

---

---

# SPECIAL MONOGRAPH SUPPLEMENT

---

---

## AN INTRODUCTION TO THE PERSONALITY ASSESSMENT SYSTEM

JOHN F. WINNE AND JOHN W. GITTINGER\*

*Psychological Assessment Associates, Inc.*  
4301 Connecticut Avenue, N. W.  
Washington, D. C., 20008

### FOREWORD

This introduction describes a theory of personality originally formulated by John W. Gittinger and indicates how his theory can be applied to the understanding of personality development and to the prediction of behavior. One of the major strengths of Gittinger's approach is that it permits predictions based on readily obtainable behavioral or psychological test data. His formulations also have a number of other advantages from both the practical and the theoretical points of view.

From the viewpoint of practical application, the way in which the theory orders data permits comparatively specific predictions concerning behavior and experience. With regard to behavior, the Personality Assessment System (PAS): (a) Indicates the kinds of internal and external cues to which the individual is most likely to respond; (b) suggests the types of stimuli that are most likely to produce behavioral change; (c) provides an understanding of the inter-, intra-, and impersonal environments in which a person is most likely to function efficiently; and (d) offers insight into what constitutes stress and predicts probable behavioral response to such stress, including maladjustments, should they occur.

In the area of experience, the PAS offers a method for obtaining specific clues to personality structure and functioning. Thus, the PAS: (a) allows for direct inferences concerning an individual's primary response style; (b) suggests the quality of the compensations and modifications he has achieved in response to social and environmental pressures; (c) provides an understanding of personality development in terms of the interaction of primary structure, environmental pressures, and adaptive tendencies; (d) offers a procedure for evaluating the surface or contact personality developed over time; and (e) makes possible the assessment of the fundamental discrepancies between the surface personality and the underlying personality structure—discrepancies that typically produce tension, conflict and anxiety.

PAS thus provides insights contributing to clinical practice in that a distinctive pattern of strengths and weaknesses can be derived for each person. At the same time, the system allows objective comparisons among the personality features of different Ss and groups, thereby offering a suitable framework for behavioral research and permitting definitive investigations into personality structure and function.

Krauskopf and Davis<sup>(36, pp. 5-6)</sup> point out:

This theory is the result of a long term effort of several people but (is) primarily the insight of one man. . . . Anyone who has worked in applied psychology has met insightful, sensitive clinicians. Some seem to be nearly magical

---

\*The authors thank Walter P. Pasternak for his editorial assistance in the preparation of this paper. Drs. Dennis J. Nauman and Marshall N. Heyman of Psychological Assessment Associates, Edward V. Malcom, formerly VA Hospital, Togus, Maine, Charles J. Krauskopf, University of Missouri at Columbia, and David R. Saunders, University of Colorado, have also made valuable suggestions concerning content and organization.

in their ability to sense and characterize other people. Some use tests as aids, some do not. One of the more striking things about these people appears to be their ability to utilize cues which they have trouble specifying for others. It is a much rarer person who can verbalize . . . his system for others to use. . . .

Gittinger has been able to articulate the cues he uses from the Wechsler intelligence scales to make inferences about what would normally be considered personality variables. Although this material has been extensively used, it is not generally available in the research literature.

This presentation draws heavily on two earlier publications: *Personality Descriptive System* <sup>(23)</sup> and *The Personality Theory of John W. Gittinger* <sup>(93)</sup>. Criticisms of these papers, as well as suggestions from people who have reviewed various brief descriptions of the theory <sup>(22, 25, 49, 50, 107)</sup> have been incorporated into the present statement. In its broadest sense, this monograph serves as an introduction to Gittinger's <sup>(24)</sup> *Personality Assessment System* in which the interactions among and between personality dimensions and adjustment levels are described.

This introduction begins with a summary of the Personality Assessment System, and though it is far from brief, this account is both over-simplified and distorted in that it ignores the interactions required for complete understanding of the theory. The second major portion deals with the relationship between PAS and the Wechsler intelligence scale—that is, with the assessment of a person's position on the three PAS dimensions.

The third section reviews, in some detail, the statistical and clinical research bearing directly on PAS-generated hypotheses and constructs. This review is more extensive than is usual for most publications because few of the studies have appeared in the professional literature. Finally, the paper considers the special computational procedures required for obtaining the PAS formulation.

---



---

## CHAPTER ONE

---



---

### SUMMARY OF PAS THEORY

The Personality Assessment System (PAS) regards personality structure and functioning in terms of highly complex patterns of interaction among a person's primary response style or primitive personality features, the environment in which his development occurs, and the long-range compensations and later modifications that he acquires. The major determinants of behavior are initial or primary endowment and two levels of adaptation that result from the interaction of the individual and his environment. Theoretically, personality structure and function can be understood only in the light of this interaction since no aspect is meaningful apart from the others.

