	4	3	2	1
14	1	3	4	2
15	3	4	1	2
16	1	2	4	3
17	1	3	2	4
18	3	4	2	1
19	1	4	2	3
20	3	4	2	1
21	4	1	2	3
22	1	2	4	3
23	4	2	1	3
24	4	2	1	3
25	1	3	4	2

Case #	Picture			
	A	B	C	D
26	1	3	2	4
27	3	2	1	4
28	2	3	1	4
29	3	1	4	2
30	4	3	2	1
31	1	2	3	4
32	3	1	2	4
33	4	2	1	3
34	1	3	4	2
35	3	2	1	4
36	4	2	3	1
37	1	3	4	2
38	1	3	4	2
39	2	4	1	3
40	1	4	2	3
41	4	1	2	3
42	3	1	2	4
43	3	2	1	4
44	2	4	3	1
45	4	2	3	1
46	4	2	1	3
47	4	2	3	1
48	1	3	2	4
49	2	4	1	3

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE.#2

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	3	4	1	26	1	4	2	3
2	1	2	3	4	27	3	1	2	4
3	4	3	1	2	28	2	1	3	4
4	1	4	2	3	29	2	1	3	4
5	2	1	4	3	30	4	3	2	1
6	4	3	2	1	31	1	4	2	3
7	2	3	4	1	32	1	3	4	2
8	1	2	3	4	33	4	2	1	3
9	4	1	2	3	34	2	3	4	1
10	1	2	4	3	35	1	3	2	4
11	3	1	4	2	36	1	2	3	4
12	3	2	4	1	37	1	3	4	2
13	3	4	1	2	38	4	3	1	2
14	2	1	4	3	39	1	4	2	3
15	4	3	2	1	40	1	4	2	3
16	1	3	4	2	41	3	2	4	1
17	1	4	2	3	42	4	1	2	3
18	3	4	1	2	43	4	3	1	2
19	1	2	4	3	44	3	1	2	4
20	3	2	1	4	45	4	3	1	2
21	4	3	2	1	46	1	4	3	2
22	1	3	4	2	47	1	4	3	2
23	4	3	2	1	48	4	3	1	2
24	4	2	1	3	49	2	3	4	1
	1	4	2	3					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #3

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	3	4	2	1	26	3	4	1	2
2	2	3	1	4	27	1	4	2	3
3	4	3	2	1	28	2	4	1	3
4	4	2	1	3	29	2	3	1	4
5	4	2	3	1	30	2	3	4	1
6	3	4	2	1	31	1	4	2	3
7	1	4	3	2	32	2	1	3	4
8	1	2	3	4	33	1	2	3	4
9	3	1	2	4	34	2	3	4	1
10	3	4	1	2	35	4	2	1	3
11	2	1	3	4	36	3	1	4	2
12	2	3	4	1	37	4	1	2	3
13	4	3	2	1	38	4	3	1	2
14	1	3	4	2	39	1	4	2	3
15	1	3	4	2	40	1	4	3	2
16	2	3	1	4	41	3	1	4	2
17	4	2	1	3	42	1	2	4	3
18	3	4	1	2	43	4	2	3	1
19	3	4	2	1	44	1	4	3	2
20	2	4	1	3	45	2	3	1	4
21	4	3	2	1	46	1	2	3	4
22	1	3	4	2	47	1	4	3	2
23	2	4	1	3	48	2	4	1	3
24	3	1	4	2	49	2	3	1	4
25	1	3	2	4					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #4

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	3	4	1	26	1	3	4	2
2	1	3	2	4	27	4	2	1	3
3	4	3	1	2	28	1	3	2	4
4	1	2	3	4	29	4	2	3	1
5	3	2	4	1	30	4	2	3	1
6	2	3	4	1	31	1	3	2	4
7	2	4	3	1	32	1	2	3	4
8	1	2	3	4	33	4	3	1	2
9	4	3	1	2	34	2	3	4	1
10	4	3	2	1	35	1	3	2	4
11	3	1	2	4	36	1	2	3	4
12	3	4	2	1	37	2	1	3	4
13	4	1	3	2	38	4	2	1	3
14	2	4	3	1	39	2	3	1	4
15	3	2	4	1	40	1	4	3	2
16	1	3	2	4	41	3	2	1	4
17	2	4	3	1	42	2	1	3	4
18	4	2	1	3	43	4	3	1	2
19	1	4	2	3	44	1	4	2	3
20	1	2	3	4	45	4	3	2	1
21	4	3	2	1	46	4	3	1	2
22	1	3	4	2	47	2	3	4	1
23	4	3	1	2	48	4	3	1	2
24	4	2	3	1	49	1	4	3	2
25	2	4	3	1					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #5

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	4	3	2	1	26	1	3	2	4
2	1	4	2	3	27	3	1	2	4
3	2	4	1	3	28	2	3	1	4
4	1	2	3	4	29	2	3	1	4
5	2	4	3	1	30	4	3	2	1
6	3	2	4	1	31	1	3	2	4
7	2	4	3	1	32	1	4	2	3
8	1	3	2	4	33	3	2	1	4
9	2	1	3	4	34	1	4	3	2
10	1	2	4	3	35	4	3	2	1
11	3	1	4	2	36	4	2	1	3
12	3	2	4	1	37	4	2	3	1
13	4	1	2	3	38	3	2	1	4
14	2	3	4	1	39	1	3	2	4
15	3	4	1	2	40	2	4	1	3
16	1	2	3	4	41	2	4	3	1
17	2	4	1	3	42	3	2	4	1
18	3	4	1	2	43	4	3	1	2
19	1	3	2	4	44	3	4	1	2
20	2	3	4	1	45	4	2	3	1
21	4	2	3	1	46	4	3	2	1
22	1	3	4	2	47	4	1	3	2
23	4	3	2	1	48	1	3	4	2
24	4	3	1	2	49	1	4	2	3
25	3	1	4	2					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #6

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	1	2	4	3	26	1	4	2	3
2	2	4	1	3	27	4	1	3	2
3	2	4	1	3	28	1	3	2	4
4	1	2	3	4	29	3	2	1	4
5	3	2	4	1	30	4	3	2	1
6	3	2	4	1	31	3	1	4	2
7	3	4	2	1	32	1	2	3	4
8	4	2	3	1	33	2	1	3	4
9	2	1	3	4	34	1	4	2	3
10	4	2	3	1	35	1	3	2	4
11	3	1	4	2	36	4	1	2	3
12	3	2	4	1	37	3	4	1	2
13	4	2	1	3	38	4	3	1	2
14	2	3	4	1	39	1	4	2	3
15	3	2	4	1	40	1	4	2	3
16	2	3	1	4	41	3	2	4	1
17	1	3	4	2	42	2	1	4	3
18	1	4	2	3	43	4	3	2	1
19	1	4	3	2	44	1	3	4	2
20	1	4	2	3	45	4	2	1	3
21	4	1	2	3	46	1	2	3	4
22	1	4	3	2	47	1	3	4	2
23	3	4	1	2	48	3	1	2	4
24	3	1	4	2	49	1	3	4	2
25	1	4	2	3					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #7

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	3	4	2	1	26	1	4	2	3
2	1	3	2	4	27	4	3	2	1
3	4	3	1	2	28	2	3	1	4
4	1	2	3	4	29	2	1	3	4
5	4	1	2	3	30	3	4	2	1
6	4	2	3	1	31	1	2	3	4
7	2	3	4	1	32	1	3	4	2
8	1	2	3	4	33	3	1	4	2
9	4	3	2	1	34	4	2	3	1
10	4	2	3	1	35	1	2	3	4
11	3	1	2	4	36	4	2	3	1
12	2	4	3	1	37	2	1	4	3
13	3	2	1	4	38	4	3	2	1
14	1	3	4	2	39	4	2	1	3
15	4	3	2	1	40	1	4	3	2
16	3	1	2	4	41	3	1	4	2
17	4	1	3	2	42	2	1	4	3
18	1	3	2	4	43	4	2	1	3
19	2	3	4	1	44	1	3	4	2
20	2	4	3	1	45	4	3	1	2
21	4	2	3	1	46	1	3	4	2
22	1	3	4	2	47	1	4	3	2
23	3	1	2	4	48	3	2	1	4
24	3	1	2	4	49	1	4	3	2
25	4	1	2	3					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #8

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	3	2	4	1	26	1	4	2	3
2	1	2	3	4	27	3	1	2	4
3	4	3	1	2	28	1	2	3	4
4	1	3	2	4	29	2	3	1	4
5	3	2	4	1	30	4	3	2	1
6	4	2	3	1	31	1	4	3	2
7	2	3	4	1	32	1	3	4	2
8	1	4	3	2	33	4	3	1	2
9	2	1	3	4	34	2	4	3	1
10	3	2	4	1	35	2	3	1	4
11	2	1	3	4	36	4	1	2	3
12	3	4	2	1	37	2	1	4	3
13	2	4	3	1	38	3	2	1	4
14	2	3	4	1	39	4	2	1	3
15	4	2	1	3	40	1	4	3	2
16	3	1	4	2	41	3	1	4	2
17	1	3	2	4	42	4	2	1	3
18	4	2	1	3	43	4	1	2	3
19	1	2	3	4	44	1	3	2	4
20	3	2	1	4	45	4	2	3	1
21	4	3	2	1	46	1	3	4	2
22	1	3	4	2	47	2	3	4	1
23	4	3	2	1	48	4	3	1	2
24	4	3	1	2	49	1	3	4	2
25	3	4	2	1					

APPENDIX II continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--MALE #9

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	3	4	1	26	3	2	1	4
2	1	4	3	2	27	2	4	3	1
3	3	1	2	4	28	1	2	3	4
4	1	3	4	2	29	2	1	3	4
5	2	1	4	3	30	3	2	4	1
6	2	1	4	3	31	3	4	1	2
7	1	4	2	3	32	4	1	3	2
8	2	3	4	1	33	2	3	1	4
9	2	1	4	3	34	2	4	3	1
10	1	3	4	2	35	2	3	1	4
11	4	2	1	3	36	3	2	1	4
12	3	2	4	1	37	3	2	1	4
13	3	4	2	1	38	3	1	4	2
14	2	1	3	4	39	2	3	1	4
15	3	2	4	1	40	1	4	2	3
16	1	3	4	2	41	2	4	3	1
17	1	2	3	4	42	4	2	3	1
18	4	3	1	2	43	3	4	2	1
19	2	3	1	4	44	1	2	3	4
20	3	2	1	4	45	4	2	3	1
21	2	3	1	4	46	2	3	1	4
22	1	3	4	2	47	1	4	3	2
23	2	3	1	4	48	1	3	2	4
24	4	1	3	2	49	2	3	4	1
25	3	4	2	1					

APPENDIX III

COMBINED WEIGHTED RANKINGS--MALES

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
1	1	1 (1)	0 (0)	0 (0)	8 (8)
	2	3 (6)	3 (6)	3 (6)	0 (0)
	3	4 (12)	4 (12)	0 (0)	1 (3)
	4	1 (4)	2 (8)	6 (24)	0 (0)
Totals		23	26	30	11
Overall Rank		2	3	4	1
2	1	0 (0)	2 (2)	0 (0)	7 (7)
	2	2 (4)	4 (8)	1 (2)	2 (4)
	3	3 (9)	3 (9)	3 (9)	9 (0)
	4	4 (16)	0 (0)	4 (16)	1 (4)
Totals		29	19	27	15
Overall Rank		4	2	3	1
3	1	7 (7)	1 (1)	0 (0)	1 (1)
	2	2 (4)	4 (8)	3 (6)	1 (2)
	3	0 (0)	2 (6)	2 (6)	5 (15)
	4	0 (0)	2 (8)	6 (24)	1 (4)
Totals		11	23	36	22
Overall Rank		1	3	4	2
4	1	1 (1)	7 (7)	1 (1)	1 (1)
	2	1 (2)	0 (0)	5 (10)	3 (6)
	3	2 (6)	1 (3)	2 (6)	4 (12)
	4	6 (24)	2 (8)	0 (0)	1 (4)
Totals		33	18	17	23
Overall Rank		4	2	1	3

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
5	1	4 (4)	5 (5)	0 (0)	0 (0)
	2	4 (8)	1 (2)	1 (2)	3 (6)
	3	0 (0)	3 (9)	3 (9)	3 (9)
	4	1 (4)	0 (0)	5 (20)	3 (12)
Totals		16	16	31	27
Overall Rank		1.5	1.5	4	3
6	1	8 (8)	1 (1)	0 (0)	0 (0)
	2	0 (0)	4 (8)	3 (6)	2 (4)
	3	1 (3)	2 (6)	3 (9)	3 (9)
	4	0 (0)	2 (8)	3 (12)	4 (16)
Totals		11	23	27	29
Overall Rank		1	2	3	4
7	1	2 (2)	7 (7)	0 (0)	0 (0)
	2	6 (12)	1 (2)	2 (4)	0 (0)
	3	1 (3)	1 (3)	3 (9)	4 (12)
	4	0 (0)	0 (0)	4 (16)	5 (20)
Totals		17	12	29	32
Overall Rank		2	1	3	4
8	1	0 (0)	7 (7)	0 (0)	2 (2)
	2	1 (2)	1 (2)	6 (12)	1 (2)
	3	6 (18)	0 (0)	2 (6)	1 (3)
	4	2 (8)	1 (4)	1 (4)	5 (20)
Totals		28	13	22	27
Overall Rank		4	1	2	3

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
9	1	7 (7)	1 (1)	1 (1)	0 (0)
	2	0 (0)	4 (8)	1 (2)	4 (8)
	3	2 (6)	3 (9)	3 (9)	1 (3)
	4	0 (0)	1 (4)	4 (16)	4 (16)
Totals		13	22	28	27
Overall Rank		1	3	4	3
10	1	3 (3)	0 (0)	2 (2)	4 (4)
	2	0 (0)	6 (12)	1 (2)	2 (4)
	3	3 (9)	2 (6)	2 (6)	2 (6)
	4	4 (16)	0 (0)	4 (16)	1 (4)
Totals		28	18	26	18
Overall Rank		4	1.5	3	1.5
11	1	8 (8)	1 (1)	0 (0)	0 (0)
	2	1 (2)	2 (4)	4 (8)	2 (4)
	3	0 (0)	2 (6)	1 (3)	6 (18)
	4	0 (0)	4 (16)	4 (16)	1 (4)
Totals		10	27	27	26
Overall Rank		1	3.5	3.5	2
12	1	0 (0)	9 (9)	0 (0)	0 (0)
	2	3 (6)	0 (0)	2 (4)	4 (8)
	3	1 (3)	0 (0)	7 (21)	1 (3)
	4	5 (20)	0 (0)	0 (0)	4 (16)
Totals		29	9	25	27
Overall Rank		4	1	2	3

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
13	1	4 (4)	0 (0)	2 (2)	3 (3)
	2	2 (4)	1 (2)	2 (4)	4 (8)
	3	2 (6)	3 (9)	2 (6)	2 (6)
	4	1 (4)	5 (20)	3 (12)	0 (0)
Totals		18	31	24	17
Overall Rank		2	4	3	1
14	1	2 (2)	4 (4)	0 (0)	3 (3)
	2	0 (0)	3 (6)	0 (0)	6 (12)
	3	6 (18)	1 (3)	2 (6)	0 (0)
	4	2 (8)	1 (4)	6 (24)	0 (0)
Totals		28	17	30	15
Overall Rank		3	2	4	1
15	1	5 (5)	0 (0)	1 (1)	3 (3)
	2	3 (6)	4 (8)	0 (0)	2 (4)
	3	1 (3)	3 (9)	5 (15)	0 (0)
	4	0 (0)	3 (12)	3 (12)	3 (12)
Totals		14	29	28	19
Overall Rank		1	4	3	2
16	1	5 (5)	0 (0)	2 (2)	2 (2)
	2	2 (4)	3 (6)	2 (4)	2 (4)
	3	2 (6)	1 (3)	1 (3)	5 (15)
	4	0 (0)	5 (20)	4 (16)	0 (0)
Totals		15	29	25	21
Overall Rank		1	4	3	2

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
17	1	2 (2)	5 (5)	1 (1)	1 (1)
	2	3 (6)	2 (4)	2 (4)	2 (4)
	3	3 (9)	0 (0)	3 (9)	3 (9)
	4	1 (4)	2 (8)	3 (12)	3 (12)
Totals		21	17	26	26
Overall Rank		2	1	3.5	3.5
18	1	0 (0)	6 (6)	1 (1)	2 (2)
	2	2 (4)	3 (6)	4 (8)	0 (0)
	3	2 (6)	0 (0)	3 (9)	4 (12)
	4	5 (20)	0 (0)	1 (4)	3 (12)
Totals		30	12	22	26
Overall Rank		4	1	2	3
19	1	6 (6)	0 (0)	1 (1)	2 (2)
	2	2 (4)	2 (4)	4 (8)	1 (2)
	3	1 (3)	3 (9)	2 (6)	3 (9)
	4	0 (0)	4 (16)	2 (8)	3 (12)
Totals		13	29	23	25
Overall Rank		1	4	2	3
20	1	0 (0)	4 (4)	3 (3)	2 (2)
	2	4 (8)	2 (4)	0 (0)	3 (6)
	3	1 (3)	2 (6)	2 (6)	4 (12)
	4	4 (16)	1 (4)	4 (16)	0 (0)
Totals		27	18	25	20
Overall Rank		4	1	3	2

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
21	1	1 (1)	6 (6)	(0)	2 (2)
	2	6 (12)	0 (0)	1 (2)	2 (4)
	3	2 (6)	2 (6)	0 (0)	5 (15)
	4	0 (0)	1 (4)	8 (32)	0 (0)
Totals		19	16	34	21
Overall Rank		2	1	4	3
22	1	0 (0)	9 (9)	0 (0)	0 (0)
	2	8 (16)	0 (0)	1 (2)	0 (0)
	3	1 (3)	0 (0)	7 (21)	1 (3)
	4	0 (0)	0 (0)	1 (4)	8 (32)
Totals		19	9	27	35
Overall Rank		2	1	3	4
23	1	1 (1)	3 (3)	5 (5)	0 0)
	2	1 (2)	2 (4)	4 (8)	4)
	3	5 (15)	2 (6)	0 (0)	(6)
	4	2 (8)	2 (8)	0 (0)	5 (20)
Totals		26	1	13	30
Overall Rank		3	2	1	4
24	1	1 (1)	4 (4)	0 (0)	4 (4)
	2	5 (10)	3 (6)	0 (0)	1 (2)
	3	2 (6)	2 (6)	3 (9)	2 (6)
	4	1 (4)	0 (0)	6 (24)	2 (8)
Totals		21	16	33	20
Overall Rank		3	1	4	2

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
25	1	4 (4)	3 (3)	0 (0)	2 (2)
	2	1 (2)	2 (4)	6 (12)	0 (0)
	3	3 (9)	3 (9)	1 (3)	2 (6)
	4	1 (4)	1 (4)	1 (4)	6 (24)
Totals		19	20	19	37
Overall Rank		1.5	3	1.5	4
26	1	2 (2)	7 (7)	0 (0)	0 (0)
	2	6 (12)	0 (0)	1 (2)	2 (4)
	3	0 (0)	2 (6)	3 (9)	4 (12)
	4	1 (4)	0 (0)	5 (20)	3 (12)
Totals		18	13	31	28
Overall Rank		2	1	4	3
27	1	4 (4)	2 (2)	2 (2)	1 (1)
	2	2 (4)	5 (10)	1 (2)	1 (2)
	3	1 (3)	2 (6)	2 (6)	4 (12)
	4	2 (8)	0 (0)	4 (16)	3 (12)
Totals		19	18	26	27
Overall Rank		2	1	3	4
28	1	4 (4)	1 (1)	4 (4)	0 (0)
	2	5 (10)	2 (4)	2 (4)	0 (0)
	3	0 (0)	5 (15)	3 (9)	1 (3)
	4	1 (4)	0 (0)	0 (0)	8 (32)
Totals		18	20	17	35
Overall Rank		2	3	1	4

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
29	1	4 (4)	4 (4)	1 (1)	0 (0)
	2	2 (4)	0 (0)	1 (2)	6 (12)
	3	3 (9)	4 (12)	0 (0)	2 (6)
	4	0 (0)	1 (4)	7 (28)	1 (4)
Totals		17	20	31	22
Overall Rank		1	2	4	3
30	1	0 (0)	9 (9)	0 (0)	0 (0)
	2	6 (12)	0 (0)	1 (2)	2 (4)
	3	1 (3)	0 (0)	2 (6)	6 (18)
	4	2 (8)	0 (0)	6 (24)	1 (4)
Totals		23	9	32	26
Overall Rank		2	1	4	3
31	1	0 (0)	7 (7)	1 (1)	1 (1)
	2	3 (6)	0 (0)	2 (4)	4 (8)
	3	2 (6)	2 (6)	2 (6)	3 (9)
	4	4 (16)	0 (0)	4 (16)	1 (4)
Totals		28	13	27	22
Overall Rank		4	1	3	2
32	1	3 (3)	0 (0)	0 (0)	6 (6)
	2	2 (4)	4 (8)	2 (4)	1 (2)
	3	3 (9)	1 (3)	4 (12)	1 (3)
	4	1 (4)	4 (16)	3 (12)	1 (4)
Totals		20	27	28	15
Overall Rank		2	3	4	1

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
33	1	0 (0)	2 (2)	1 (1)	6 (6)
	2	3 (6)	4 (8)	2 (4)	0 (0)
	3	2 (6)	3 (9)	2 (6)	2 (6)
	4	4 (16)	0 (0)	4 (16)	1 (4)
Totals		28	19	27	16
Overall Rank		4	2	3	1
34	1	3 (3)	6 (6)	0 (0)	0 (0)
	2	5 (10)	2 (4)	1 (2)	1 (2)
	3	0 (0)	1 (3)	4 (12)	4 (12)
	4	1 (4)	0 (0)	4 (16)	4 (16)
Totals		17	13	30	30
Overall Rank		2	1	3.5	3.5
35	1	4 (4)	4 (4)	0 (0)	1 (1)
	2	4 (8)	2 (4)	3 (6)	0 (0)
	3	1 (3)	1 (3)	6 (18)	1 (3)
	4	0 (0)	2 (8)	0 (0)	7 (28)
Totals		15	19	24	32
Overall Rank		1	2	3	4
36	1	3 (3)	2 (2)	2 (2)	2 (2)
	2	6 (12)	2 (4)	1 (2)	0 (0)
	3	0 (0)	4 (12)	3 (9)	2 (6)
	4	0 (0)	1 (4)	3 (12)	5 (20)
Totals		15	22	25	28
Overall Rank		1	2	3	4