Primary response style includes three fundamental components. These dimensions or continua which, taken together, represent the primitive personality structure are labeled Externalized-Internalized, Regulated-Flexible, and Role Adaptive-Role Uniform. They are primary in that from birth onward they determine the quality and direction of a person's selective tendencies, both in awareness and response. They establish the general lines along which a person is predisposed to develop and limit his ability to adjust by making some orientations alien to him. The original, primitive personality structure, then, provides a preferred type of reactivity. From the very beginning of life, how a person responds as well as to what he responds, will be essentially in accord with his fundamental pattern, except as external pressures force changes on him.

In general terms, whenever any primitive tendency is permitted to develop in its primary direction, a tension-free, but one-sided adjustment is the result. The person fails to achieve a sufficiently broad area of awareness to deal effectively with reality. The underlying need for change and the resulting consequences constitute the fundamental dynamics of the Personality Assessment System.

As a person develops, he is confronted with the task of reconciling his primitive tendencies with various environmental and social demands. These external pressures require him in some way to adapt his primary or preferred needs. By acquiring alterations in his primitive orientation, the person overcomes, at least in part, the limitations that his initial response style imposed on his ability to adjust.

PAS assumes three levels of adjustment. The first of these is the *primitive* level constituted by sets of primary abilities corresponding to the three theoretical domains of behavior. The second level, the *basic* or attained structure, is achieved as a child matures to adolescence. Finally, through further modifications of behavior, a person attains, at adulthood, a *surface* or contact level. Figs. 1-3 represent schematically the relationships among the levels for each of the three personality dimensions.

These dimensions and levels are not discrete entities. Rather, their interaction is felt to be far more important in determining behavior than is any component taken alone. The interactions have been discussed by Gittinger<sup>(22, 24)</sup> and by Saunders and Gittinger<sup>(70)</sup>. Since this section will describe each dimension separately, the accounts are considerably oversimplified. They are distorted still further by an emphasis on direction without consideration of degree. As a result, the dimensions will often be described as if they were dichotomous even though PAS, in fact, regards them as continuous.

#### THE EXTERNALIZED-INTERNALIZED DIMENSION

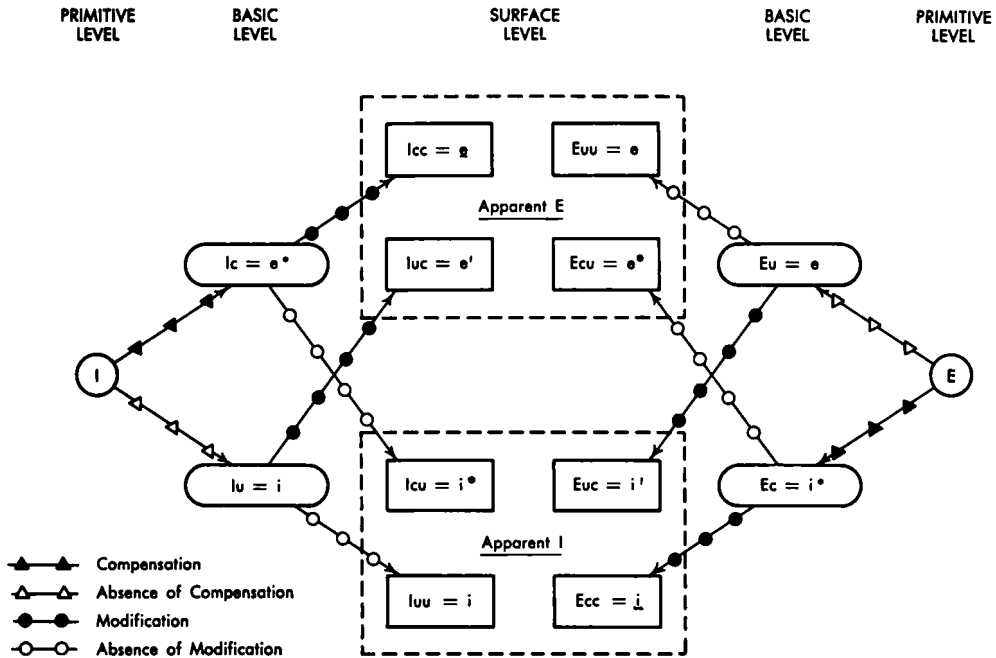
The Externalized-Internalized or *E-I*<sup>2</sup> continuum, schematically represented in Fig. 1, is the ideational-perceptual component of personality and is most intimately associated with a person's intellectual approach. It is often referred to, therefore, as the intellectual variable. This dimension is thought to have direct bearing on both the quality and content of an individual's mental activity as well as on the ways in which such activities are used. The Externalizer (*E*) and the Internalizer (*I*) are the polar extremes of the dimension and are diametrically opposed to one another with regard to the stimuli to which they are initially sensitive and the types of primary responses that are evoked; the types of preferred satisfactions they seek and the least stressful ways they seek them; their major sources of threat and the quality of the resulting defensiveness; the course of development and the content and direction of their acquired adjustments; their proneness to mental and physical malfunctioning; and the quality of the inter-, intra-, and impersonal environment that facilitates or hampers optimal functioning.