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
37	1	2 (2)	4 (4)	2 (2)	1 (1)
	2	3 (6)	2 (4)	1 (2)	3 (6)
	3	2 (6)	2 (6)	2 (6)	3 (9)
	4	2 (8)	1 (4)	4 (16)	2 (8)
Totals		22	18	26	24
Overall Rank		2	1	4	3
38	1	1 (1)	6 (6)	1 (1)	1 (1)
	2	3 (6)	1 (2)	5 (10)	0 (0)
	3	5 (15)	0 (0)	1 (3)	3 (9)
	4	0 (0)	2 (8)	2 (8)	5 (20)
Totals		22	16	22	30
Overall Rank		2.5	1	2.5	4
39	1	5 (5)	0 (0)	4 (4)	0 (0)
	2	4 (8)	0 (0)	3 (6)	2 (4)
	3	0 (0)	6 (18)	0 (0)	3 (9)
	4	0 (0)	3 (12)	2 (8)	4 (16)
Totals		13	30	18	29
Overall Rank		1	4	2	3
40	1	0 (0)	8 (8)	0 (0)	1 (1)
	2	4 (8)	1 (2)	0 (0)	4 (8)
	3	5 (15)	0 (0)	0 (0)	4 (12)
	4	0 (0)	0 (0)	9 (36)	0 (0)
Totals		23	10	36	21
Overall Rank		3	1	4	2

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
41	1	4 (4)	4 (4)	1 (1)	0 (0)
	2	3 (6)	3 (6)	1 (2)	2 (4)
	3	0 (0)	1 (3)	2 (6)	6 (18)
	4	2 (8)	1 (4)	5 (20)	1 (4)
Totals		18	17	29	26
Overall Rank		2	1	4	3
42	1	2 (2)	5 (5)	1 (1)	1 (1)
	2	0 (0)	4 (8)	3 (6)	2 (4)
	3	5 (15)	0 (0)	2 (6)	2 (6)
	4	2 (8)	0 (0)	3 (12)	4 (16)
Totals		25	13	25	27
Overall Rank		2.5	1	2.5	4
43	1	0 (0)	1 (1)	5 (5)	3 (3)
	2	0 (0)	3 (6)	3 (6)	3 (6)
	3	2 (6)	4 (12)	1 (3)	2 (6)
	4	7 (28)	1 (4)	0 (0)	1 (4)
Totals		34	23	14	19
Overall Rank		4	3	1	2
44	1	1 (1)	1 (1)	1 (1)	6 (6)
	2	1 (2)	3 (6)	4 (8)	1 (2)
	3	3 (9)	3 (9)	1 (3)	2 (6)
	4	4 (16)	2 (8)	3 (12)	0 (0)
Totals		28	24	24	14
Overall Rank		4	2.5	2.5	1

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
45	1	4 (4)	5 (5)	0 (0)	0 (0)
	2	1 (2)	2 (4)	1 (2)	5 (10)
	3	4 (12)	1 (3)	0 (0)	4 (12)
	4	0 (0)	1 (4)	8 (32)	0 (0)
Totals		18	16	34	22
Overall Rank		2	1	4	3
46	1	1 (1)	5 (5)	0 (0)	3 (3)
	2	4 (8)	1 (2)	3 (6)	1 (2)
	3	1 (3)	0 (0)	5 (15)	3 (9)
	4	3 (12)	3 (12)	1 (4)	2 (8)
Totals		24	29	25	22
Overall Rank		3	1	4	2
47	1	1 (1)	3 (3)	0 (0)	5 (5)
	2	1 (2)	6 (12)	0 (0)	2 (4)
	3	3 (9)	0 (0)	6 (18)	0 (0)
	4	4 (16)	0 (0)	3 (12)	2 (8)
Totals		28	15	30	17
Overall Rank		3	1	4	2
48	1	0 (0)	1 (1)	3 (3)	5 (5)
	2	4 (8)	1 (2)	1 (2)	3 (6)
	3	1 (3)	6 (18)	2 (6)	0 (0)
	4	4 (16)	1 (4)	3 (12)	1 (4)
Totals		27	25	23	15
Overall Rank		4	3	2	1

APPENDIX III continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
49	1	5 (5)	2 (2)	2 (2)	0 (0)
	2	4 (8)	4 (8)	1 (2)	0 (0)
	3	0 (0)	2 (6)	2 (6)	5 (15)
	4	1 (4)	1 (4)	4 (16)	4 (16)
Totals		17	20	26	31
Overall Rank		1	2	3	4

APPENDIX IV

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #1

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	3	4	2	1	26	1	4	3	2
2	1	3	4	2	27	4	2	3	1
3	4	3	1	2	28	3	2	1	4
4	2	1	4	3	29	2	4	3	1
5	3	2	1	4	30	3	4	2	1
6	3	2	4	1	31	1	3	2	4
7	2	4	3	1	32	1	4	3	2
8	1	3	4	2	33	3	1	2	4
9	4	3	1	2	34	1	3	4	2
10	3	1	4	2	35	1	4	2	3
11	3	1	2	4	36	4	1	3	2
12	4	2	3	1	37	3	1	4	2
13	4	2	1	3	38	4	2	1	3
14	2	3	4	1	39	2	3	1	4
15	2	3	1	4	40	1	4	2	3
16	1	2	3	4	41	2	3	4	1
17	4	1	2	3	42	1	2	4	3
18	3	4	1	2	43	3	1	4	2
19	2	4	3	1	44	2	4	3	1
20	4	2	3	1	45	3	2	4	1
21	4	2	3	1	46	2	1	3	4
22	1	3	4	2	47	3	2	4	1
23	4	1	2	3	48	3	2	1	4
24	4	3	2	1	49	1	3	2	4
25	2	1	3	4					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #2

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	4	3	1	26	1	3	4	2
2	4	1	2	3	27	4	1	3	2
3	3	4	1	2	28	1	4	2	3
4	3	1	4	2	29	4	3	2	1
5	4	2	3	1	30	2	4	3	1
6	1	3	4	2	31	1	2	3	4
7	1	4	2	3	32	1	2	3	4
8	2	4	3	1	33	3	1	4	2
9	3	1	4	2	34	1	4	3	2
10	4	1	3	2	35	3	1	2	4
11	4	3	1	2	36	4	1	3	2
12	3	1	4	2	37	2	1	3	4
13	4	3	2	1	38	4	3	2	1
14	3	2	4	1	39	3	1	4	2
15	2	4	1	3	40	1	3	4	2
16	1	2	3	4	41	2	4	3	1
17	2	3	1	4	42	1	4	2	3
18	4	2	3	1	43	1	3	4	2
19	3	4	2	1	44	1	3	4	2
20	4	1	2	3	45	4	2	3	1
21	4	3	1	2	46	1	2	3	4
22	1	4	3	2	47	1	4	2	3
23	4	3	2	1	48	4	1	2	3
24	4	1	3	2	49	1	3	2	4
25	2	4	3	1					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #3

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	3	4	1	26	1	4	3	2
2	1	3	2	4	27	4	1	3	2
3	2	4	1	3	28	3	1	2	4
4	2	1	3	4	29	2	4	3	1
5	3	4	2	1	30	4	2	3	1
6	3	2	4	1	31	1	3	4	2
7	2	4	3	1	32	2	1	3	4
8	1	3	4	2	33	3	1	2	4
9	4	1	3	2	34	2	3	4	1
10	4	3	1	2	35	1	2	3	4
11	3	1	4	2	36	4	1	2	3
12	1	3	4	2	37	2	1	3	4
13	4	3	1	2	38	4	1	3	2
14	2	3	4	1	39	4	3	1	2
15	3	4	2	1	40	1	3	2	4
16	1	4	2	3	41	1	3	4	2
17	3	2	4	1	42	2	1	4	3
18	2	4	1	3	43	4	2	3	1
19	1	3	4	2	44	1	3	4	2
20	1	4	2	3	45	4	2	3	1
21	4	2	3	1	46	3	1	4	2
22	1	4	3	2	47	2	4	3	1
23	4	1	2	3	48	4	2	1	3
24	2	1	4	3	49	1	4	3	2
25	3	2	4	1					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #4

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	4	1	2	3	26	1	2	3	4
2	3	4	1	2	27	4	3	2	1
3	4	3	1	2	28	1	2	3	4
4	1	2	4	3	29	3	1	2	4
5	2	3	4	1	30	4	3	2	1
6	2	3	4	1	31	1	3	4	2
7	3	1	4	2	32	3	1	4	2
8	1	2	3	4	33	2	1	3	4
9	1	3	4	2	34	2	3	4	1
10	1	2	4	3	35	1	2	3	4
11	4	2	1	3	36	3	1	2	4
12	2	4	3	1	37	2	1	4	3
13	4	3	1	2	38	4	3	2	1
14	1	4	2	3	39	3	4	1	2
15	3	4	1	2	40	1	4	2	3
16	1	3	2	4	41	3	2	4	1
17	2	4	3	1	42	4	2	3	1
18	2	4	1	3	43	4	2	3	1
19	2	3	4	1	44	1	4	3	2
20	2	1	3	4	45	4	3	2	1
21	3	4	1	2	46	3	4	1	2
22	1	3	4	2	47	1	3	4	2
23	2	3	1	4	48	3	1	2	4
24	3	1	4	2	49	2	4	3	1
25	2	3	4	1					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #5

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	4	2	3	1	26	1	3	4	2
2	1	4	2	3	27	4	1	2	3
3	3	4	1	2	28	1	3	2	4
4	2	3	4	1	29	2	4	3	1
5	2	1	3	4	30	4	2	3	1
6	2	4	1	3	31	1	2	3	4
7	3	2	4	1	32	1	3	2	4
8	1	2	4	3	33	3	1	2	4
9	4	1	3	2	34	1	3	4	2
10	4	2	3	1	35	3	2	4	1
11	3	1	4	2	36	4	1	2	3
12	2	3	4	1	37	1	4	2	3
13	4	2	1	3	38	4	3	1	2
14	2	3	4	1	39	1	3	2	4
15	2	3	4	1	40	1	4	3	2
16	2	3	1	4	41	3	1	4	2
17	4	1	3	2	42	1	3	4	2
18	2	4	1	3	43	3	1	4	2
19	2	4	3	1	44	1	4	3	2
20	1	3	4	2	45	3	2	4	1
21	4	3	2	1	46	2	1	3	4
22	1	3	2	4	47	1	2	3	4
23	2	3	1	4	48	4	2	1	3
24	4	1	2	3	49	2	4	3	1
25	2	4	3	1					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #6

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	3	4	2	1	26	2	4	3	1
2	1	4	3	2	27	2	1	3	4
3	1	3	2	4	28	2	1	3	4
4	1	4	3	2	29	2	1	4	3
5	4	2	3	1	30	2	4	3	1
6	3	2	4	1	31	2	4	3	1
7	2	3	4	1	32	1	2	4	3
8	2	1	3	4	33	4	3	2	1
9	3	1	2	4	34	3	4	1	2
10	2	4	1	3	35	3	2	1	4
11	2	1	4	3	36	3	1	4	2
12	4	2	3	1	37	4	3	1	2
13	2	4	1	3	38	2	3	1	4
14	2	4	3	1	39	2	4	3	1
15	4	3	2	1	40	4	1	2	3
16	1	3	2	4	41	4	2	1	3
17	2	3	4	1	42	1	2	4	3
18	2	4	1	3	43	4	3	2	1
19	1	4	2	3	44	3	4	1	2
20	1	4	2	3	45	1	4	3	2
21	3	4	2	1	46	3	2	1	4
22	1	4	3	2	47	3	4	1	2
23	3	1	2	4	48	1	4	2	3
24	2	1	4	3	49	3	1	2	4
25	4	3	2	1					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #7

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	2	3	4	1	26	1	2	4	3
2	2	4	3	1	27	3	1	4	2
3	3	4	1	2	28	1	3	2	4
4	1	2	4	3	29	3	1	4	2
5	3	2	4	1	30	3	2	4	1
6	1	3	4	2	31	1	4	2	3
7	2	4	3	1	32	1	3	2	4
8	1	3	2	4	33	3	1	2	4
9	4	1	3	2	34	1	3	4	2
10	4	2	3	1	35	1	2	3	4
11	4	1	2	3	36	4	2	1	3
12	2	3	4	1	37	1	3	2	4
13	4	1	2	3	38	4	3	2	1
14	3	2	4	1	39	2	4	3	1
15	4	2	3	1	40	1	4	3	2
16	1	4	2	3	41	3	2	4	1
17	4	3	1	2	42	1	3	4	2
18	3	4	1	2	43	2	3	1	4
19	2	3	4	1	44	2	3	4	1
20	4	1	3	2	45	4	2	3	1
21	4	1	3	2	46	3	2	1	4
22	1	4	3	2	47	1	3	4	2
23	3	2	1	4	48	4	2	1	3
24	3	1	4	2	49	1	4	2	3
25	1	3	2	4					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #8

Case #	Picture				Case #	Picture			
	A	B	C	D		A	B	C	D
1	4	3	2	1	26	1	4	3	2
2	1	3	2	4	27	2	3	1	4
3	3	1	2	4	28	4	3	1	2
4	2	1	3	4	29	3	2	4	1
5	4	3	2	1	30	2	3	4	1
6	1	3	4	2	31	1	4	2	3
7	2	3	4	1	32	2	1	3	4
8	1	2	3	4	33	4	2	1	3
9	4	2	1	3	34	3	2	4	1
10	2	4	3	1	35	3	2	1	4
11	3	1	2	4	36	3	1	2	4
12	2	4	3	1	37	3	2	4	1
13	1	4	3	2	38	2	1	4	3
14	2	4	3	1	39	4	2	3	1
15	1	4	2	3	40	1	4	3	2
16	2	1	3	4	41	4	2	1	3
17	4	2	3	1	42	2	1	4	3
18	1	4	2	3	43	1	3	2	4
19	1	4	3	2	44	2	4	3	1
20	4	2	3	1	45	4	3	2	1
21	2	4	1	3	46	3	1	2	4
22	1	3	4	2	47	4	1	3	2
23	4	1	2	3	48	1	2	3	4
24	2	1	4	3	49	3	2	1	4
25	2	1	3	4					

APPENDIX IV continued

INDIVIDUAL RANKINGS BY PERSONNEL MANAGERS--FEMALE #9

Case #	Picture			
	A	B	C	D
1	2	4	3	1
2	1	4	3	2
3	3	4	1	2
4	1	3	4	2
5	3	1	2	4
6	3	4	2	1
7	1	4	3	2
8	1	2	4	3
9	3	1	2	4
10	4	2	3	1
11	4	1	3	2
12	3	1	4	2
13	3	2	4	1
14	1	3	4	2
15	3	2	4	1
16	2	3	1	4
17	3	2	4	1
18	3	4	1	2
19	1	4	2	3
20	2	3	4	1
21	4	1	3	2
22	2	4	3	1
23	1	4	3	2
24	3	2	4	1
25	2	4	3	1

Case #	Picture			
	A	B	C	D
26	2	3	4	1
27	4	2	1	3
28	3	2	1	4
29	3	2	4	1
30	4	3	1	2
31	1	3	2	4
32	2	3	1	4
33	2	1	4	3
34	1	4	2	3
35	2	4	3	1
36	4	2	1	3
37	4	2	3	1
38	4	1	3	2
39	2	3	1	4
40	1	4	3	2
41	3	4	2	1
42	1	2	4	3
43	4	1	3	2
44	1	3	4	2
45	4	3	2	1
46	3	1	4	2
47	3	2	1	4
48	4	2	1	3
49	2	4	1	3

APPENDIX V

COMBINED WEIGHTED RANKINGS--FEMALES

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
1	1	0 (0)	1 (1)	0 (0)	8 (8)
	2	4 (8)	1 (2)	4 (8)	0 (0)
	3	2 (6)	3 (9)	3 (9)	1 (3)
	4	3 (12)	4 (16)	2 (8)	0 (0)
Totals		26	28	25	11
Overall Rank		3	4	2	1
2	1	1 (1)	1 (1)	1 (1)	6 (6)
	2	0 (0)	4 (8)	4 (8)	1 (2)
	3	4 (12)	3 (9)	2 (6)	0 (0)
	4	5 (20)	1 (4)	2 (8)	1 (4)
Totals		33	22	23	12
Overall Rank		4	2	3	1
3	1	7 (7)	0 (0)	1 (1)	1 (1)
	2	2 (4)	6 (12)	1 (2)	0 (0)
	3	0 (0)	1 (3)	5 (15)	3 (9)
	4	0 (0)	2 (8)	2 (8)	5 (20)
Totals		11	23	26	30
Overall Rank		1	2	3	4
4	1	1 (1)	4 (4)	4 (4)	0 (0)
	2	3 (6)	4 (8)	2 (4)	0 (0)
	3	3 (9)	1 (3)	2 (6)	3 (9)
	4	2 (8)	0 (0)	1 (4)	6 (24)
Totals		24	15	18	31
Overall Rank		3	1	2	4

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
5	1	2 (2)	6 (6)	1 (1)	0 (0)
	2	4 (8)	0 (0)	3 (6)	2 (4)
	3	2 (6)	0 (0)	3 (9)	4 (12)
	4	1 (4)	3 (12)	2 (8)	3 (12)
Totals		20	18	24	28
Overall Rank		2	1	3	4
6	1	5 (5)	0 (0)	3 (3)	1 (1)
	2	3 (6)	3 (6)	2 (4)	1 (2)
	3	1 (3)	4 (12)	4 (12)	0 (0)
	4	0 (0)	2 (8)	0 (0)	7 (28)
Totals		14	26	19	31
Overall Rank		1	3	2	4
7	1	2 (2)	6 (6)	0 (0)	1 (1)
	2	5 (10)	2 (4)	1 (2)	1 (2)
	3	2 (6)	1 (3)	4 (12)	2 (6)
	4	0 (0)	0 (0)	4 (16)	5 (20)
Totals		18	13	30	29
Overall Rank		2	1	4	3
8	1	0 (0)	7 (7)	1 (1)	1 (1)
	2	1 (2)	2 (4)	4 (8)	2 (4)
	3	4 (12)	0 (0)	3 (9)	2 (6)
	4	4 (16)	0 (0)	1 (4)	4 (16)
Totals		30	11	22	27
Overall Rank		4	1	2	3

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
9	1	6 (6)	2 (2)	0 (0)	1 (1)
	2	1 (2)	2 (4)	6 (12)	0 (0)
	3	2 (6)	3 (9)	1 (3)	3 (9)
	4	0 (0)	2 (8)	2 (8)	5 (20)
Totals		14	23	23	30
Overall Rank		1	2.5	2.5	4
10	1	1 (1)	2 (2)	2 (2)	4 (4)
	2	2 (4)	4 (8)	0 (0)	3 (6)
	3	1 (3)	1 (3)	5 (15)	2 (6)
	4	5 (20)	2 (8)	2 (8)	0 (0)
Totals		28	21	25	16
Overall Rank		4	2	3	1
11	1	7 (7)	2 (2)	0 (0)	0 (0)
	2	1 (2)	3 (6)	4 (8)	0 (0)
	3	1 (3)	1 (3)	3 (9)	4 (12)
	4	0 (0)	3 (12)	2 (8)	4 (16)
Totals		12	23	25	28
Overall Rank		1	2	3	4
12	1	0 (0)	6 (6)	1 (1)	2 (2)
	2	0 (0)	3 (6)	4 (8)	2 (4)
	3	4 (12)	0 (0)	2 (6)	3 (9)
	4	5 (20)	0 (0)	2 (8)	2 (8)
Totals		32	12	23	23
Overall Rank		4	1	2.5	2.5

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
13	1	2 (2)	1 (1)	1 (1)	5 (5)
	2	3 (6)	1 (2)	3 (6)	2 (4)
	3	4 (12)	1 (3)	3 (9)	1 (3)
	4	0 (0)	6 (24)	2 (8)	1 (4)
Totals		20	30	24	16
Overall Rank		2	4	3	1
14	1	0 (0)	7 (7)	0 (0)	2 (2)
	2	2 (4)	1 (2)	1 (2)	5 (10)
	3	4 (12)	1 (3)	2 (6)	2 (6)
	4	3 (12)	0 (0)	6 (24)	0 (0)
Totals		28	12	32	18
Overall Rank		3	1	4	2
15	1	5 (5)	0 (0)	1 (1)	3 (3)
	2	1 (2)	2 (4)	3 (6)	3 (6)
	3	2 (6)	3 (9)	3 (9)	1 (3)
	4	2 (8)	4 (16)	2 (8)	2 (8)
Totals		21	29	24	20
Overall Rank		2	4	3	1
16	1	6 (6)	0 (0)	2 (2)	1 (1)
	2	3 (6)	0 (0)	4 (8)	2 (4)
	3	0 (0)	2 (6)	3 (9)	4 (12)
	4	0 (0)	7 (28)	0 (0)	2 (8)
Totals		12	34	19	25
Overall Rank		1	4	2	3

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
17	1	2 (2)	0 (0)	2 (2)	5 (5)
	2	1 (2)	3 (6)	3 (6)	2 (4)
	3	3 (9)	2 (6)	3 (9)	1 (3)
	4	3 (12)	4 (16)	1 (4)	1 (4)
Totals		25	28	21	16
Overall Rank		3	4	2	1
18	1	0 (0)	7 (7)	1 (1)	1 (1)
	2	2 (4)	0 (0)	3 (6)	4 (8)
	3	0 (0)	1 (3)	5 (15)	3 (9)
	4	8 (32)	0 (0)	0 (0)	1 (4)
Totals		36	10	22	22
Overall Rank		4	1	2.5	2.5
19	1	4 (4)	0 (0)	0 (0)	5 (5)
	2	4 (8)	0 (0)	3 (6)	2 (4)
	3	1 (3)	3 (9)	3 (9)	2 (6)
	4	0 (0)	6 (24)	3 (12)	0 (0)
Totals		15	33	27	15
Overall Rank		1.5	4	3	1.5
20	1	3 (3)	0 (0)	3 (3)	3 (3)
	2	2 (4)	3 (6)	2 (4)	2 (4)
	3	2 (6)	4 (12)	3 (9)	0 (0)
	4	2 (8)	2 (8)	1 (4)	4 (16)
Totals		21	26	20	23
Overall Rank		2	4	1	3

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
21	1	3 (3)	4 (4)	0 (0)	2 (2)
	2	2 (4)	4 (8)	1 (2)	2 (4)
	3	4 (12)	1 (3)	2 (6)	2 (6)
	4	0 (0)	0 (0)	6 (24)	3 (12)
Totals		19	15	32	24
Overall Rank		2	1	4	3
22	1	1 (1)	8 (8)	0 (0)	0 (0)
	2	7 (14)	1 (2)	0 (0)	1 (2)
	3	0 (0)	0 (0)	4 (12)	5 (15)
	4	1 (4)	0 (0)	5 (20)	3 (12)
Totals		19	10	32	29
Overall Rank		2	1	4	3
23	1	4 (4)	1 (1)	3 (3)	1 (1)
	2	1 (2)	1 (2)	5 (10)	2 (4)
	3	3 (9)	3 (9)	1 (3)	2 (6)
	4	1 (4)	4 (16)	0 (0)	4 (16)
Totals		19	28	16	27
Overall Rank		2	4	1	3
24	1	2 (2)	7 (7)	0 (0)	0 (0)
	2	3 (6)	1 (2)	3 (6)	2 (4)
	3	4 (12)	1 (3)	3 (9)	1 (3)
	4	0 (0)	0 (0)	3 (12)	6 (24)
Totals		20	12	27	31
Overall Rank		2	1	3	4

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
25	1	1 (1)	6 (6)	0 (0)	2 (2)
	2	6 (12)	0 (0)	2 (4)	1 (2)
	3	1 (3)	0 (0)	5 (15)	3 (9)
	4	1 (4)	3 (12)	2 (8)	3 (12)
Totals		20	18	27	25
Overall Rank		2	1	4	3
26	1	0 (0)	7 (7)	0 (0)	2 (2)
	2	0 (0)	2 (4)	2 (4)	5 (10)
	3	5 (15)	0 (0)	3 (9)	1 (3)
	4	4 (16)	0 (0)	4 (16)	1 (16)
Totals		31	11	29	31
Overall Rank		3.5	1	2	3.5
27	1	5 (5)	2 (2)	2 (2)	0 (0)
	2	2 (4)	2 (4)	3 (6)	2 (4)
	3	2 (6)	4 (12)	2 (6)	1 (3)
	4	0 (0)	1 (4)	2 (8)	6 (24)
Totals		15	22	22	31
Overall Rank		1	2.5	2.5	4
28	1	4 (4)	2 (2)	3 (3)	0 (0)
	2	1 (2)	3 (6)	4 (8)	1 (2)
	3	3 (9)	3 (9)	2 (6)	1 (3)
	4	1 (4)	1 (4)	0 (0)	7 (28)
Totals		19	21	17	33
Overall Rank		2	3	1	4

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
29	1	3 (3)	0 (0)	6 (6)	0 (0)
	2	2 (4)	2 (4)	1 (2)	4 (8)
	3	1 (3)	3 (9)	1 (3)	4 (12)
	4	3 (12)	4 (16)	1 (4)	1 (4)
Totals		22	29	15	24
Overall Rank		2	4	1	3
30	1	1 (1)	8 (8)	0 (0)	0 (0)
	2	2 (4)	1 (2)	3 (6)	3 (6)
	3	4 (12)	0 (0)	2 (6)	3 (9)
	4	2 (8)	0 (0)	4 (16)	3 (12)
Totals		25	10	28	27
Overall Rank		2	1	4	3
31	1	1 (1)	8 (8)	0 (0)	0 (0)
	2	2 (4)	1 (2)	2 (4)	4 (8)
	3	2 (6)	0 (0)	4 (12)	3 (9)
	4	4 (16)	0 (0)	3 (12)	2 (8)
Totals		27	10	28	25
Overall Rank		3	1	4	2
32	1	3 (3)	0 (0)	1 (1)	5 (5)
	2	2 (4)	2 (4)	2 (4)	3 (6)
	3	3 (9)	1 (3)	4 (12)	1 (3)
	4	1 (4)	6 (24)	2 (8)	0 (0)
Totals		20	31	25	14
Overall Rank		2	4	3	1

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
33	1	1 (1)	7 (7)	0 (0)	1 (1)
	2	1 (2)	1 (2)	2 (4)	5 (10)
	3	2 (6)	1 (3)	5 (15)	1 (3)
	4	5 (20)	0 (0)	2 (8)	2 (8)
Totals		29	12	27	22
Overall Rank		4	1	3	2
34	1	5 (5)	3 (3)	1 (1)	0 (0)
	2	2 (4)	5 (10)	1 (2)	1 (2)
	3	2 (6)	1 (3)	1 (3)	5 (15)
	4	0 (0)	0 (0)	5 (20)	4 (16)
Totals		15	16	26	33
Overall Rank		1	2	3	4
35	1	2 (2)	4 (4)	1 (1)	2 (2)
	2	2 (4)	1 (2)	6 (12)	0 (0)
	3	4 (12)	4 (12)	0 (0)	1 (3)
	4	1 (4)	0 (0)	2 (8)	6 (24)
Totals		22	18	21	29
Overall Rank		3	1	2	4
36	1	7 (7)	2 (2)	0 (0)	0 (0)
	2	2 (4)	4 (8)	3 (6)	0 (0)
	3	0 (0)	2 (6)	4 (12)	3 (9)
	4	0 (0)	1 (4)	2 (8)	6 (24)
Totals		11	20	26	33
Overall Rank		1	2	3	4

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
37	1	2 (2)	4 (4)	1 (1)	2 (2)
	2	3 (6)	2 (4)	2 (4)	2 (4)
	3	2 (6)	2 (6)	3 (9)	2 (6)
	4	2 (8)	1 (4)	3 (12)	3 (12)
Totals		22	18	26	24
Overall Rank		2	1	4	3
38	1	3 (3)	3 (3)	3 (3)	0 (0)
	2	1 (2)	3 (6)	3 (6)	2 (4)
	3	5 (15)	2 (6)	2 (6)	0 (0)
	4	0 (0)	1 (4)	1 (4)	7 (28)
Totals		20	19	19	32
Overall Rank		3	1.5	1.5	4
39	1	4 (4)	3 (3)	1 (1)	1 (1)
	2	1 (2)	3 (6)	4 (8)	1 (2)
	3	3 (9)	0 (0)	2 (6)	4 (12)
	4	1 (4)	3 (12)	2 (8)	3 (12)
Totals		19	21	24	29
Overall Rank		1	2	3	4
40	1	0 (0)	8 (8)	1 (1)	0 (0)
	2	5 (10)	0 (0)	0 (0)	4 (8)
	3	3 (9)	0 (0)	2 (6)	4 (12)
	4	1 (4)	1 (4)	6 (24)	1 (4)
Totals		23	12	31	24
Overall Rank		2	1	4	3

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
41	1	1 (1)	5 (5)	2 (2)	1 (1)
	2	4 (8)	2 (4)	1 (2)	2 (4)
	3	2 (6)	2 (6)	1 (3)	4 (12)
	4	2 (8)	0 (0)	5 (20)	2 (8)
Totals		23	15	27	25
Overall Rank		2	1	4	3
42	1	1 (1)	2 (2)	6 (6)	0 (0)
	2	2 (4)	4 (8)	2 (4)	1 (2)
	3	6 (18)	2 (6)	0 (0)	1 (3)
	4	0 (0)	1 (4)	1 (4)	7 (28)
Totals		23	20	14	33
Overall Rank		3	2	1	4
43	1	2 (2)	3 (3)	1 (1)	3 (3)
	2	1 (2)	2 (4)	2 (4)	4 (8)
	3	2 (6)	4 (12)	3 (9)	0 (0)
	4	4 (16)	0 (0)	3 (12)	2 (8)
Totals		26	19	26	19
Overall Rank		3.5	1.5	3.5	1.5
44	1	0 (0)	1 (1)	3 (3)	5 (5)
	2	0 (0)	0 (0)	6 (12)	3 (6)
	3	4 (12)	4 (12)	0 (0)	1 (3)
	4	5 (20)	4 (16)	0 (0)	0 (0)
Totals		32	29	15	14
Overall Rank		4	3	2	1

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
45	1	0 (0)	8 (8)	1 (1)	0 (0)
	2	3 (6)	1 (2)	0 (0)	5 (10)
	3	4 (12)	0 (0)	2 (6)	3 (9)
	4	2 (8)	0 (0)	6 (20)	1 (4)
Totals		26	10	31	23
Overall Rank		3	1	4	2
46	1	0 (0)	1 (1)	5 (5)	3 (3)
	2	3 (6)	2 (4)	3 (6)	1 (2)
	3	0 (0)	6 (18)	0 (0)	3 (9)
	4	6 (24)	0 (0)	1 (4)	2 (8)
Totals		30	23	15	22
Overall Rank		4	3	1	2
47	1	1 (1)	2 (2)	2 (2)	4 (4)
	2	3 (6)	4 (8)	1 (2)	1 (2)
	3	2 (6)	1 (3)	3 (9)	3 (9)
	4	4 (16)	2 (8)	2 (8)	1 (4)
Totals		29	21	21	19
Overall Rank		4.	2.5	2.5	1
48	1	0 (0)	2 (2)	2 (2)	5 (5)
	2	0 (0)	6 (12)	0 (0)	3 (6)
	3	6 (18)	0 (0)	2 (6)	1 (3)
	4	3 (12)	1 (4)	5 (20)	0 (0)
Totals		30	18	28	14
Overall Rank		4	2	3	1

APPENDIX V continued

Case #	Rank	Classes of Malocclusion			
		Cl I U	Cl I T	Cl II U	Cl II T
49	1	4 (4)	2 (2)	2 (2)	1 (1)
	2	3 (6)	1 (2)	4 (8)	1 (2)
	3	2 (6)	2 (6)	3 (9)	2 (6)
	4	0 (0)	4 (16)	0 (0)	5 (20)
Totals		16	26	19	29
Overall Rank		1	3	2	4

APPENDIX VI

The following pictures represent the slides that were shown to the individual personnel managers. In the study, all of the slides were in color. Case #1, 11, 22, 29, 40, and 47 were randomly selected to represent the color slides. The others were reproduced in black and white.

KEY:

I = Class I
II = Class II
U = Untreated
T = Treated

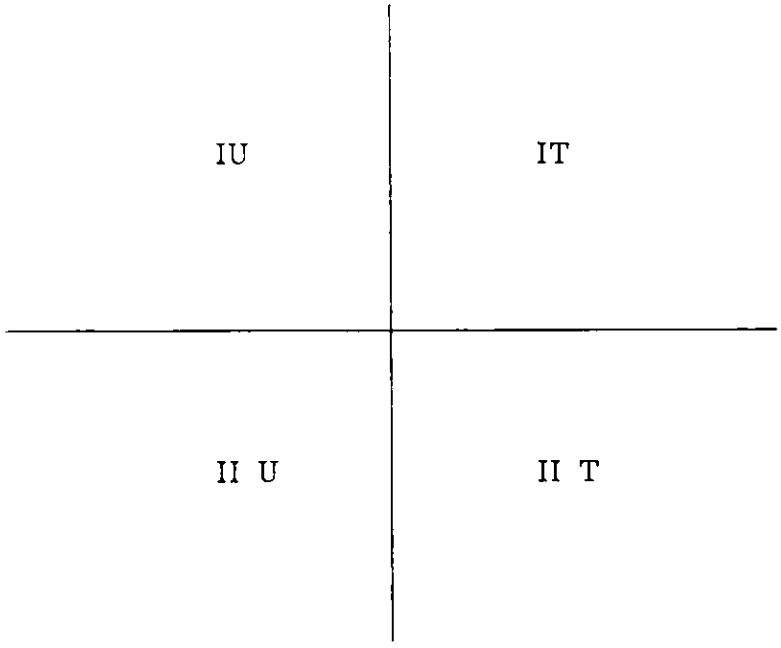
Picture A is located in the upper left quadrant.

Picture B is located in the upper right quadrant.

Picture C is located in the lower left quadrant.

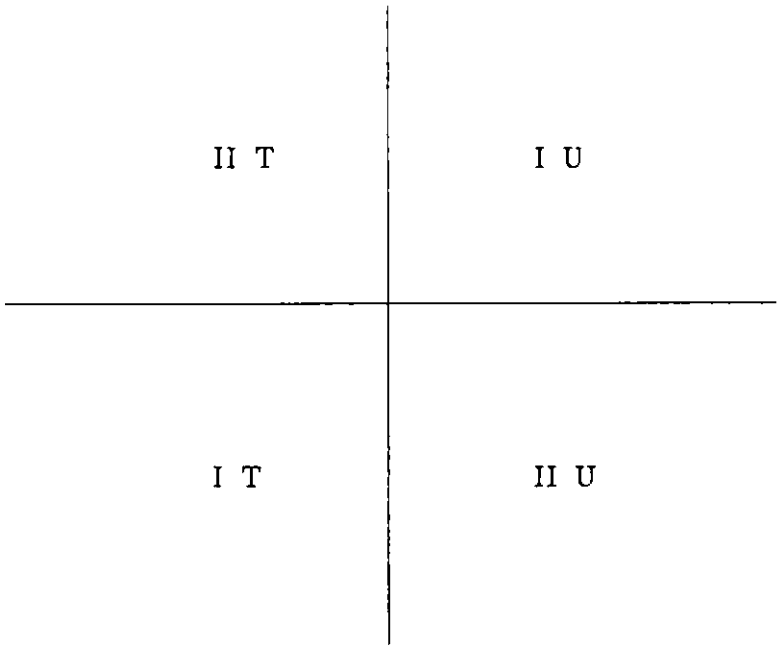
Picture D is located in the lower right quadrant.