The natural frame of reference for the Externalizer lies in the world outside himself. He has little need or tendency to refer his perceptions to internal reference points to make them personally meaningful. His reality consists of real people and real things, and he relates to them spontaneously and directly. Relating, in fact, is the natural avenue of self-expression for the Externalizer. He can initiate and maintain close interpersonal relationships. Since these relationships are essential for his psychological equilibrium, he seeks and finds new major satisfactions in them.

Reality, for the Externalizer, consists largely of what he can reach through his senses and what can reach him. His dominant organization is perceptual and the

<sup>2</sup>The notation system of PAS expresses the primitive personality structure by the initial letters of the polar extremes of each dimension: *E-I* for Externalized-Internalized, *R-F* for Regulated-Flexible, and *A-U* for Role Adaptive-Role Uniform. A lower case *c* generally indicates change at either the basic or surface level and a lower case *u* generally indicates lack of change at these levels. A more complete description of the notation system follows this section on theory.

FIG. 1. SCHEMATIC REPRESENTATION OF THE POSSIBLE COURSES OF DEVELOPMENT IN THE INTERNALIZER-EXTERNALIZER DIMENSION.



quality of his perception is inherently specific and concrete. His behavior is characterized by a high level of overtness since he is continually responding to, and interacting with, perceived external reality. He prefers doing to thinking, because through doing he can increase his environmental relatedness; thinking would turn him away from others in an internal direction.

It follows that the kinds of skills an Externalizer tends to develop are primarily perceptual in nature. His characteristically high activity level, as it evolves from the diffuse quality of infancy, predisposes him to be oriented toward physical action. He also maintains his inherently specific and concrete orientation, seeking areas of activity for which this approach is suitable.

The natural inclination of the Externalizer also directs him toward activities and accomplishments that increase environmental contact, a tendency that is evident comparatively early in his development. The externalized child, for example, usually develops speech earlier than does the internalized child. The development of speech serves to bring the Externalizer closer to, and into more intimate contact with, others and thus provides him with satisfaction. In view of his initial difficulty with ideational and abstract concepts, however, he is not likely to develop linguistic skills since the symbols of language, *per se*, are not a source of primary appeal.

In contrast, the natural frame of reference for the Internalizer (*I*) is inwardly directed; his reality consists primarily of what goes on within himself. Both the areas of awareness to which he is inherently attuned and the quality of his natural responsiveness lie in the internal direction. The Internalizer tends to withdraw from precisely the same close relationships that the Externalizer seeks because, for him, such involvement is more intrusive than gratifying.

Self-sufficiency is the essential condition for psychological equilibrium for the primitive Internalizer. He neither initiates nor maintains intimate interpersonal relationships because intimacy represents a threat to his self-containment. His

major satisfactions are essentially private. While the Externalizer relates because he has a fundamental need to do so, the Internalizer relates only when and where relating is necessary for the support of his internalized needs. Otherwise, he is likely to be aware of the external environment only to the extent it intrudes on him.

External reality becomes meaningful to the Internalizer chiefly through his internal reference points. His spontaneous and direct awareness and reactions center around, and are related to, his own mental processes. His dominant orientation is ideational and the quality of his awareness is inherently nonspecific and abstract. Behaviorally, he is passive since he responds predominantly to covert stimuli of which he alone is aware. He prefers mental activity to physical interaction because this provides a source for the kinds of private and self-contained gratifications he seeks; physical interaction is less preferred not only because it brings him into contact with the external world but also because it takes more effort on his part.

The skills that naturally are developed by the Internalizer are, as a result, primarily mental, directed largely to maintaining his self-sufficiency. His primitive level of ideational awareness and response predisposes him to the production of fantasy. He turns, in maturity, to interest areas consistent with his preference for the abstract and the general. The situations he seeks will not involve shared activities for he is most interested in minimal environmental infringement.

Since the internalized child has little primary need to interact, he tends not to develop common speech early but may be prone to invent individualized or autistic speech. Once he has acquired common speech, however, he is apt to take great pleasure in manipulating language symbols and, if circumstances permit, he may well develop linguistic skills. He is also adept at learning skills that depend on memory and he seeks areas of activity for which such skills are suitable.

The internalized orientation, then, provides the Internalizer with a frame of reference that predetermines his selectivity in both awareness and response. However, it also imposes limitations on his ability to adjust to external reality. Like the Externalizer, the Internalizer must learn how to increase the range of his awareness and to achieve certain learned adjustments if he is to reach optimal levels of functioning. These adaptations needed by the Internalizer lie in a direction opposite to those required by the Externalizer, just as their respective primitive tendencies are in fundamental opposition. The Internalizer must learn how to control his natural ideational reactions, at least to a degree that will allow him to be aware of both internal and external stimuli. He must learn to respond to both in meaningful ways. Finally, he must learn how to integrate ideational and perceptual activities appropriately so that he can function more effectively.