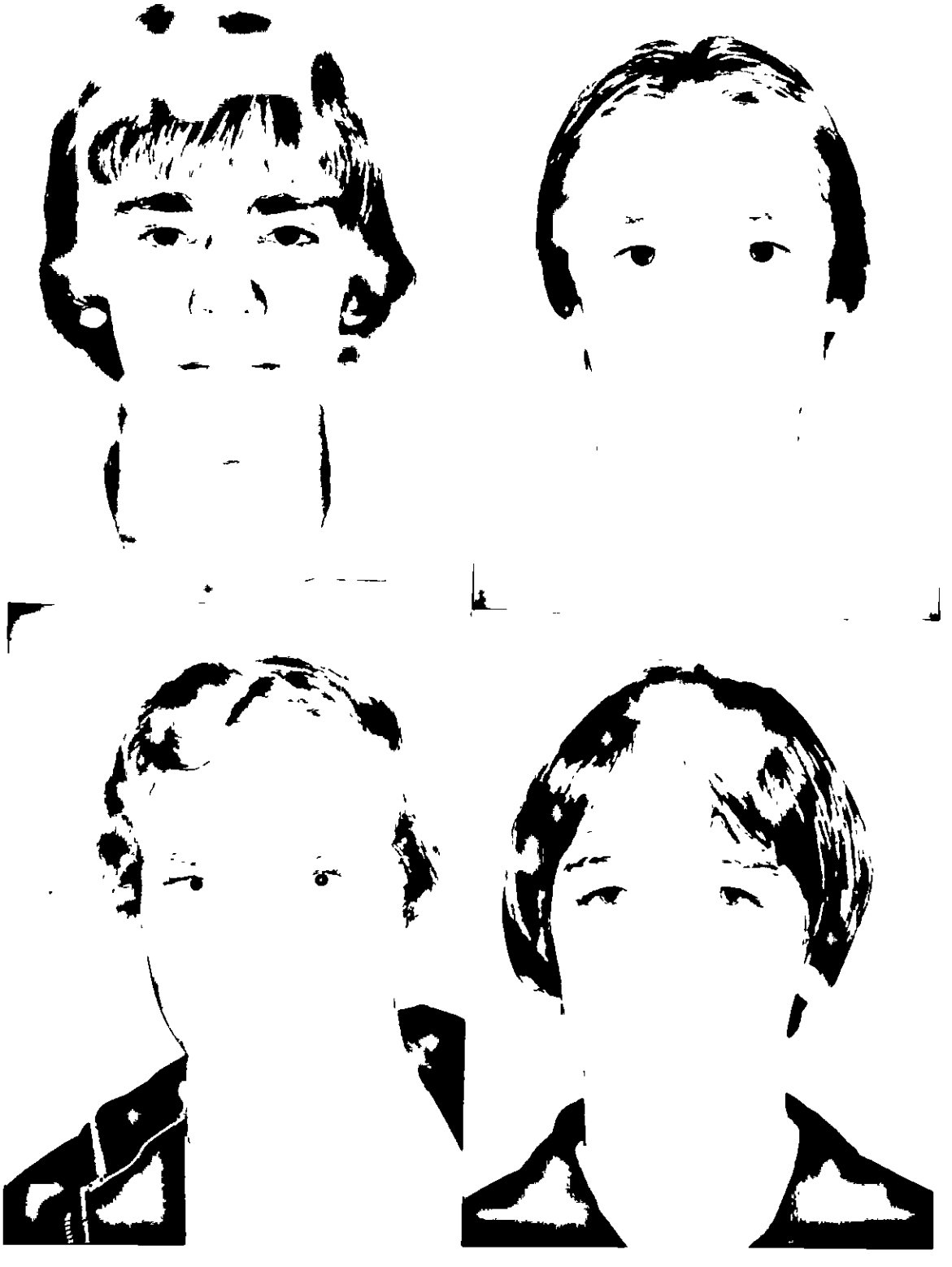
Case #1



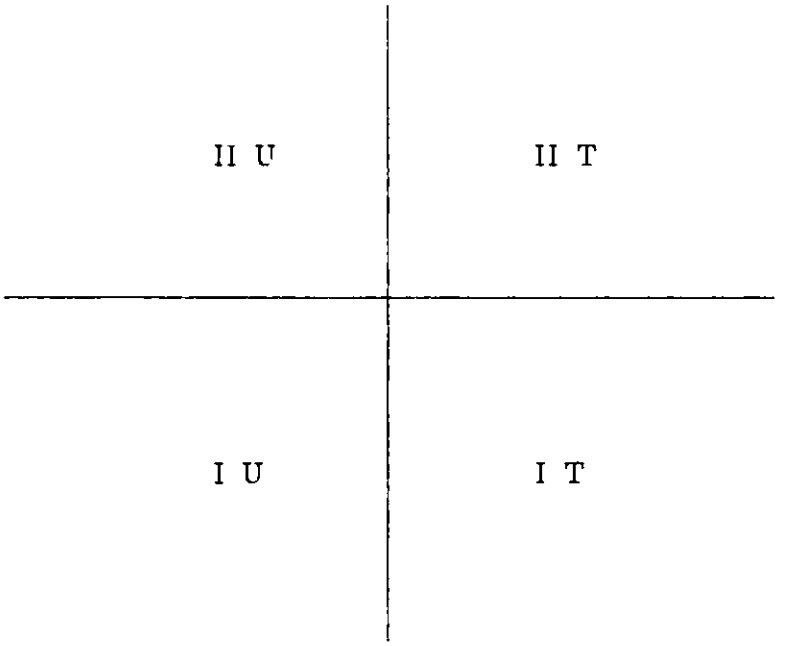


Case #2



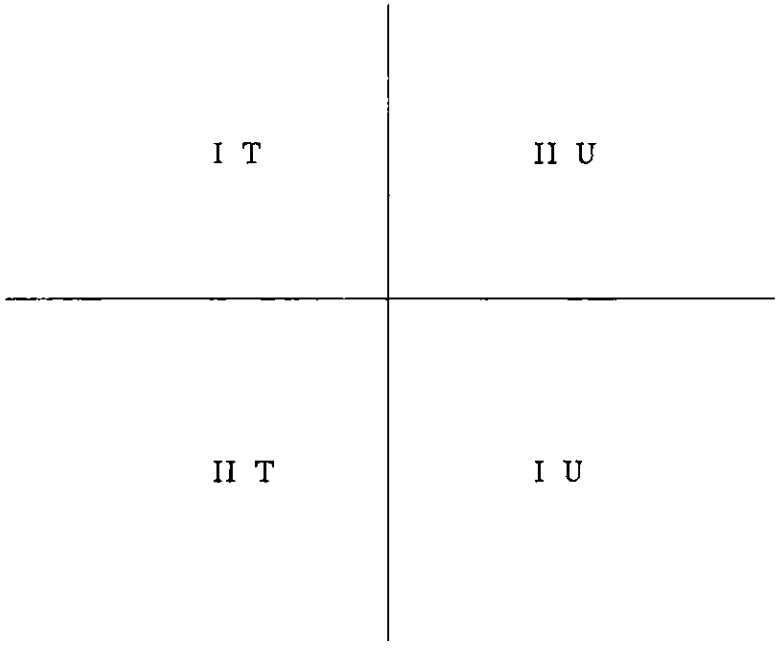


Case #3





Case #4



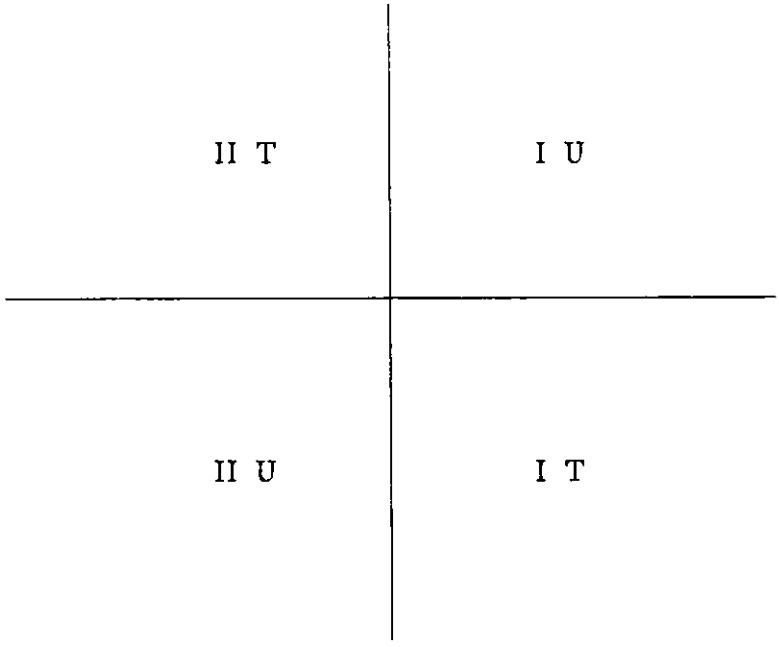




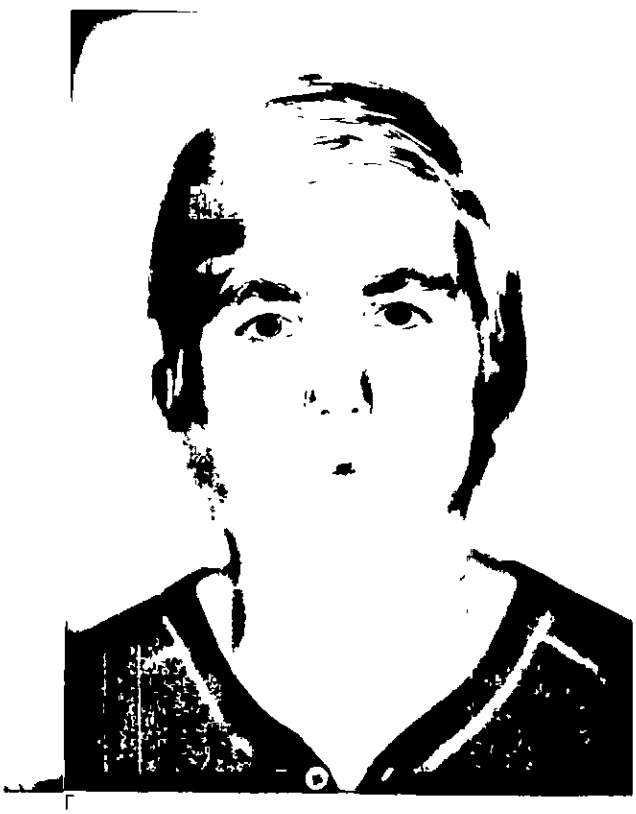




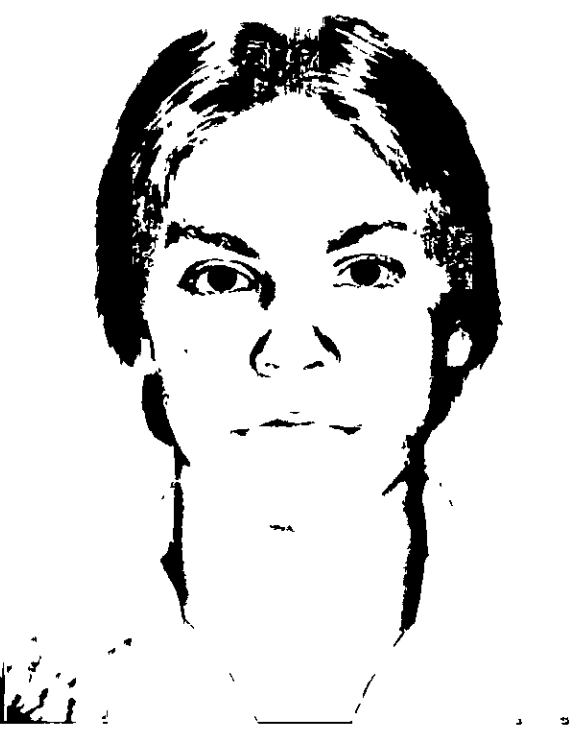
Case #5



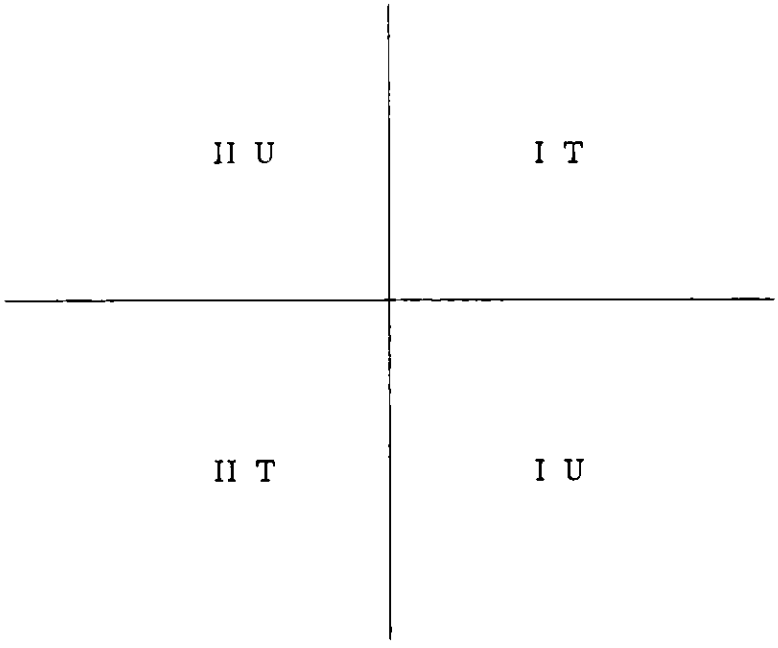








Case #6



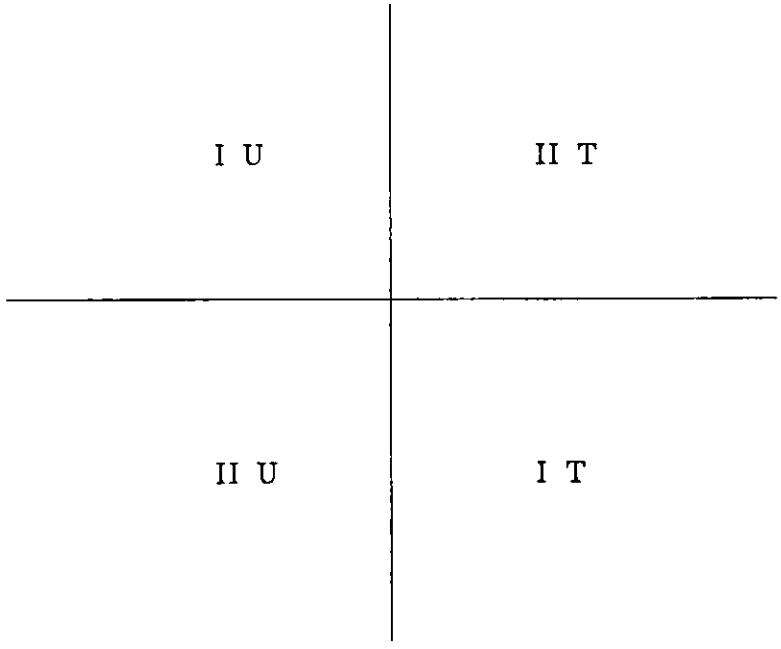


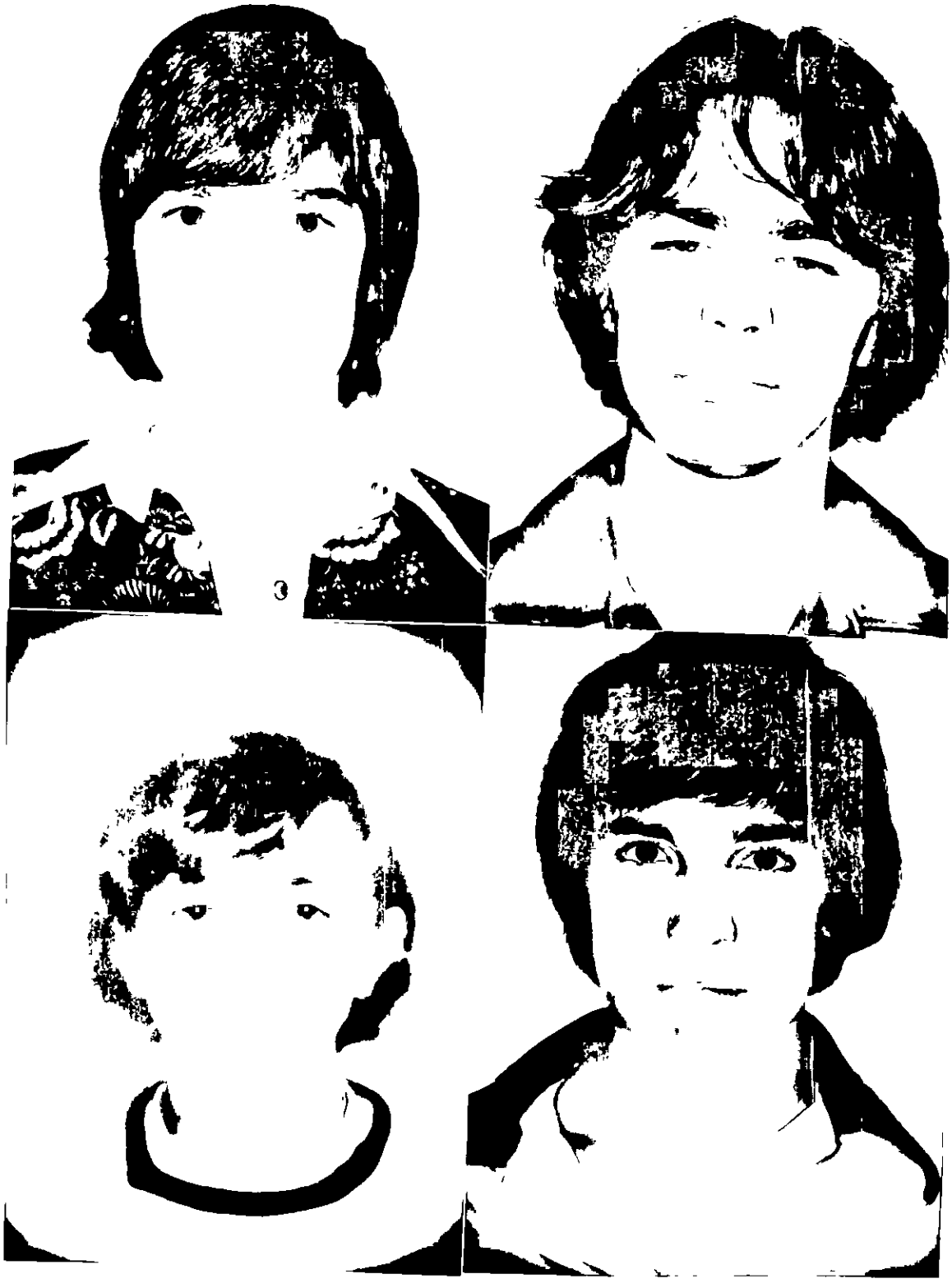




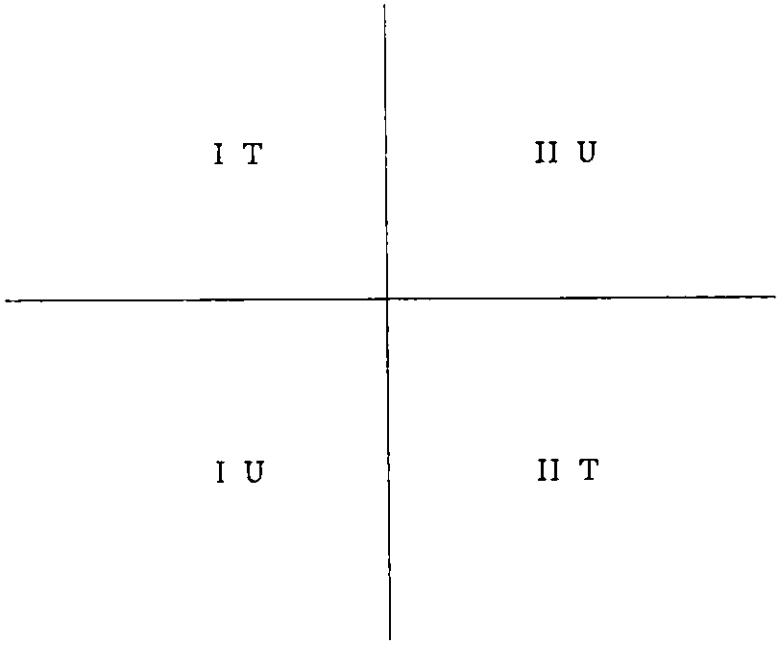


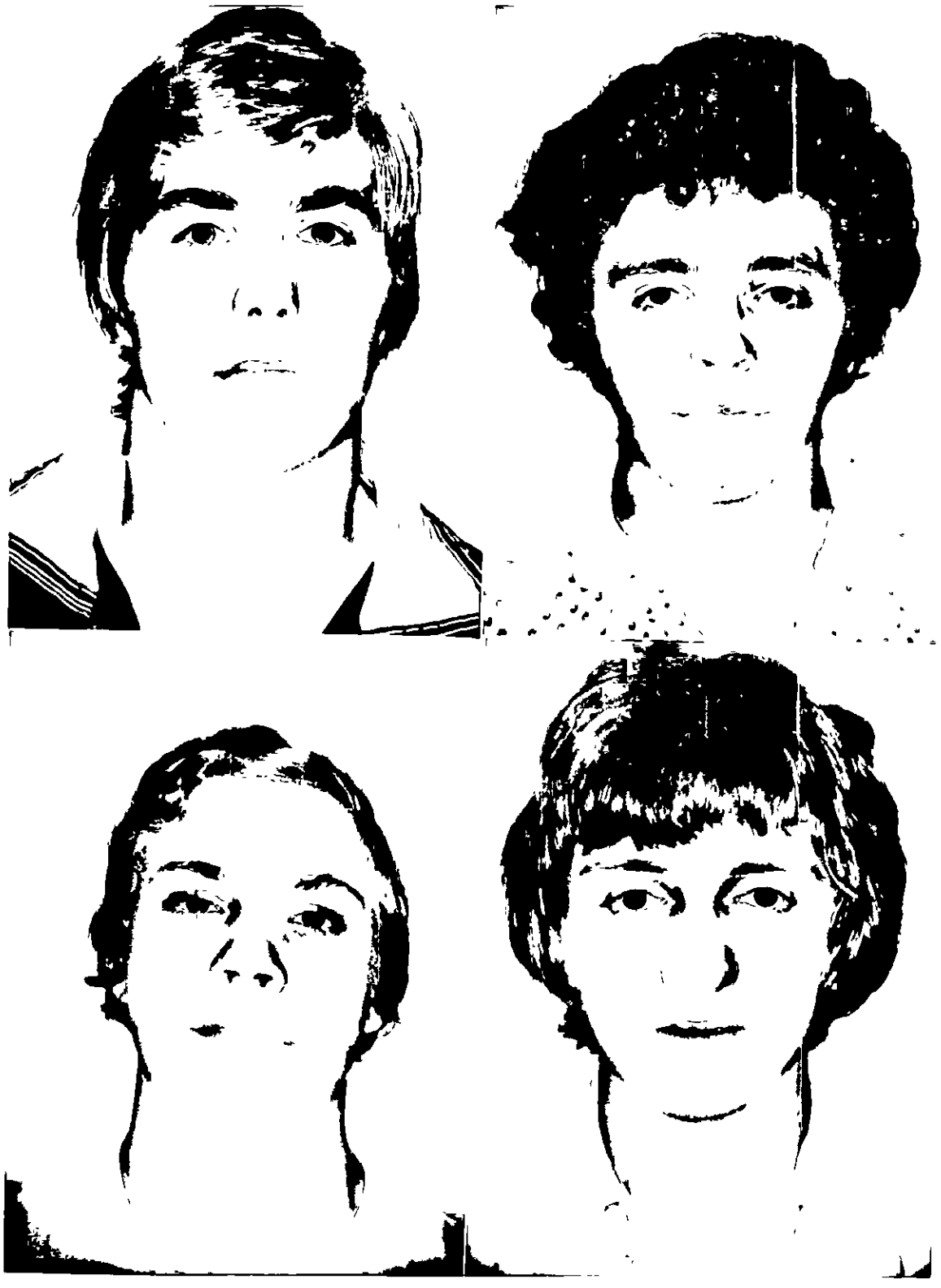
Case #7



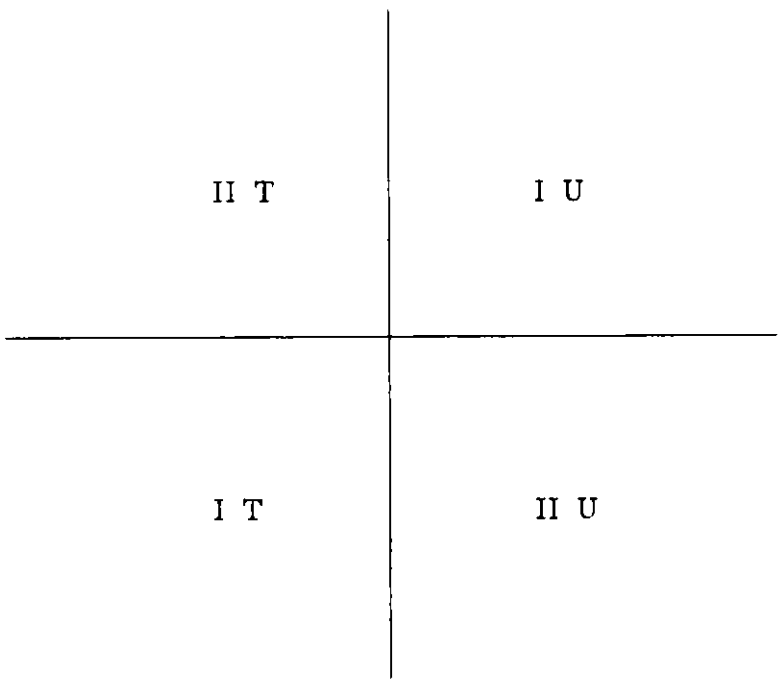


Case #8



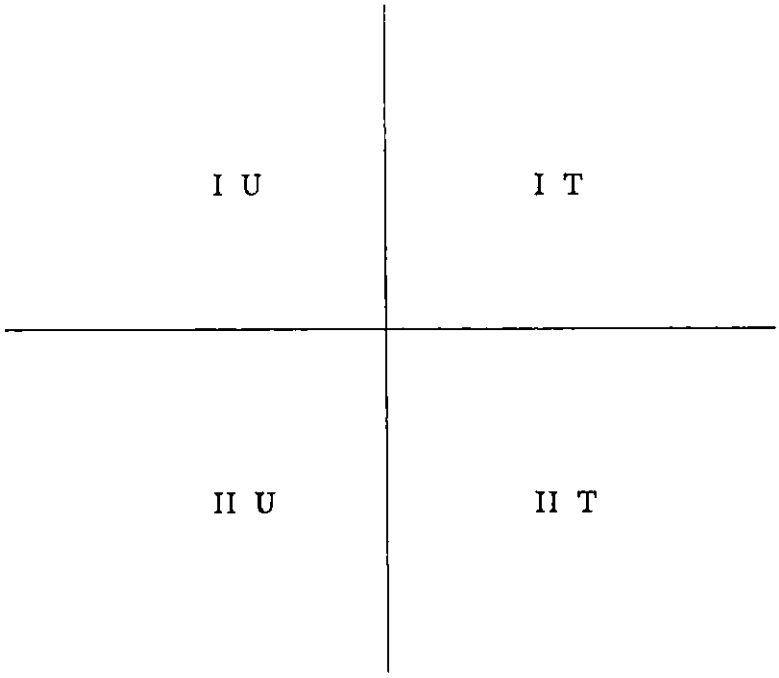


Case #9





Case #10



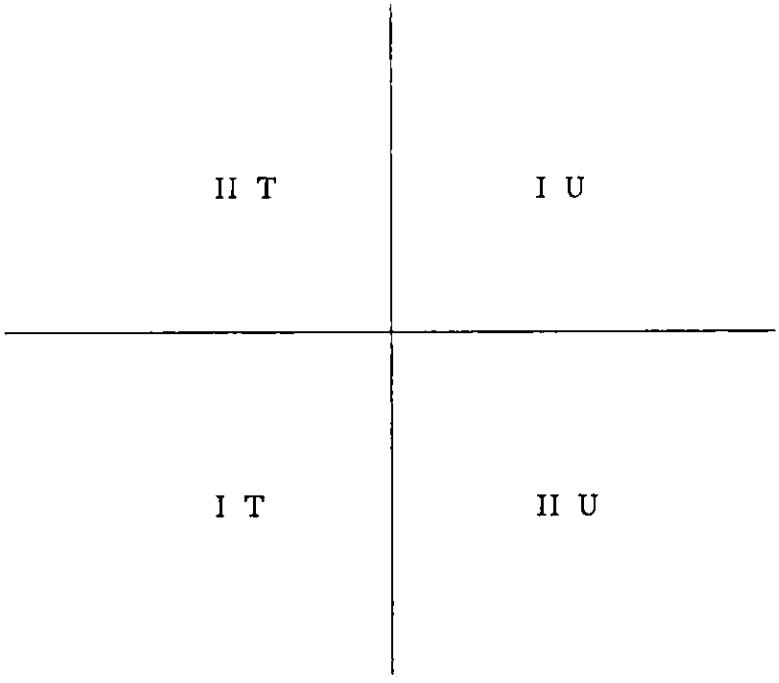






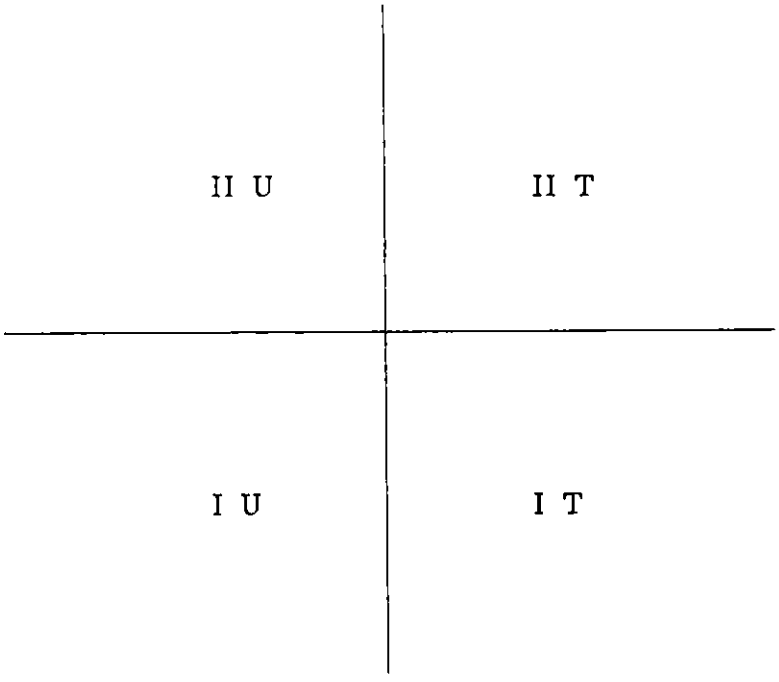


Case #11





Case #12



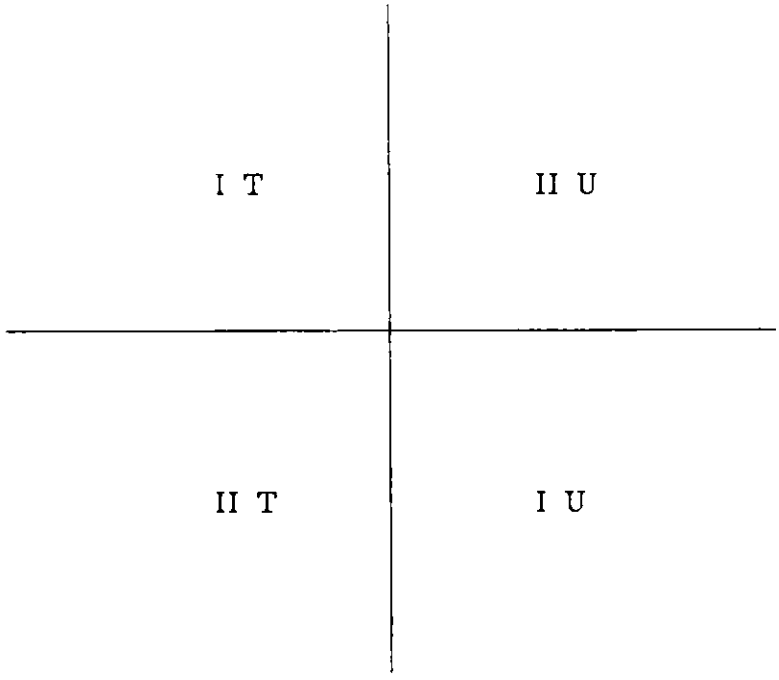








Case #13



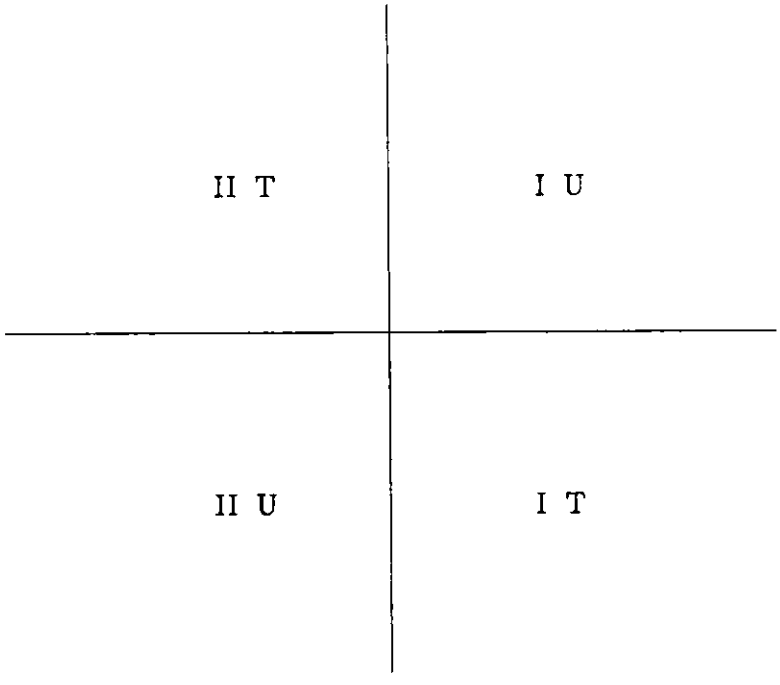








Case #14



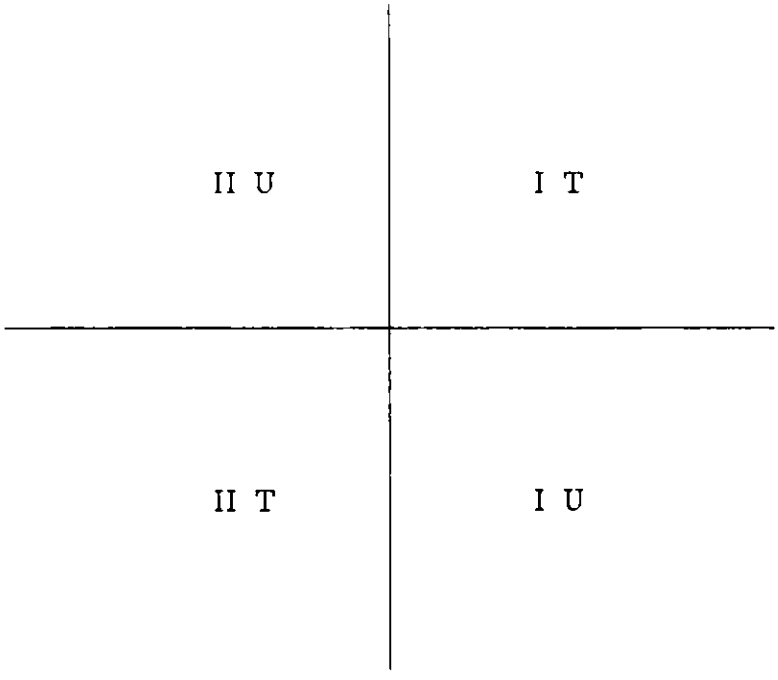








Case #15



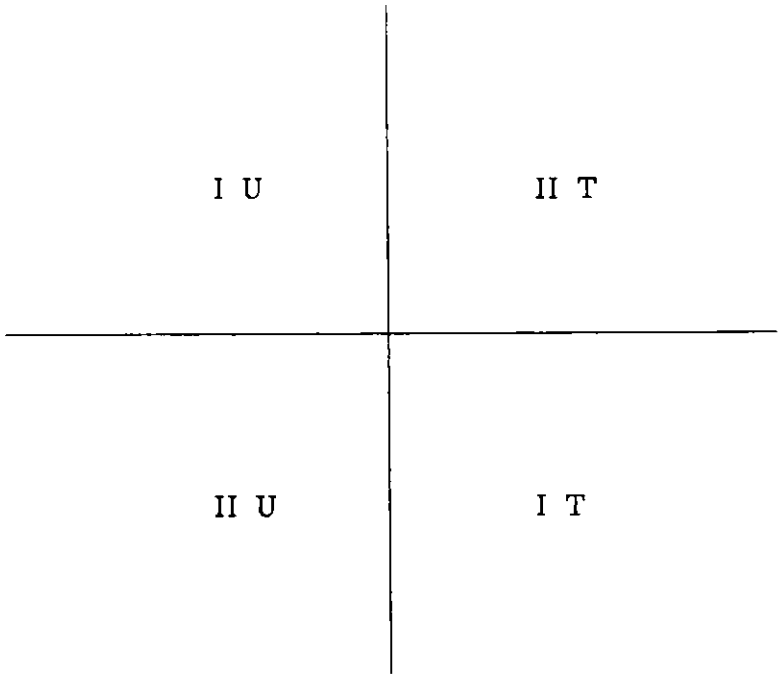






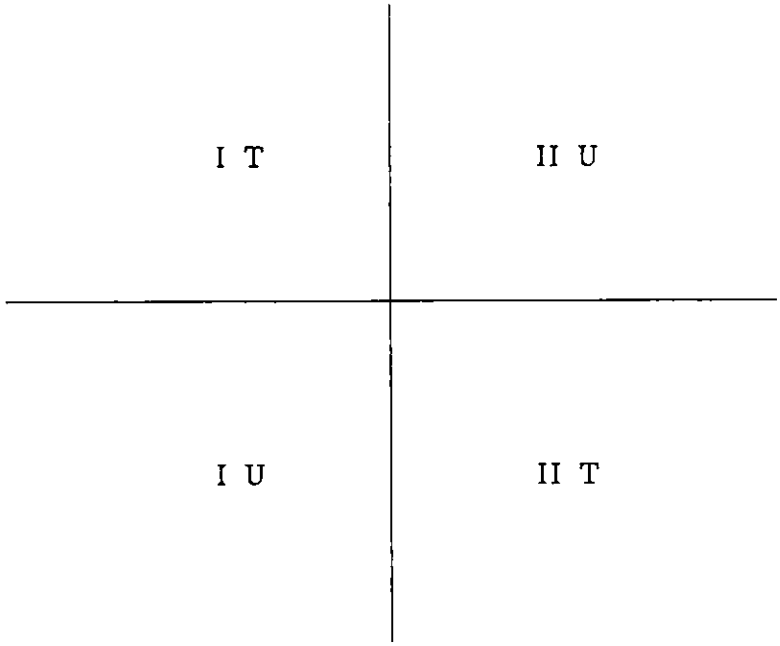


Case #16



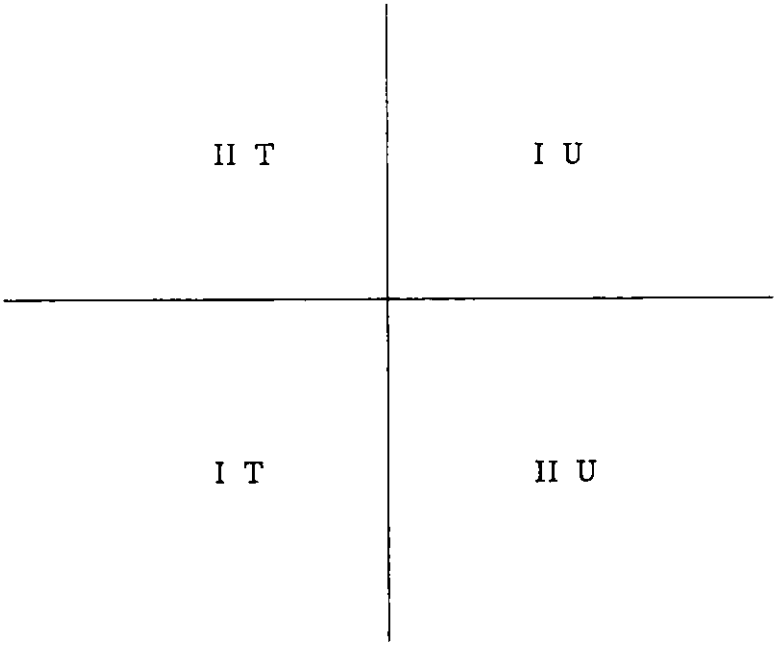


Case #17





Case #18

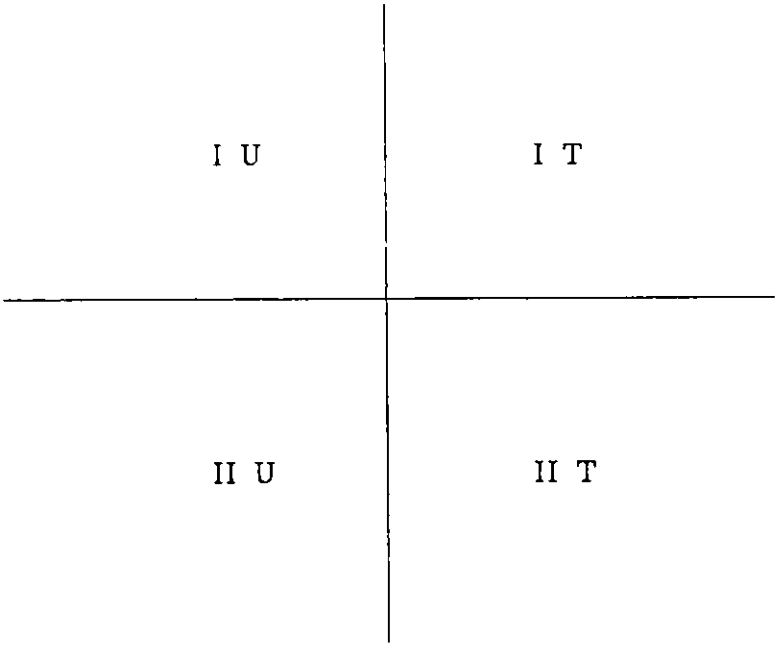




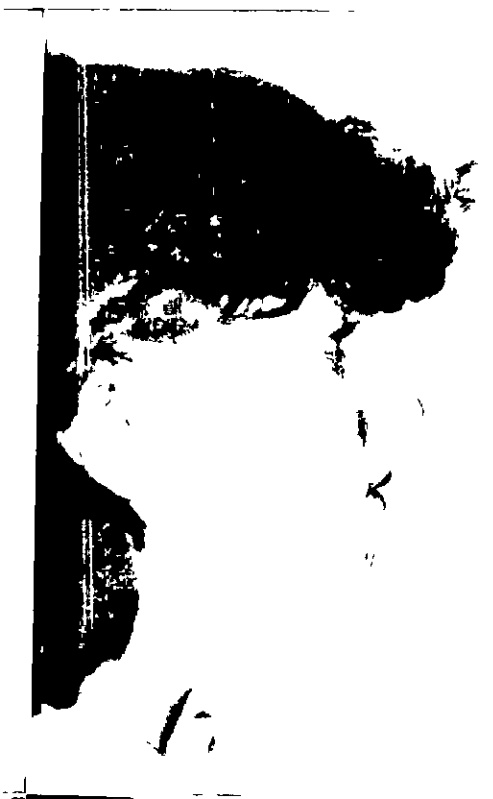




Case #19



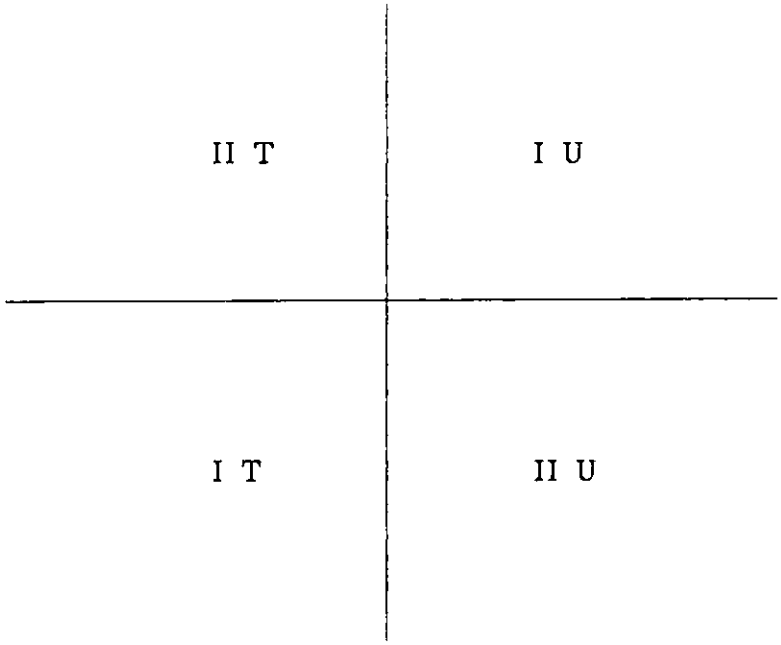








Case #20



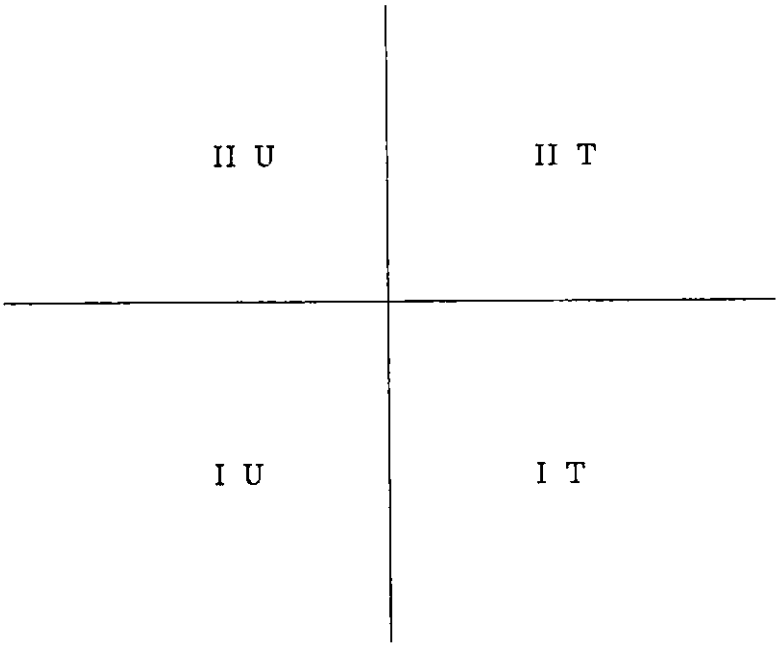