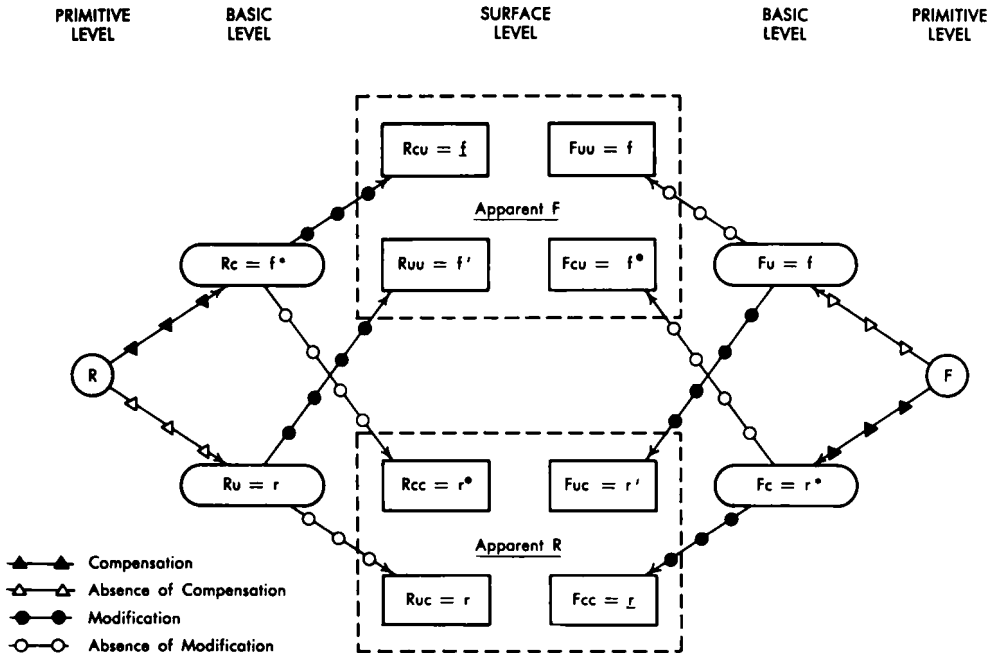
In summary, the Externalizer and the Internalizer represent polar extremes on the Externalized-Internalized dimension of personality. The Externalizer is perceptually dominant, environmentally sensitive, and more responsive to external than to internal cues. He is behaviorally active and more interested in interacting than in thinking. His perception is relatively specific and concrete. His emotion is directed outward; he depends primarily on his environment since he seeks his major psychological satisfactions in relationships with others. Stressful situations include those requiring ideational awareness, self-sufficiency, and control of his natural tendencies toward behavioral activity and relating.

The Internalizer, on the other hand, is ideationally dominant, self-sufficient, and more responsive to internal than to external cues. He is behaviorally passive, tends to withdraw, and is more inclined toward thinking than doing. He perceives in abstract terms. Since his emotion is directed inward, he is primarily self-contained; he seeks his major psychological satisfactions in the privacy of his own experiences. If he has adjustment problems, they will lie chiefly in the need for controlling his tendencies toward passivity and withdrawal. He often needs to develop his perceptual reactivity and to learn how to relate to others on a genuinely interpersonal basis.

## THE REGULATED-FLEXIBLE DIMENSION

The Regulated-Flexible (*R-F*) dimension, schematically represented in Fig. 2, is also known as the mechanical-procedural variable because it is closely associated with the kinds of procedures, methods, and controls by which a person adjusts. While the Externalized-Internalized dimension implies the mental orientation of the person, the Regulated-Flexible dimension implies the range of responsiveness and the manner in which he adapts. By definition, Regulation and Flexibility are the polar extremes on the continuum.

FIG. 2. SCHEMATIC REPRESENTATION OF THE POSSIBLE COURSES OF DEVELOPMENT IN THE REGULATED-FLEXIBLE DIMENSION



Regulated and flexible *Ss* differ in their primary needs and seek to satisfy these needs in different ways. They differ with respect to what threatens them and in the nature of their defenses. They differ in their strengths and weaknesses, and have different concepts of themselves and others. In learning, they are attracted to different areas, and each learns in his own way. In short, regulated and flexible people are unlike in both behavior and experience. Like the Externalizer and the Internalizer, their many differences stem ultimately from the major differences in their respective initial response styles.<sup>3</sup>

Primitive Regulation is characterized by a narrow, restricted range of awareness. PAS calls this restriction "insulation", defining the term as a psychological state in which the person responds to, organizes, and becomes involved with a limited number of specific, well-defined stimuli. Although this constriction has a number

<sup>3</sup>It should be noted and emphasized here, even though this point is discussed elsewhere, that interaction of the variables is very important. The internalized and regulated *IR* is narrow and restricted in his initial response to internal stimuli; the externalized and regulated *ER* is narrow and restricted in his initial response to external stimuli. *IR* perseveration is likely to be mental while *ER* perseveration is overtly behavioral. Thus, not only are regulated and flexible people unlike in both behavior and experience, but *IR*, *IF*, *ER*, and *EF* are each unlike in both behavior and experience because of their initial response sets.

of concomitant drawbacks and limitations, it is not without certain special advantages.

The initially regulated person, the primitive *R*, has the ability to select and focus on comparatively narrow aspects of the total stimulus field while remaining unaware of, insulated from, and undistracted by, other stimuli irrelevant to his specific concerns. He is characterized, thus, by psychological traits such as attentiveness, concentration, and set. As a result, therefore, the primitive *R* has a high threshold for confusion. He can, in fact, tolerate considerable stress before changing his behavior, primarily because he remains relatively unaware of the stress, unless it becomes comparatively intense and sustained.

Not only does the *R* tend to focus on narrow segments of his environment, but he also tends to be satisfied within these limits. As a result, although his activities are restricted, he is not apt to initiate shifts himself nor to undertake voluntary changes in his behavior, attitudes, and interests, resulting in a primary state that is essentially selfish. Therefore, extensions of the area of his activity are very much a function of external guidance and control. Given such direction, he is usually able to progress well, within the limitations imposed by his primary regularity.

The *R* is apt to become preoccupied with narrow areas of activity to the point of becoming relatively oblivious to the other events around him. His natural approach to reality is through discrete, logic-tight, compartmented structures. His intense involvement with what is occupying his attention at the moment results in self-centeredness and self-preoccupation. His restricted awareness leads to a lack of sensitivity in many respects, especially in the intra- and interpersonal areas. Characteristically, the primitive *R* has little insight either into himself or into the needs and feelings of others. He is neither impulsive nor spontaneous. He can recognize, identify, classify, and control effectively, but he has little capacity for interpersonal understanding, and even less for empathy.

The lack of insight that characterizes the regulated *S*'s interpersonal behavior also extends into the area of learning. The primitive *R* has marked ability to learn without understanding; he is excellent at rote learning because he has little need to understand before he learns. The quality of his learning is essentially imitative and perseverative. He can acquire procedures, routines, form, and habits readily but will not spontaneously introduce variation into his learning activities any more than he tends to shift in other areas.

The primitive *R* has the capacity to develop specific aptitudes to a high degree. He does not object to painstaking practice and does not resent repeated drill. On the contrary, he tends to enjoy perseverative activities and to become involved with them at the expense of other interests. Given external direction, he can learn, retain, and use his skills well. He will accept authority readily and will follow it without question. Under appropriate guidance, he has the ability to become highly specialized—even over-specialized—in single areas, for his learning is extremely effective in specific, well-defined, and clearly structured tasks. He is especially adept in learning situations in which his success depends chiefly on rote memory or manual dexterity rather than on problem solving.

Regulation, like the other primitive personality tendencies, predisposes the individual to certain kinds of awareness and response while, at the same time, inhibiting other kinds. If the primitive *R* is to overcome the limitations that his regulation imposes on him, he must learn to increase his range of reactivity. He is essentially insensitive, tough, and narrow. To adapt more effectively, he must learn how to escape from his own logic-tight compartments, become more sensitive and responsive, and introduce insight and understanding into his relationships and his learning.

The initially flexible, or primitive *F*, person is free of many of the disadvantages of primitive Regulation, but he also lacks its advantages. The primitive *F* is virtually incapable of insulation. On the one hand, therefore, he is not limited by the re-

stricted awareness of the *R*, but on the other hand, many of his problems in adaptation arise out of his relative inability to focus on any one of the wide range of stimuli of which he is simultaneously aware.

The primitive *F* is both aware of, and responsive to, a wide variety of stimuli, all of which compete for his attention and sharply reduce his ability to concentrate.<sup>4</sup> His reactivity is characterized more by diffusion than by set, and his threshold for confusion is low. His awareness is not sufficiently controlled to permit him to respond within appropriate limits. He is over-responsive, distractible, and virtually incapable of sustained focus. He shifts readily—too readily, in fact—so that he requires external control to help him channel his activities effectively.

A primitive *F* can function best if he has a wide range of activities that do not depend on specific, literal, or imitative abilities. He tends to have a great many different interests, shifting his attention from one to the other, for he enjoys activity for its own sake. While he has little difficulty beginning a number of activities without external direction, his problem lies in his inability to concentrate on any one activity in particular; thus, he may not finish what he starts. The primitive *R* perseverates his behavior, and the primitive *F* varies his behavior constantly.

Characteristically, the primitive *F* is sensitive, spontaneously responsive and insightful. This general insightfulness is also evident in his learning behavior. He must understand before he can learn. As a result, rote learning is very difficult for him. If his distractibility can be sufficiently controlled, he can perform very effectively in learning situations that require originality, spontaneity, and insightful problem-solving, and which do not depend on highly developed specific aptitudes or sustained practice. It is obvious, then, that the primitive *F* finds routine and fixed procedures both alien and irksome. At the same time, the quality of his spontaneous learning can be extremely high, if prompted by his own interests. He is not inclined to accept authority unless he agrees with it, nor to follow directions unless they accord with his own understanding. He learns best in relatively unstructured situations that permit him to respond on the basis of his imagination and sensitivity and which offer sufficient latitude to allow for originality of approach.