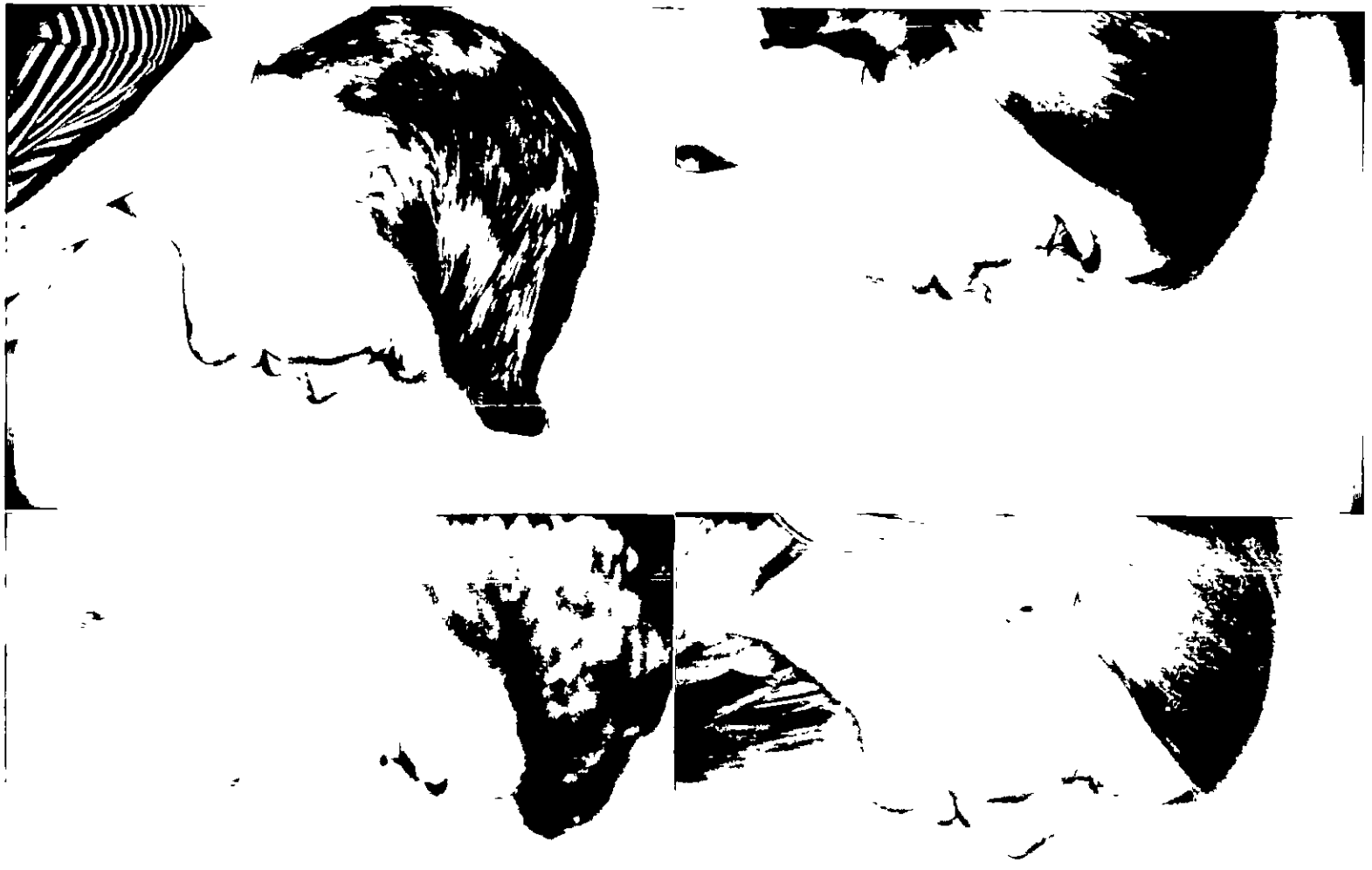




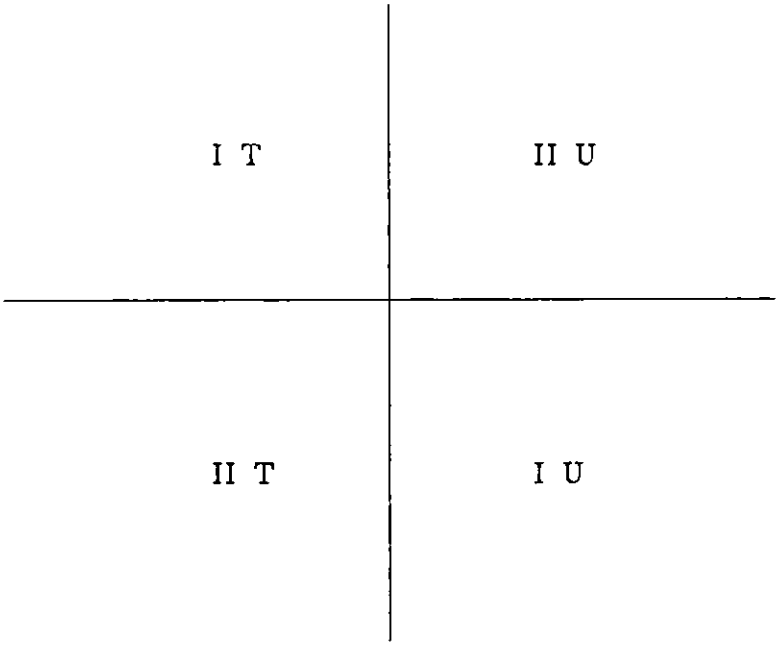


Case #21



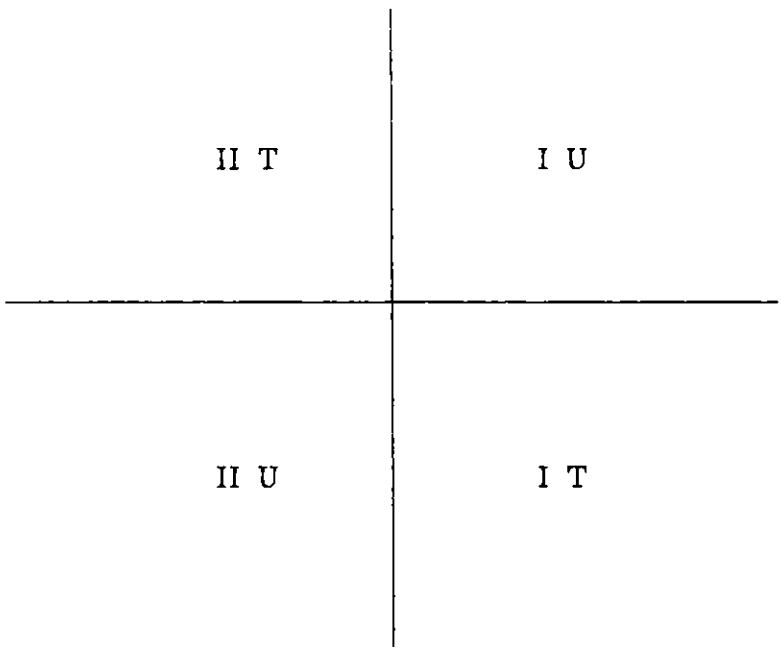


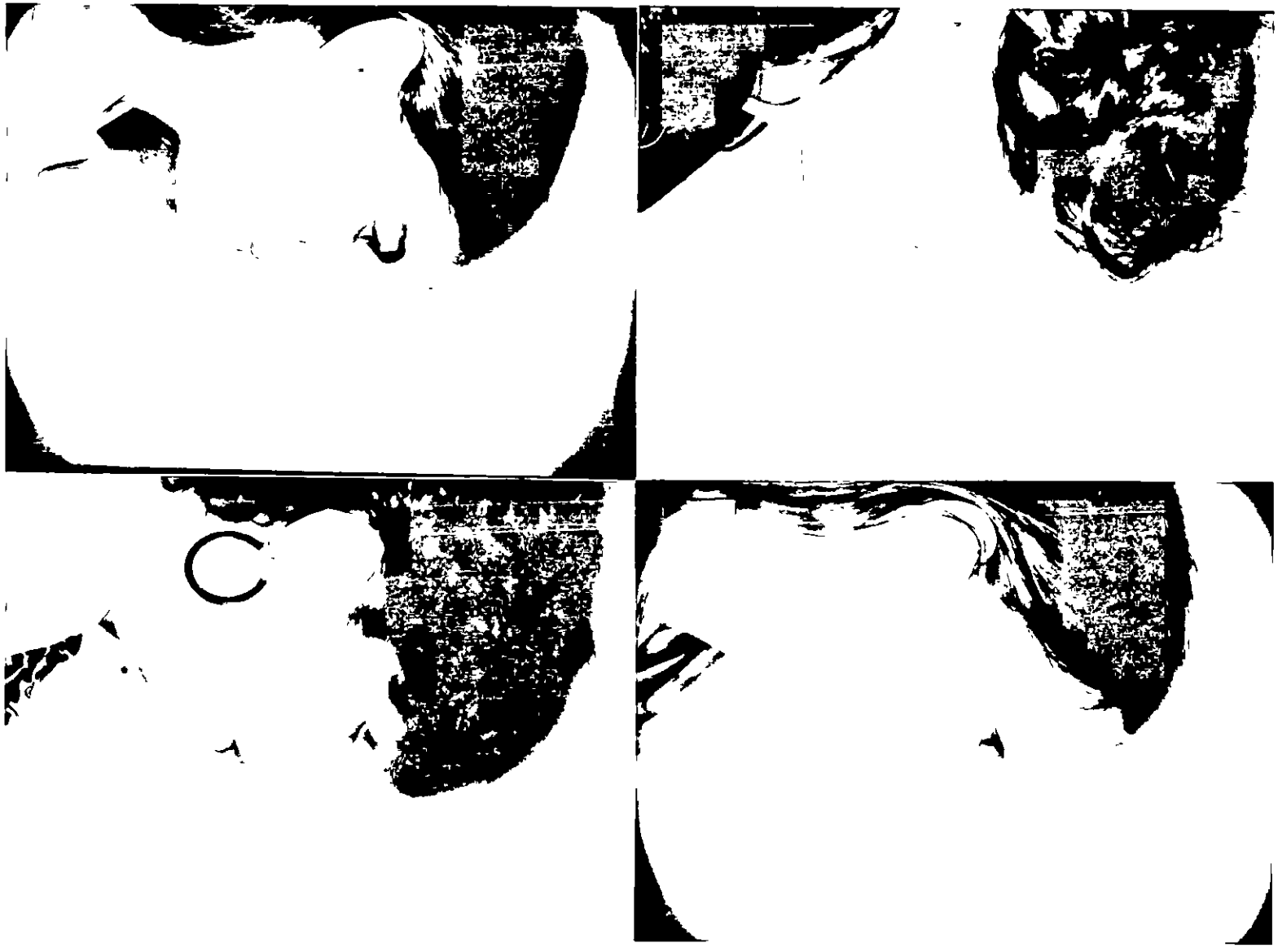
Case #22



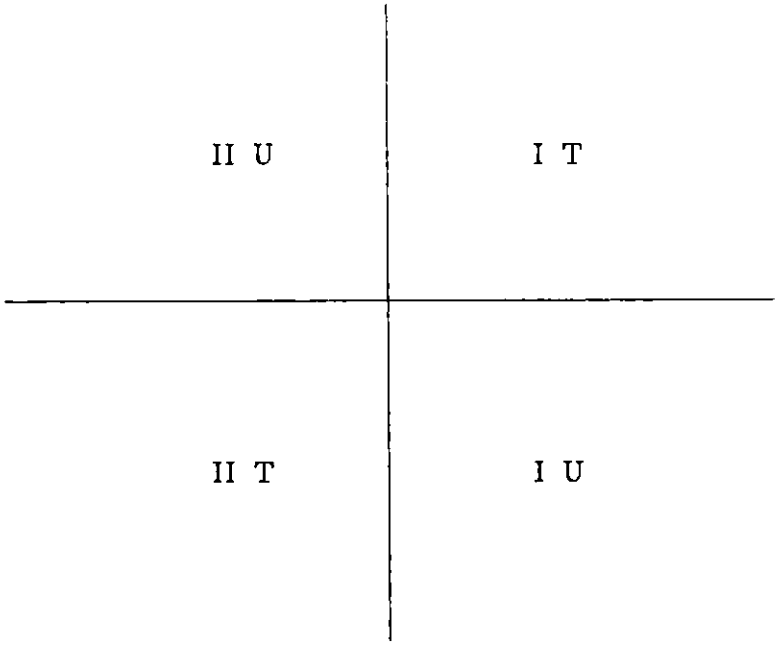


Case #23



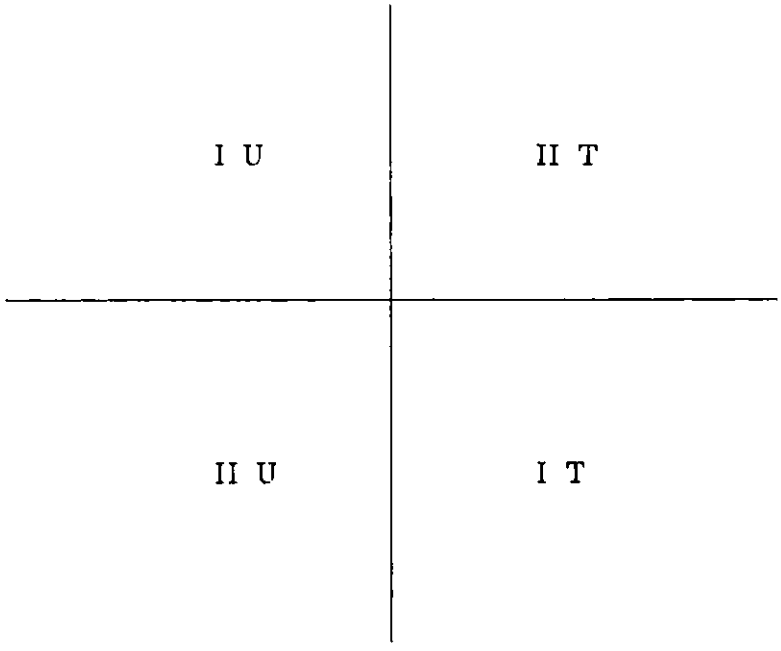


Case #24



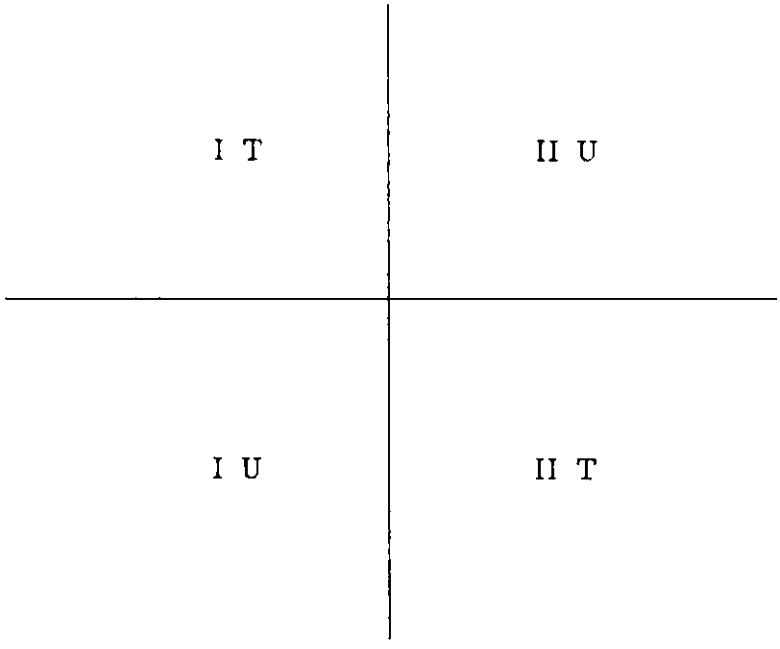


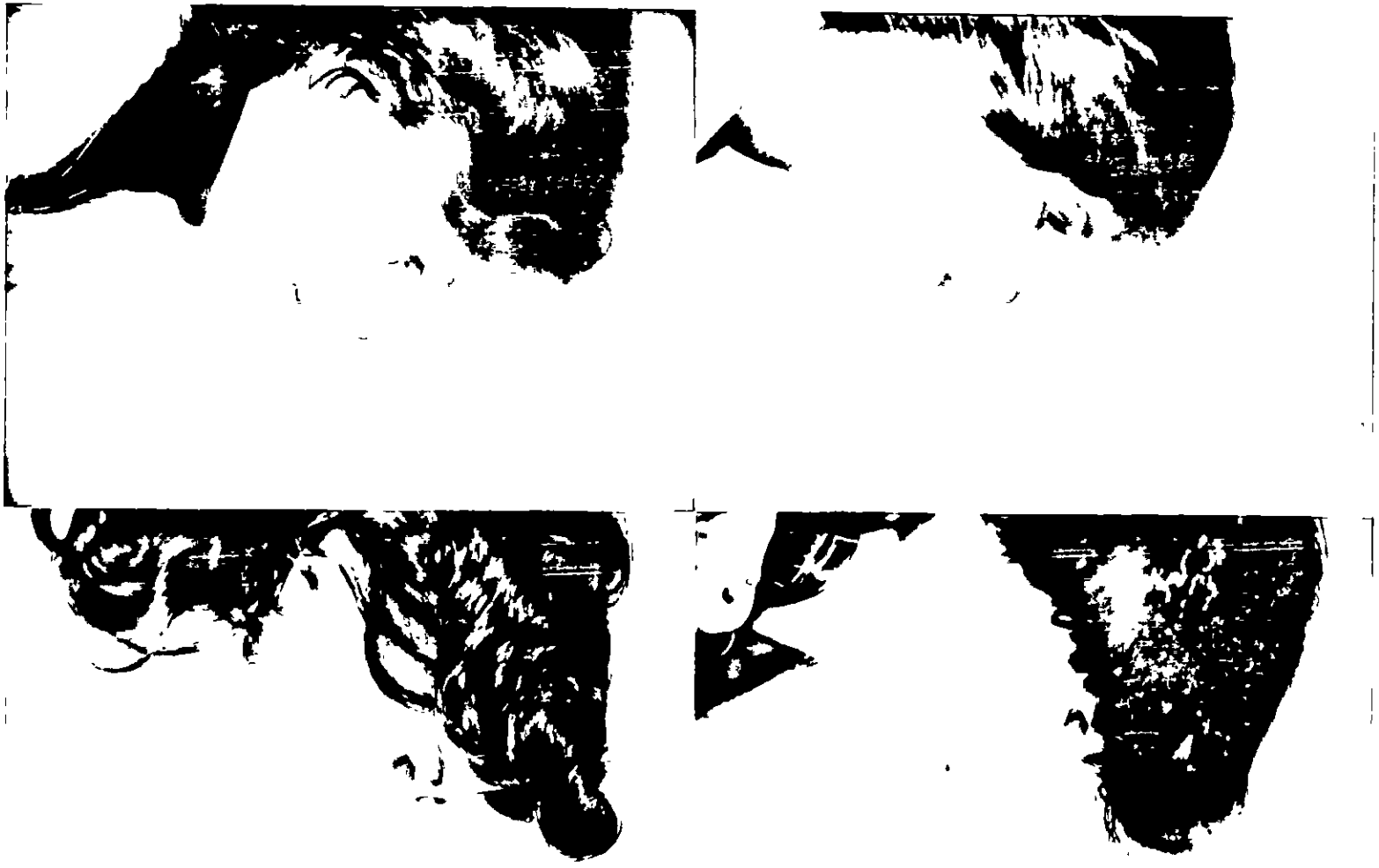
Case #25



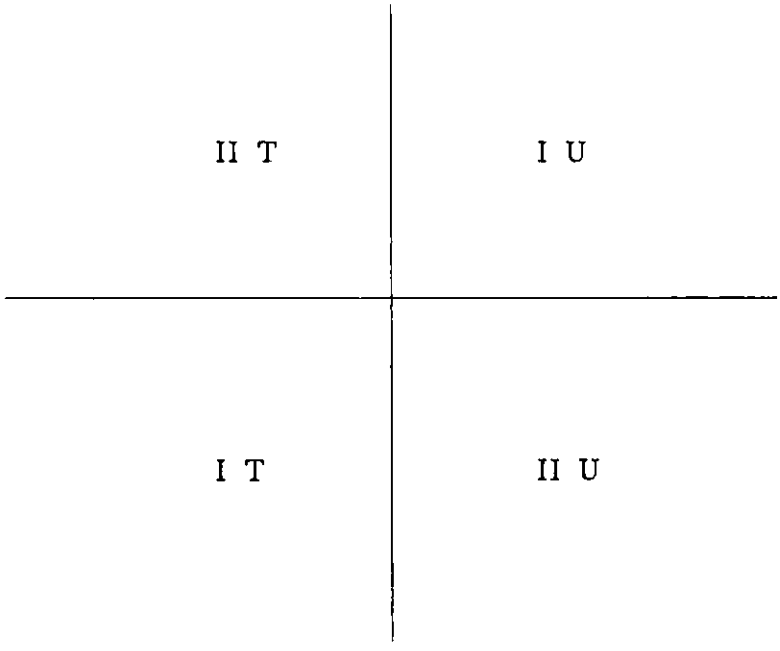


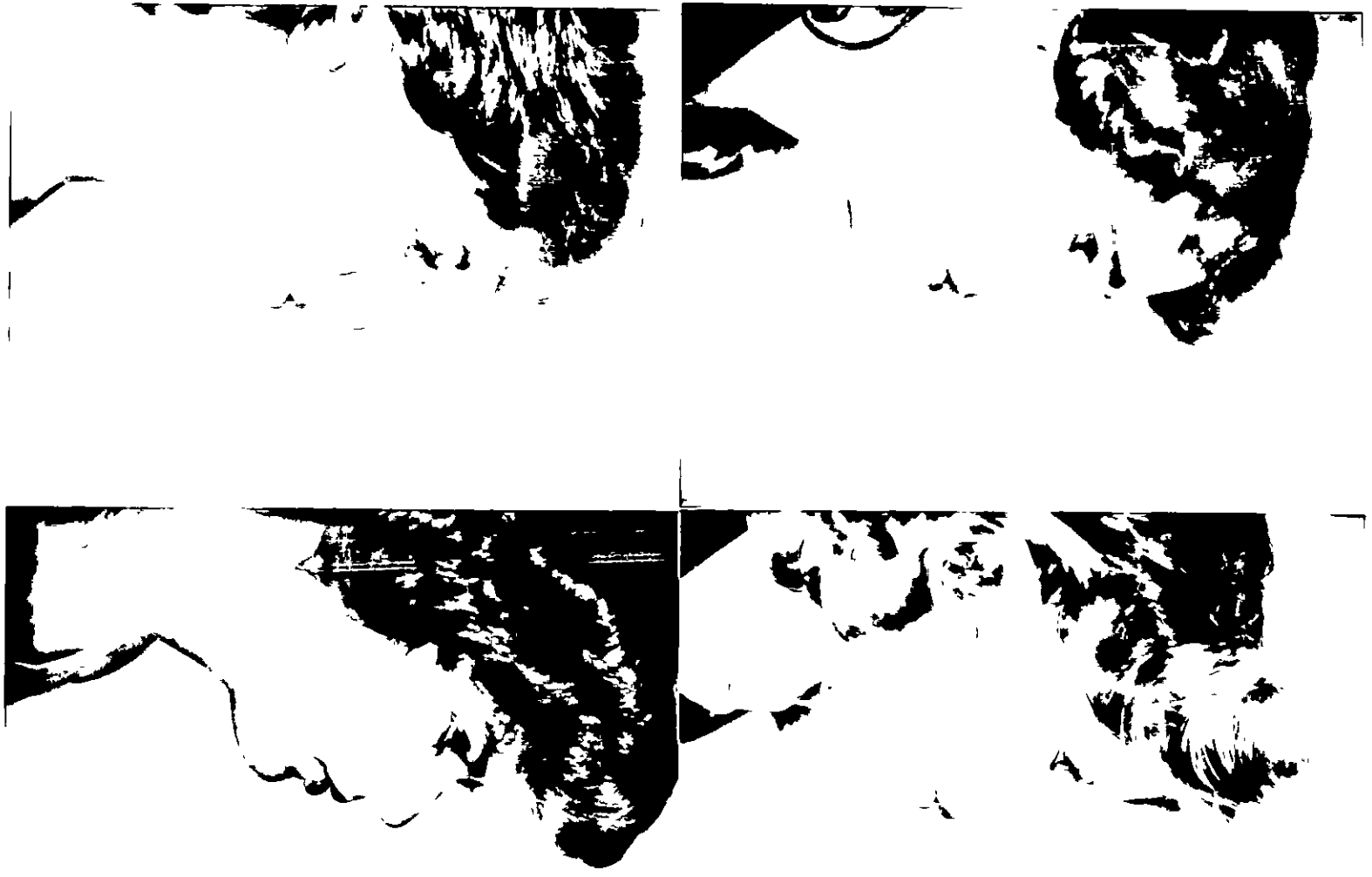
Case #26



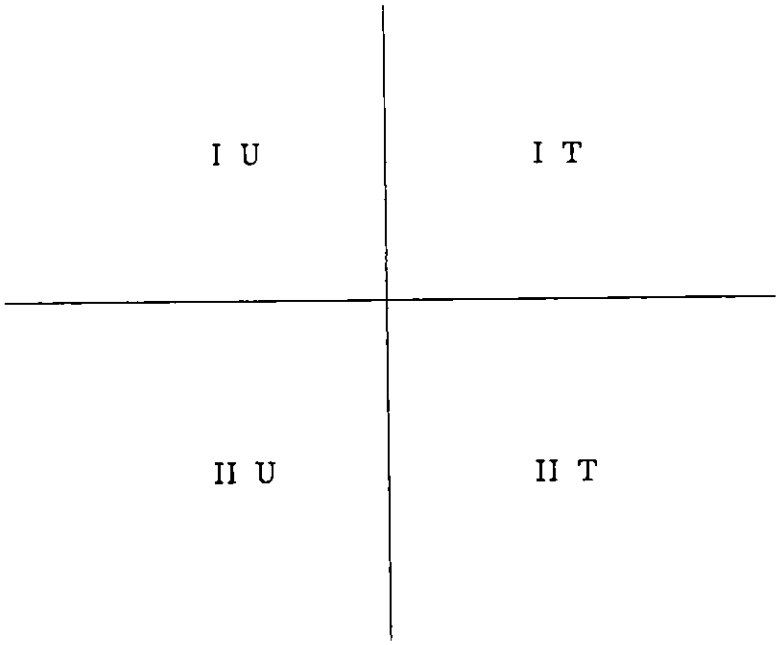


Case #27





Case #28



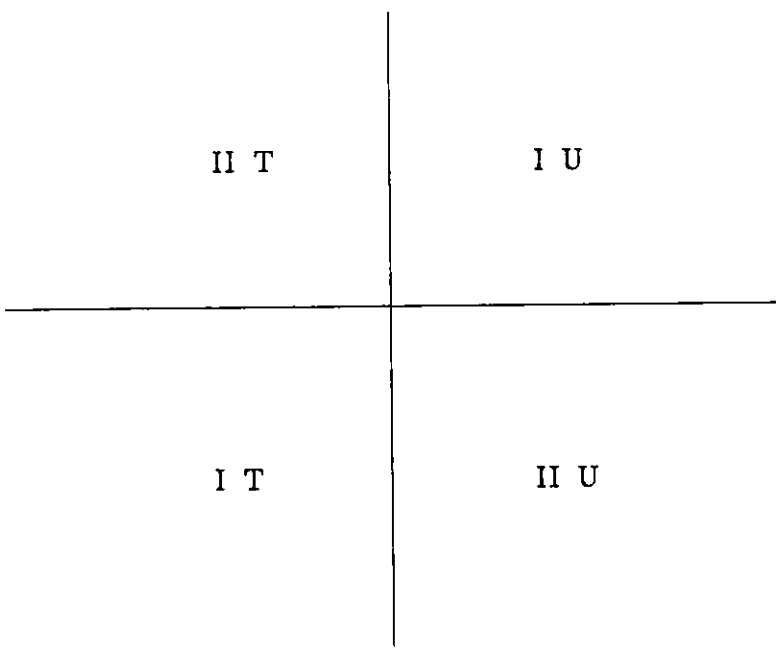






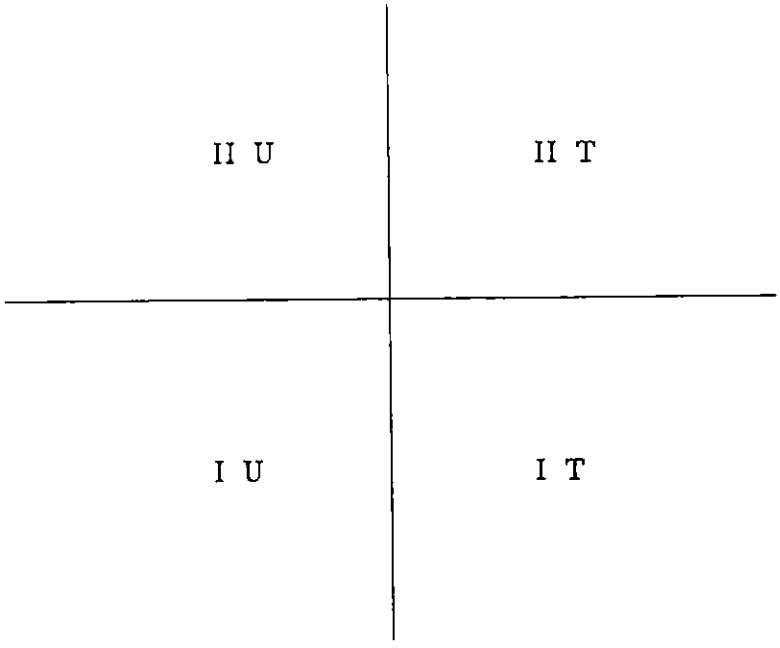