While many of the above characteristics are potentially very effective, the primitive *F* has other attributes that make it very difficult for him to use his abilities. He must learn to restrict the range of his awareness sufficiently to enable him to concentrate and to focus on specific interests at the expense of others. He must introduce direction into his activity and acquire control of his responsiveness if he is to escape confusion. He must learn to control his over-sensitivity so that he is less upset by feelings of inferiority, by frustration, and by the discipline others impose on him.

In summary, regulated and flexible people represent the two poles of the Regulated-Flexible dimension. The regulated person, at one pole, reacts to a limited number of specific, well-defined stimuli on which he can concentrate and focus. The range of his reactivity is narrow, and since his threshold for confusion and distraction is high, he is characterized by his ability to concentrate. He tends to compartmentalize; this psychological insulation restricts his awareness of others, thus making him insensitive and self-centered. Situations requiring him to be sensitive, sympathetic, and insightful are stressful for him.

At the other extreme, the *F* has a wide range of reactivity; he tends to be aware, almost simultaneously, of a wide variety of stimuli. As a result, he has difficulty concentrating and his threshold for confusion is low. This person is characterized by sensitivity, empathy, and insight. Since he can concentrate only with difficulty, he has to learn to restrict his inherently generalized reactivity so that he can focus more efficiently.

<sup>4</sup>The internalized and flexible (*IF*) person is initially aware of and responsive to a wide range of internal stimuli. He may be so active internally (autistic) that he is almost completely unresponsive externally. The *EF*, on the other hand, is initially aware of and responsive to a wide range of external stimuli with the result that he may be obviously over-reactive, over-responsive, and confused. Through adjustment by compensation and modification, this initial response state is controlled or modified.



With this brief description of the second dimension of personality, perhaps we can begin to see a mechanism to describe actual behavior within the framework of PAS. The externalized and regulated, or *ER* child, for example, will usually develop rapidly in motor areas. He will crawl early and will enjoy crawling. However, he will tend to persevere at this stage and may not spontaneously be inclined to give up crawling in favor of walking. If left to his own devices, he will pass through each step in his development slowly and will proceed to the next step unwillingly. The regulated and internalized, or *IR* child, will manifest the same general characteristics, but in the ideational area. He will perform well in those intellectual areas on which he has concentrated or for which he has developed his specific aptitudes but may not turn readily to other intellectual tasks. Like the *ER* who is content to crawl, the *IR* may remain preoccupied with the alphabet or the multiplication tables.

As an adult, an *ER*, because he is externalized and more involved with things than with people, may find vocational satisfaction in the field of manual arts, mechanics, or engineering. Depending on intellectual and educational factors, an *IR*, both internalized and logical, will be more likely to engage in an abstract but highly formalized occupation such as theoretical physics.

The combination of Externalized and Flexible, the *EF* child, is likely to be behaviorally active, perceptually aware, and over-responsive. He is the sort of child who reacts to so many competing environmental stimuli that he is virtually chaotic. The internalized and flexible, or *IF* child, appears to be quite passive because he is essentially unresponsive to environmental stimuli. However, he is highly preoccupied with mental activities; in his own way, then, he is as distractible, over-responsive, and confused as is the *EF*. Unless there is considerable pressure on the *IF* to keep him in touch with reality, he may develop so strongly in the direction of fantasy that he withdraws in an autistic manner.

The well-adjusted *IF*, as an adult who is sensitive and who likes abstraction, is likely to be attracted to social or religious reform or become a linguistics specialist, given the opportunity. The *EF*, with his social orientation and creative, emotional bent, may become an actor, teacher, or social worker.

#### THE ROLE ADAPTIVE-ROLE UNIFORM DIMENSION

As a starting point for discussing the third major personality dimension of the PAS, it is necessary to recognize, almost as a fundamental postulate, that new-born infants manifest "personality". Obviously, this rudimentary personality cannot be attributed to knowledge or intent. Nor can it be explained completely by the physical attractiveness of the new-born child. Nevertheless, nursery attendants and parents *do* respond to infants as being either "good" or "bad", interesting or uninteresting, alert or detached, active or passive, almost without regard to the actual behavior of the infant. Depending on these early judgments, infants receive considerable attention or they are ignored—even rejected—except when a sense of responsibility leads to necessary attention and care. In these early beginnings are found the roots of what is called, in PAS, the Role Adaptive-Role Uniform, or *A-U*, dimension.

Since this component of personality is closely related to the quality of one's social-interpersonal adjustment and to the ways that a person uses social behavior in later years, it is also known as the social variable. The *A-U* dimension is associated with a person's capacity to adapt his initial response style to the roles required by the cultural milieu in which he is born and raised.