Case #29



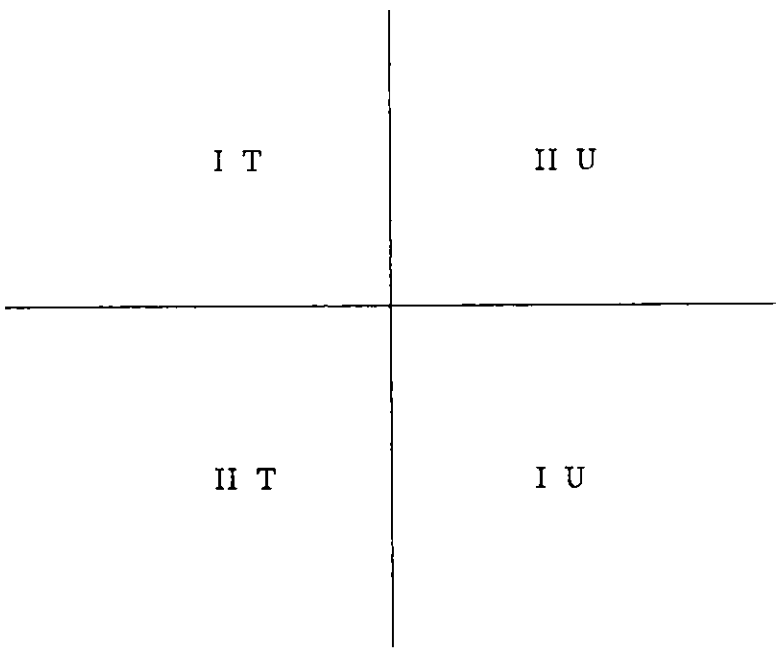


Case #30

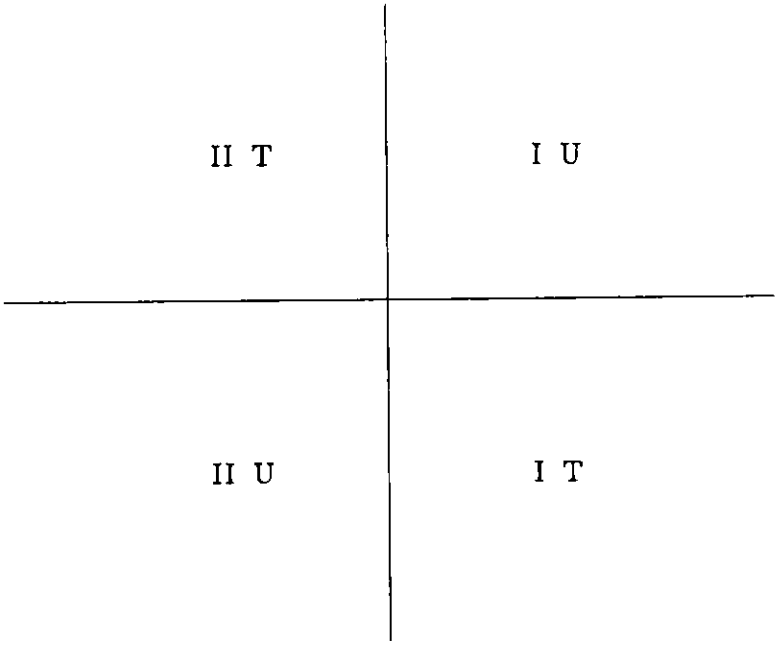




Case #31



Case #32



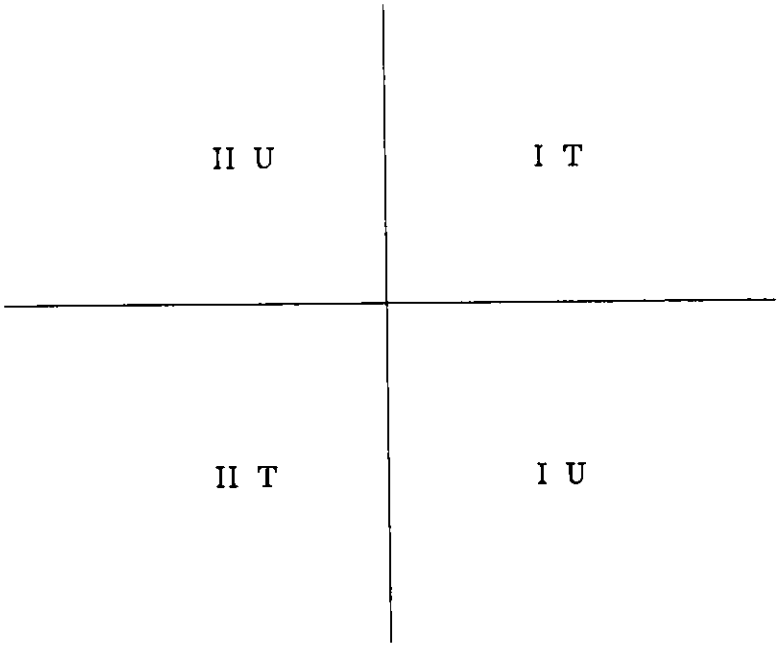


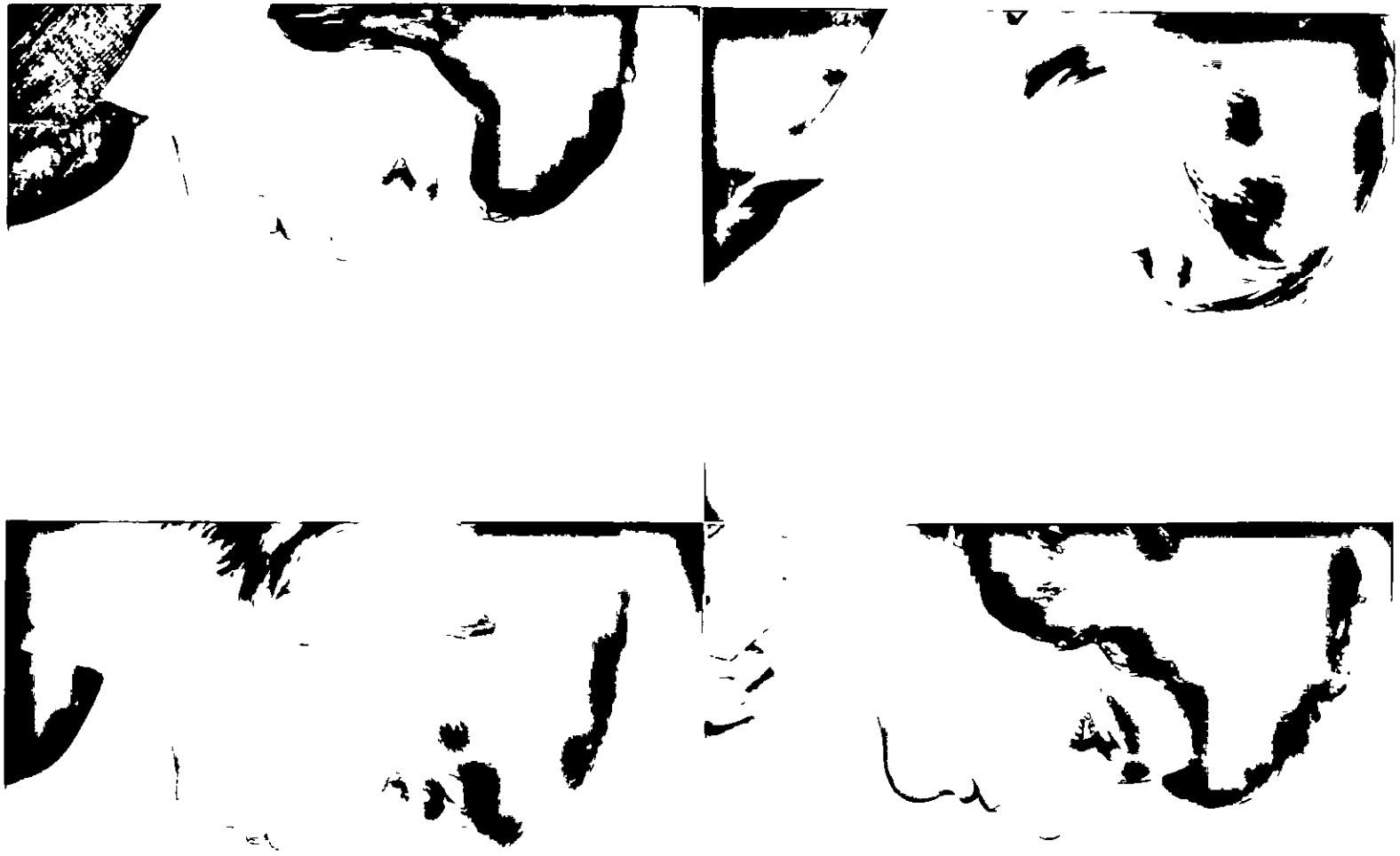




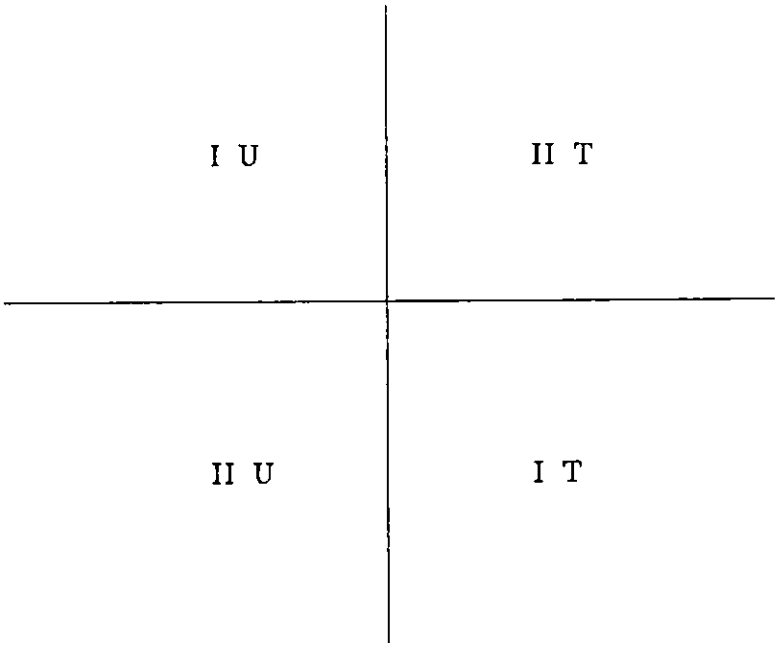


Case #33



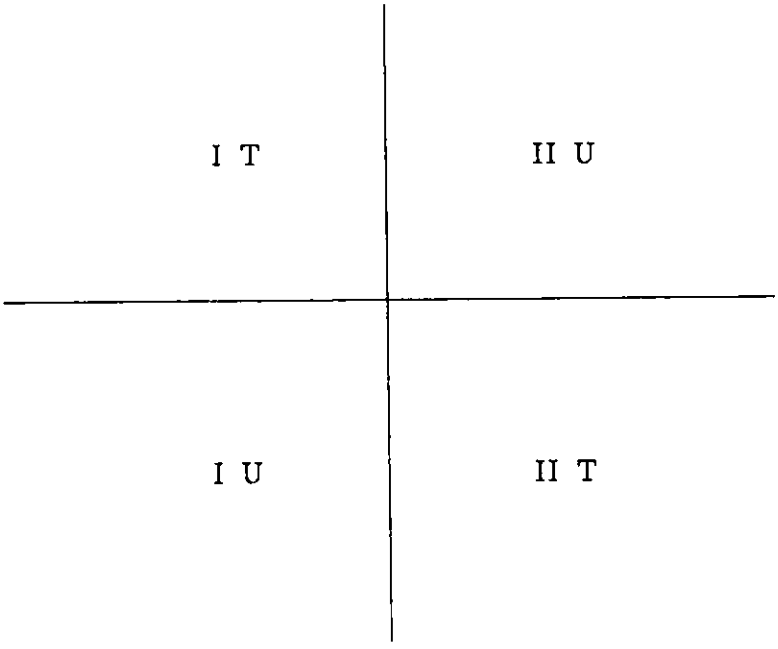


Case #34

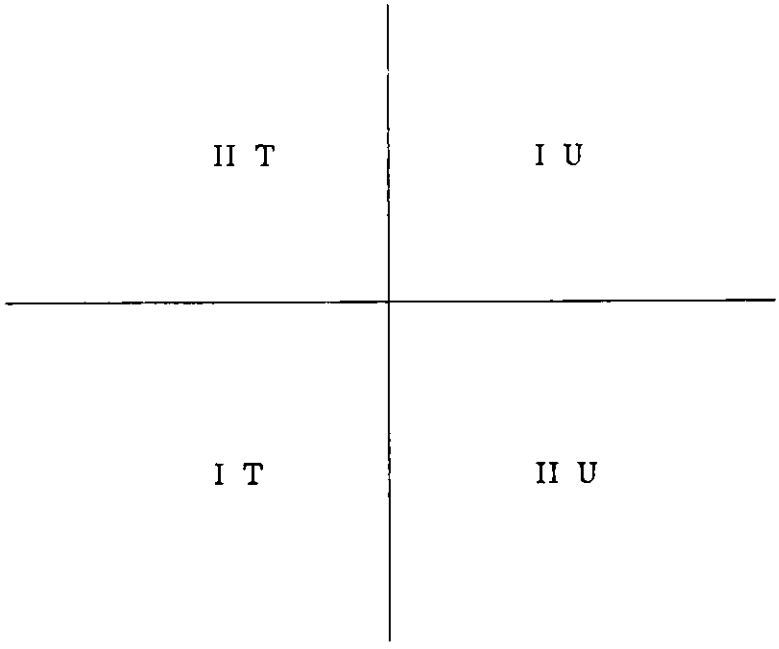




Case #35

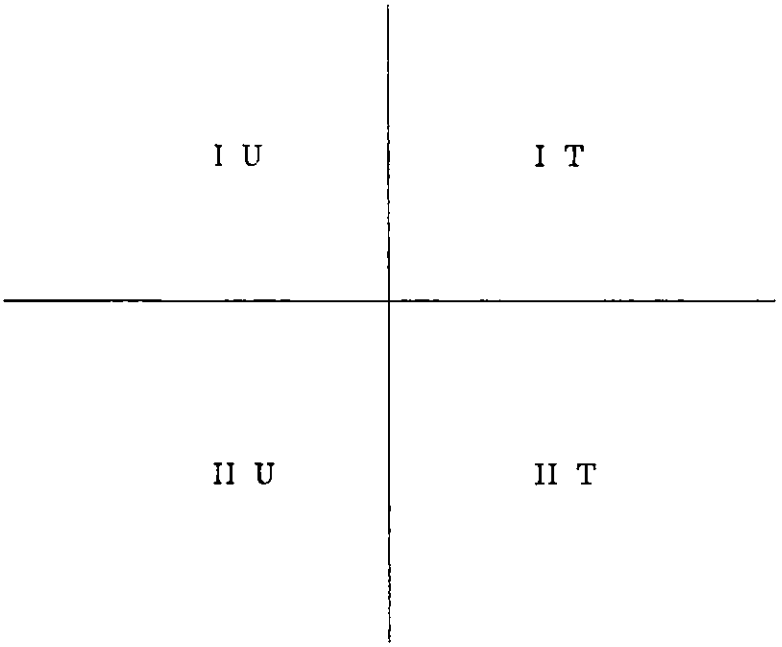


Case #36





Case #37



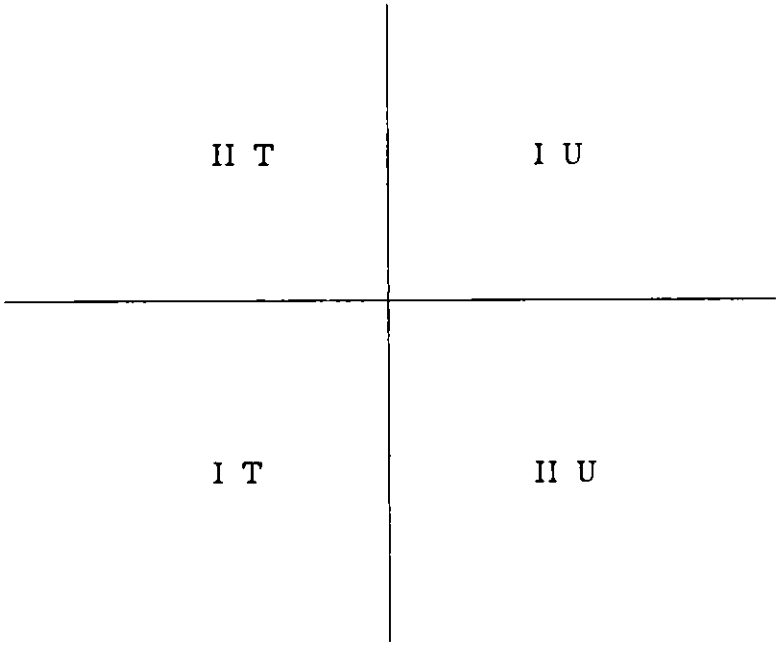




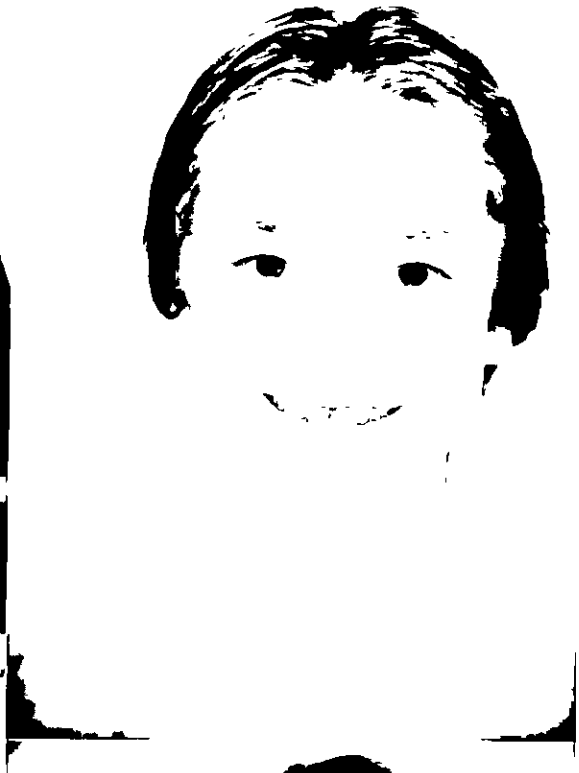




Case #38



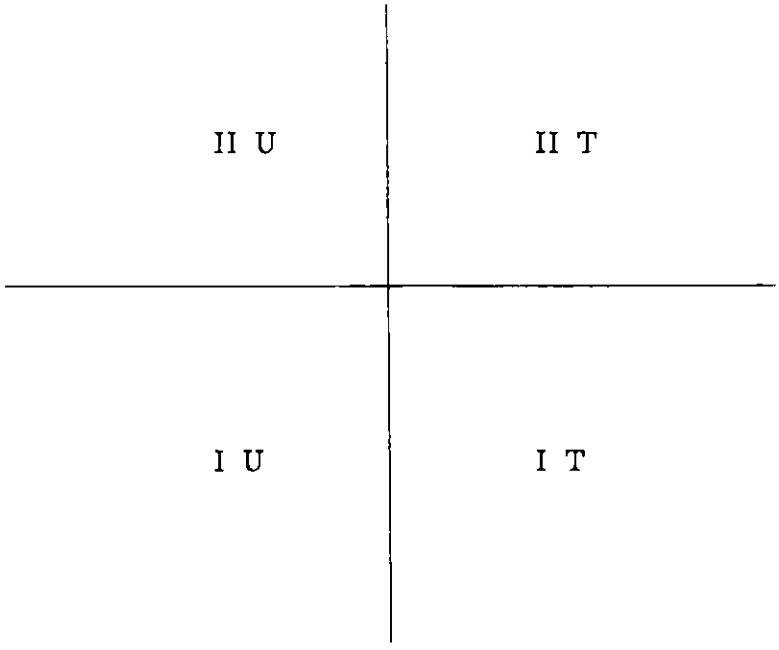


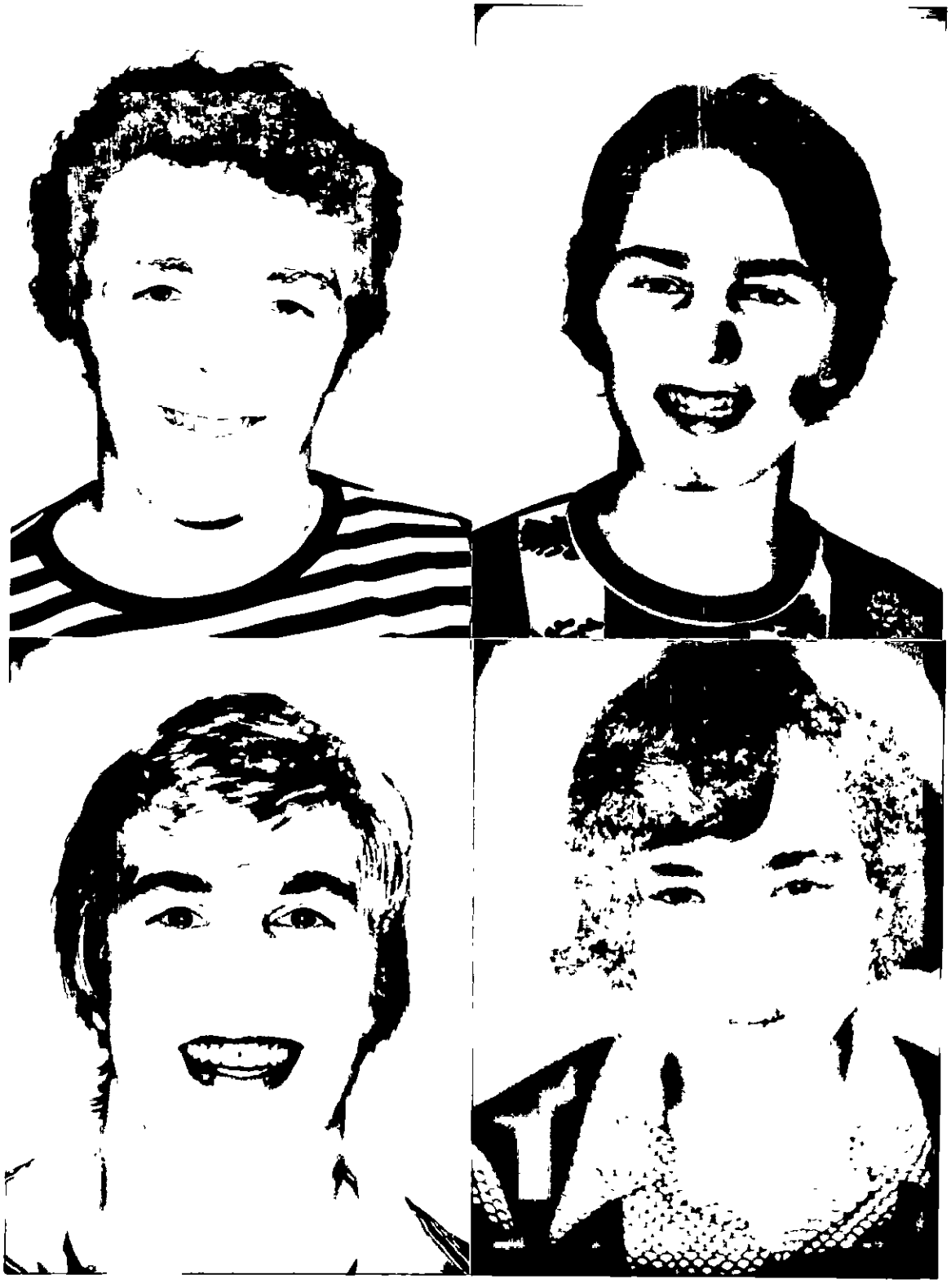