The Role Adaptive-Role Uniform dimension, represented schematically in Fig. 3, differs from those discussed previously in two major ways. First, the Externalized-Internalized and the Regulated-Flexible dimensions are well known in psychological literature, albeit under different names. The *E-I* dimension resembles many of the concepts of introversion-extraversion described in the last half-century<sup>(5)</sup>, while the *R-F* dimension is closely related to the "tender-toughminded" dichotomies as, for example, Cattell's<sup>(8, 9)</sup> Source Trait I: *Mature, Tough Poise vs.*



influential people in his early environment affect the primitive adjustment and subsequent adaptations.

Primitive role adaptivity can serve either as a good beginning for long-standing interpersonal relationships or as a means of avoiding them. It can be used as a facade behind which to hide true feelings or as an entrée into situations in which true feelings can be appropriately expressed. It can serve to cover an underlying lack of genuine social-interpersonal insight or can facilitate deeper understanding without a need to overcome initial misconceptions. The major adjustments an *A* must make, in the interest of more efficient and socially productive functioning, are not only to mirror social adaptability but to integrate this in such a way as to develop the other dimensions of his personality.

The nature of the social responsiveness of the *A* usually makes him appear to have a degree of empathic awareness that is greater than he really has. Thus, his initial social assets may become liabilities since those who were positively attracted to him at first may become quite negative when they discover, on more extensive contact, that he fails to provide the responses and satisfactions they had expected. As a result, an *A* often arrives at adolescence considerably bewildered, confused, and with a strong sense of not being understood. Characteristically, he has been conforming as a child, responsive and appropriate in most of the sub-milieus to which he has been exposed without really being aware of the inconsistencies and contradictions resulting from his adaptivity. During his developmental years, an *A* may have been criticized, particularly by authority figures, for being too easily influenced, for being too suggestible, or for being socially insincere and dishonest. This unexpected rejection and hostility, primarily from those who have known him best, are incomprehensible to him. Adolescence, then, is frequently a period of genuine identity crisis, often characterized by strong revolt against familiar social conformity.

Internalized and externalized *A* children have somewhat different problems and a somewhat different course of development. The internalized person is less likely to be spontaneously expressive since his emotionality is internalized; therefore, he has to *learn to be expressive*, depending on external cues for guidance and direction during his learning process. Since, as an *A*, he has marked capacity to learn social expressiveness in appropriate, effective ways, the *IA* is in danger not only of learning versatile social responsiveness in a rote, un insightful way, but also to be expressive in ways that do not necessarily reflect his inner feelings.

The externalized person, on the other hand, is likely to be spontaneously expressive since his emotionality is externalized; therefore, he has to *learn to control* his expressiveness appropriately. He, too, depends on external cues for guidance and direction. Since, as an *A*, he can learn appropriate social control from the milieu in which he operates, the *EA* may learn appropriate and effective ways of *appearing* to control his expressiveness but may be far less disciplined and controlled than he seems.

The major problem for the internalized *A* is that others are attracted to him more than he is attracted to them, but because he is adaptively responsive to them, he is considered to be more aware of the meaning of his behavior than he may consciously feel. Often, he may be autistic, self-preoccupied, or selfishly self-centered while appearing to be relating, responsive, and socially aware. When the adolescent identity crisis occurs, the internalized *A* is particularly likely to react against the interpersonal involvements fostered by his role adaptivity by trying to escape, particularize, or withdraw from his social-interpersonal relationships.

As an Internalizer, the *IA* initially prefers to keep people at a distance although he needs the security provided by some interpersonal relationships. His self-sufficiency is threatened by the constant demands that he live up to the social promise that his social facility has created; his security is threatened by the abandonment implied by his authority figures' expectation that he will become independent on *their* terms and in *their* manner. Thus, the internalized *A* often revolts against the

social conventions of his particular background and seeks a way to become individualized, independent, or self-sufficient. This revolt may take forms ranging from a schizophrenic break—the classical dementia praecox of historical literature—through religious or ideological conversion involving an intense, idealized, humanitarian sense of interpersonal responsibility, to an individualized but reactionary emotional relationship with a peer whom he believes gives him succor and security.

In contrast, the problem for the *externalized A* arises because his interpersonal involvements are more interactive and emotional than those of the internalized *A*; his social expressiveness has a reciprocal quality because he is attracted to others as well as attracting them. Although he tends to be over-responsive, he is quite effective with people he attracts, and who attract him, and relatively successful in learning to rebuff those he does not like or accept. Characteristically, however, his role adaptability is not always smooth and may lead to adjustment problems at a comparatively early age. He is highly suggestible, strongly seducible, and often overtly fickle and inconsistent. He can learn by rote to express his true feelings appropriately without acquiring as much control as seems apparent. Similarly, he may appear to be socially mature when he is really deceptively immature.

At adolescence, the externalized *A* is also likely to react against the social conventions of his background, but his revolt takes an aggressive, emotionally defensive, and combative form. It can range from a manic-depressive episode through intense emotional attachments—often of a homosexual or bisexual nature—to hostile, paranoid rejection of all emotional relationships.