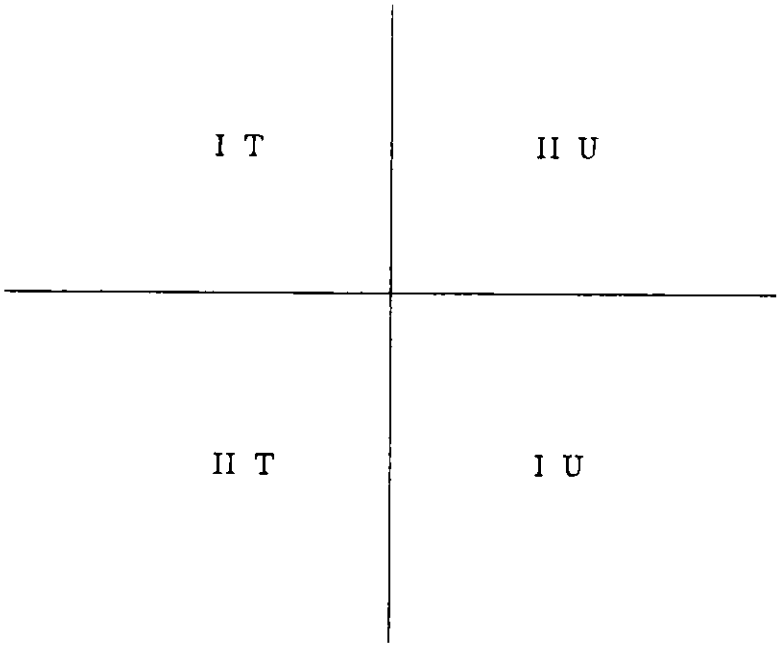


Case #39



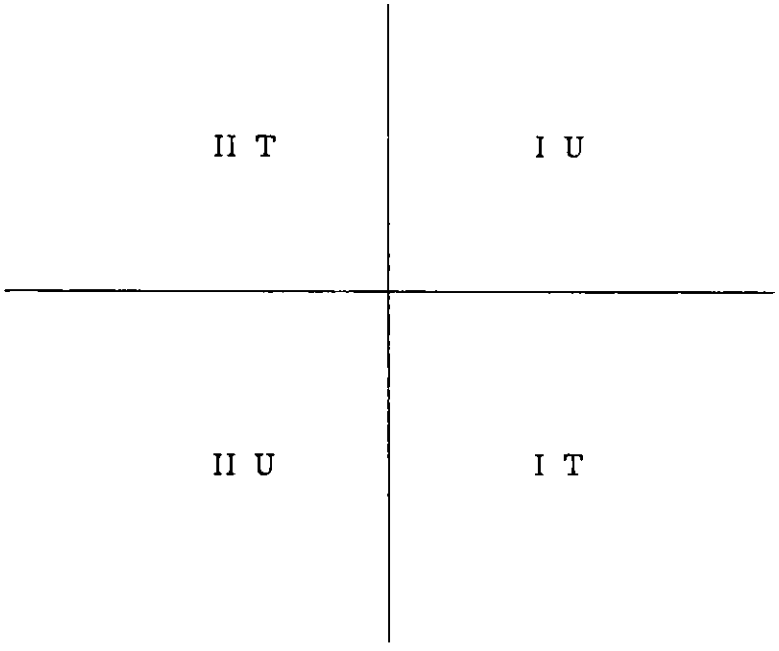


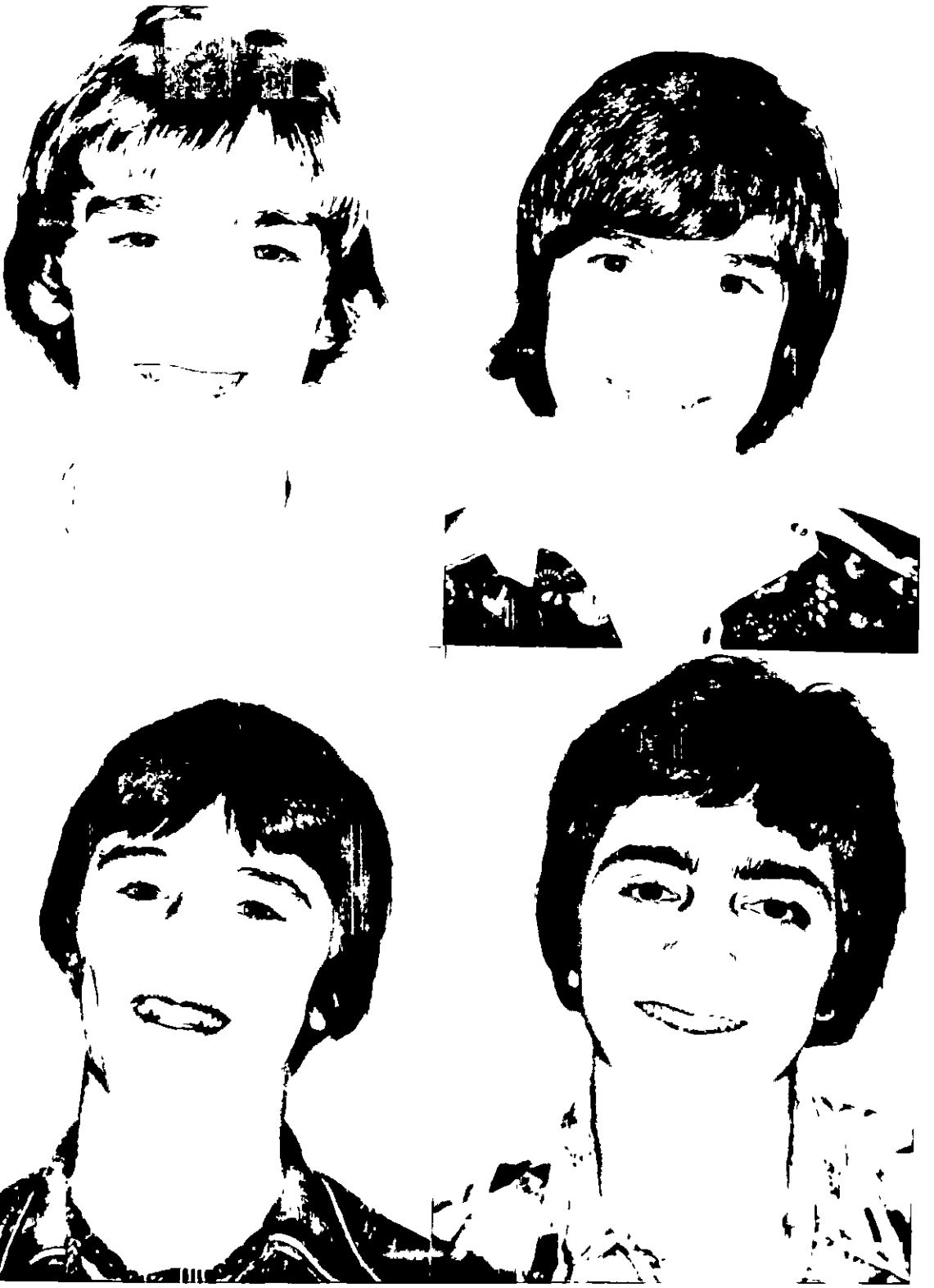
Case #40



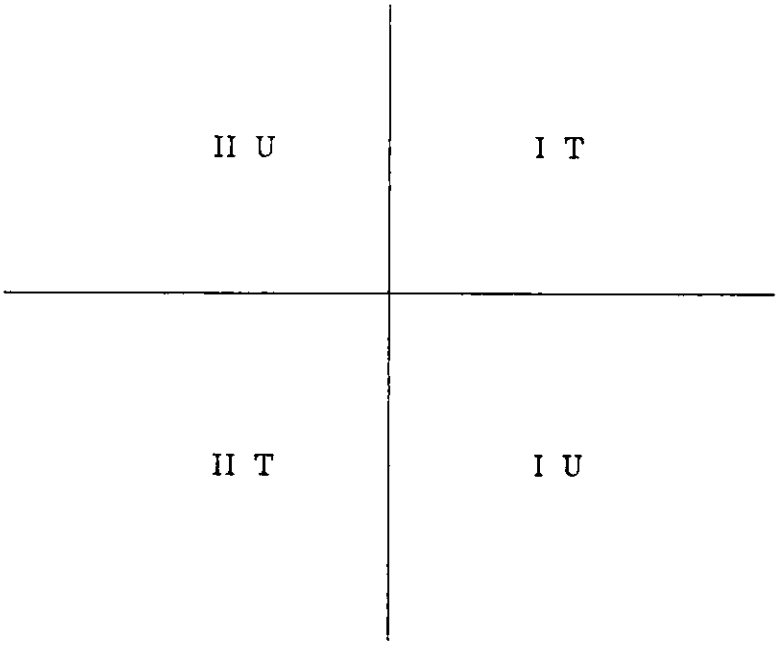


Case #41



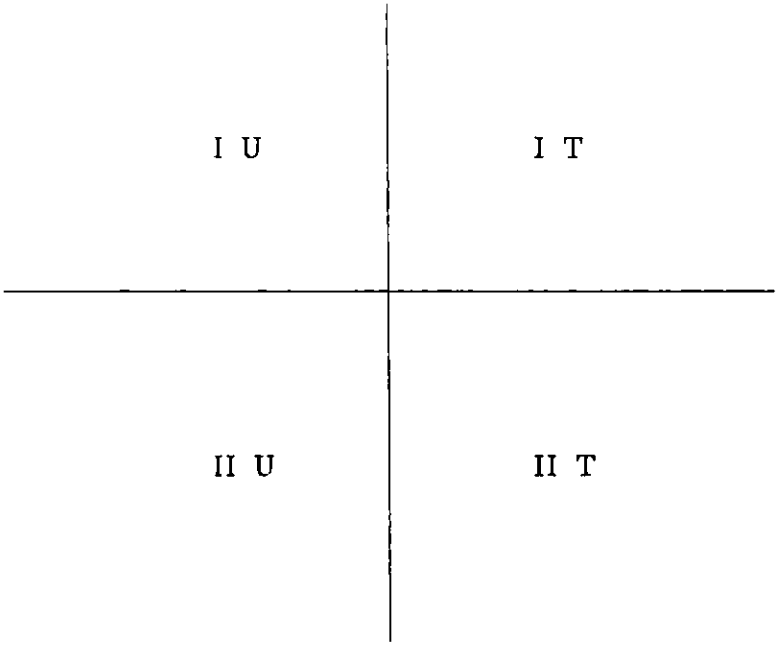


Case #42





Case #43



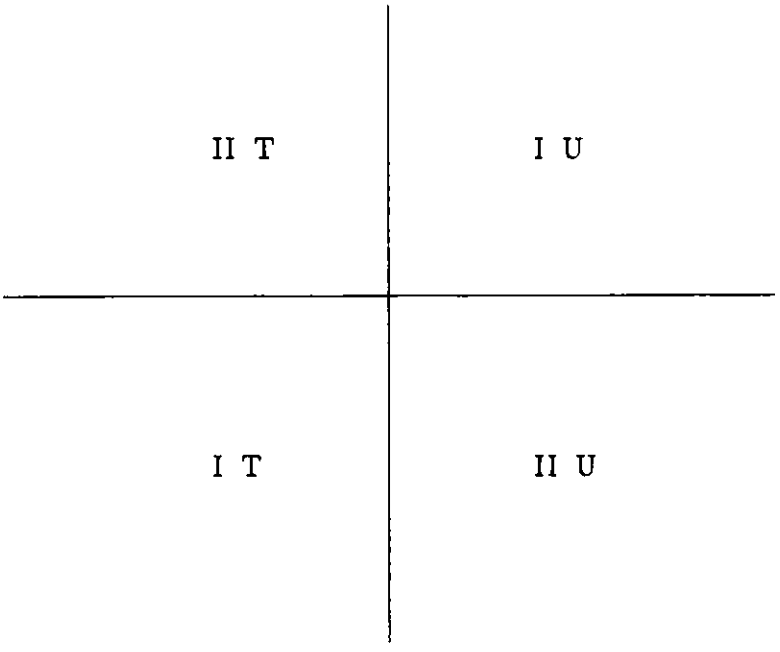








Case #44



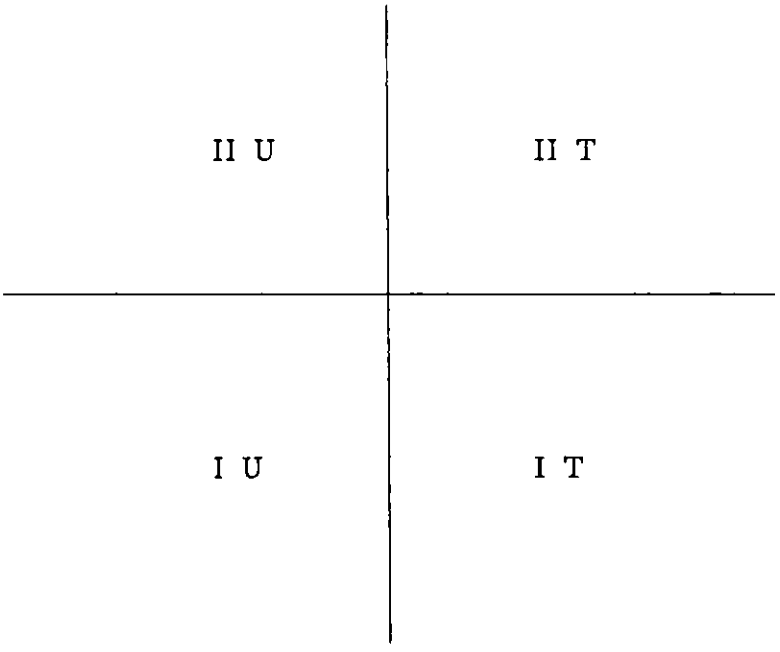








Case #45



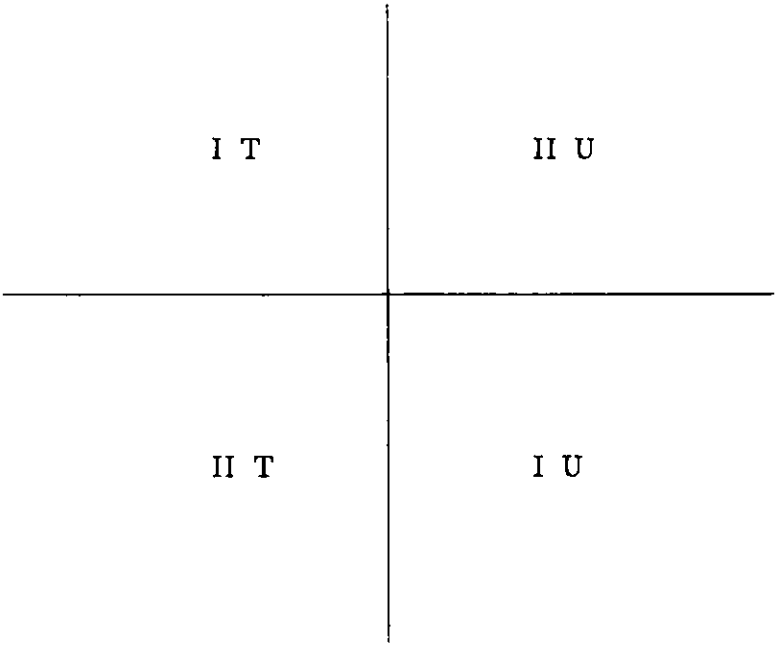








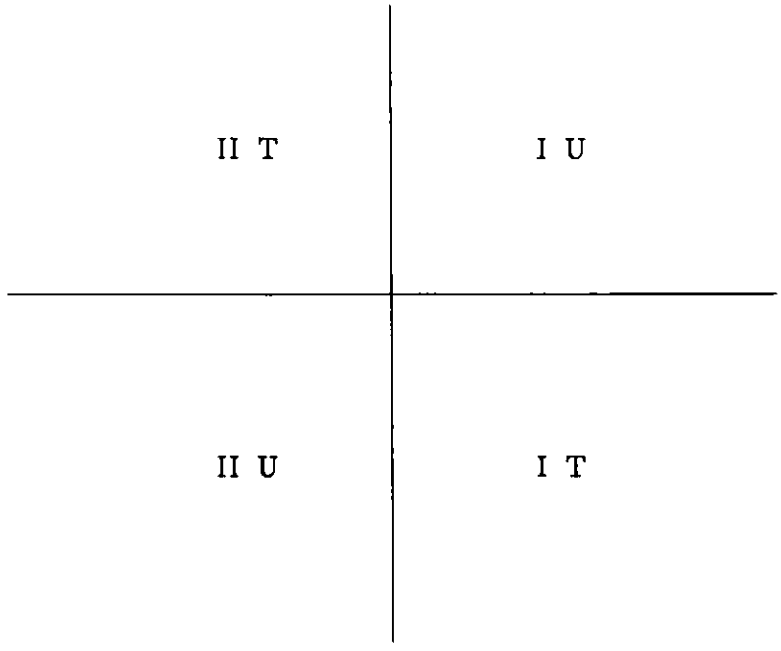
Case #46





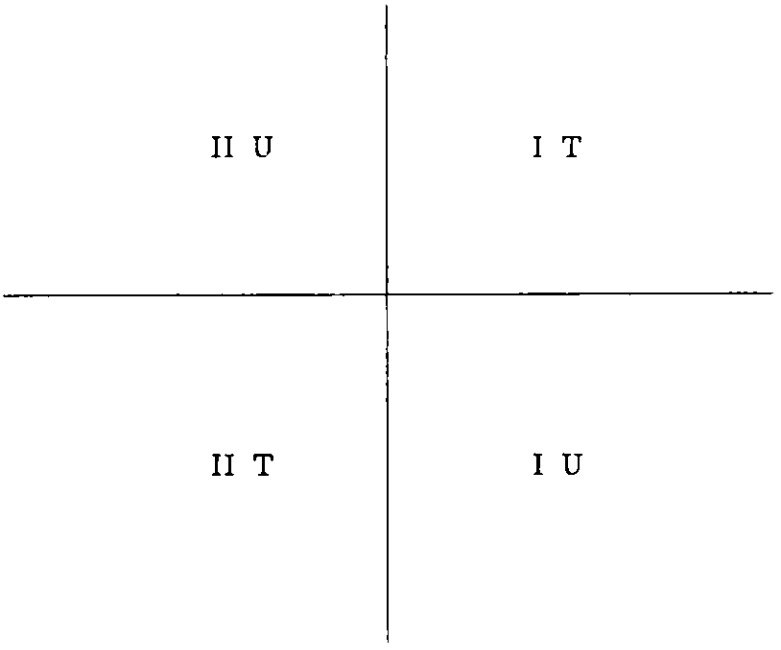


Case #47





Case #48



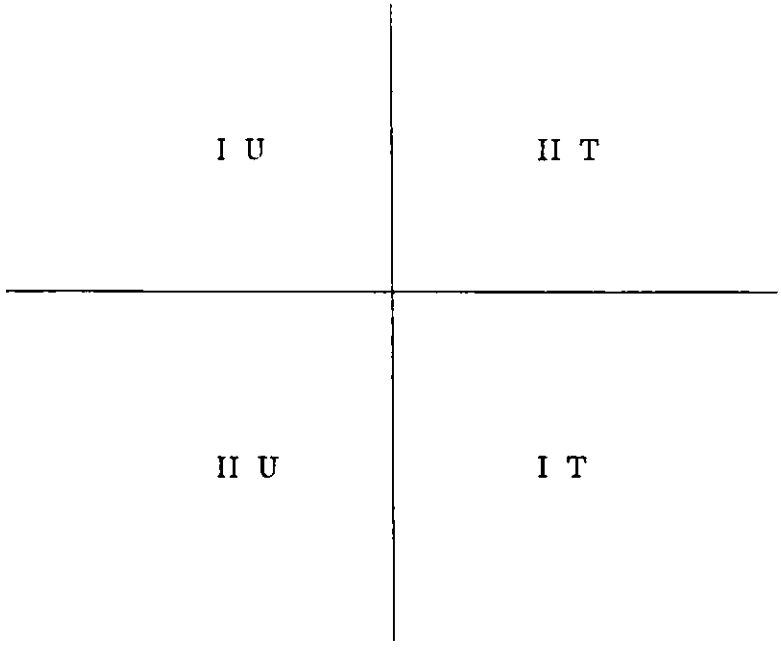








Case #49





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