Complicating the *A* adjustments further is the possibility that since so much of his early life experience is "impressionistic"—that is, based on what others believe about him rather than what they know—the *A* may not really develop the skills and discipline that others assume he has. That is, he may be less mature than he appears, a poorer reader than is recognized, or be judged more intelligent than he may be in fact. Thus, when he reaches an age at which he is likely to be judged on actual performance, he may have severe psychological adjustment problems, particularly when faced with the need to acquire occupational or educational training.

The practical solution for these sorts of problems, often and easily accomplished by an *A*, is to move to another environment. He can live for a while in a new setting on the strength of his initially favorable social adaptivity. He can gain acceptance very quickly in a new community or on a new job. Not until more exacting demands are made upon him will the environment become threatening. Recognizing that he gets along best in the initial stages of interpersonal involvements, the *A* often learns to move on before the situation becomes over-demanding or rejecting. Alternatively, he may learn to blunt his social adaptivity, through compensation or modification, in order to be more productive. Thus, the ultimate adjustment of the *A* may range from paranoid defensiveness to psychopathic exploitation of his social skills, or the adjustment may take some intermediate, more socially productive, form.

Briefly stated, the ability to shift roles easily is a talent of the primitive *A*, but other components of the personality influence role flexibility. Ready social acceptance may serve the Externalizer's need to interact with his environment, but it may run counter to the Internalizer's need to be left alone. A regulated person may attract others initially but his self-centeredness and inability to see himself in relation to others will ultimately show through his adaptivity. A flexible person may also begin well but his sensitivity, his tendency to be confused, and his inferiority feelings may result in rejection and social failure. Ultimately, these kinds of difficulties set the stage for compensation and modification, processes that will be discussed in the following section.

Primitive Role Uniformity, at the other polar extreme of the *A-U* dimension, creates special problems for a person attempting to respond or react to social cues. While the social response style of the Role Adaptive child may mask, obscure, and even inhibit development in the other dimensions of personality, the response style of the Role Uniform child tends to accentuate or even facilitate such development.

As is true in Role Adaptivity, the pattern of strengths and weaknesses in Role Uniformity is difficult to describe because the milieu in which the *U* child is reared and the personal characteristics of the influential people in his early life play crucial roles in his maturation. Generally speaking, however, the interpersonal development of a *U* is quite different from that of an *A*. Moreover, the problems of an internalized *U* are not the same as those of an externalized *U*. The *IU* tends to be socially unaware, and thus, socially unresponsive, whereas the *EU* is very much aware socially, but he is inclined to be resistant and negativistic.

Unlike primitive Role Adaptivity, primitive Role Uniformity can rarely be used as a facade behind which to hide true feelings since socially appropriate behavior is difficult for the *U* to achieve. Because his behavior is so often inappropriate, the *U* child has early experience with rejection. The major adjustments he must make, if he is to function more efficiently and productively, are to develop the other dimensions of his personality and to learn how to use the resultant intellectual or procedural skills to secure some measure of social acceptance.

The nature of the social responsiveness of the *U* usually makes him appear less aware and less empathic than he really is. His initial set may be such that either by the absence of social responsiveness, as in the *IU*, or by inappropriate or ineffective responses, as in the *EU*, he becomes the focus of considerable attention, usually of a corrective or instructional nature. As a result, the *U* often reaches adolescence with a much more stylized, delineated, and unique social facade than does the *A*. Characteristically, the *U*, as a child, has been resistant, unresponsive, and individualistic rather than conforming. He has adapted selectively to the sub-milieu to which he has been exposed; he is competitive, and he is confident of the intellectual and procedural skills he has mastered. During his developmental years, the *U* not only has had heavy pressure and criticism from authority figures (e.g., that he is too selfish and self-centered, that he is inept or lazy, that he is socially ineffective), but he has also had considerable rejection from his peers, primarily by those who know him least. The *U* adolescent identity crisis is most often characterized by a strong drive for independence from the discipline makers of the past (revolt against familiar authority) and strong identification with persons (either peers or teachers) who seem to understand and accept him.

Even more than is true for the *A*, internalized and externalized *U* children have different problems and usually quite different courses of development. One of the major differences between the *IU* and the *EU* is that the *IU* tends to withdraw when he is challenged while the *EU* is likely to over-relate. Each must learn some of the skills of the other. Thus, the *EU* learns to internalize in order to avoid over-reacting and the *IU* learns to externalize in order to avoid withdrawal. The quality of this learning is both more intense and more specialized (uniform) than that of either the *EA* or *IA*.

The *IU*, like the *IA*, is not spontaneously expressive since his emotionality is internalized. When he does learn to respond, his responses—unlike those of the *A*—will not be very adaptive; thus, his inability to react appropriately (or his failure to respond) will be quite obvious. Although the *IU* may learn to be expressive, his learned behavior will have a rote and uninsightful quality that usually intensifies the pressure on him to adapt. Since he does not give the *appearance* of adapting, as the *IA* does, he gets very little relief. Consequently, he overlearns social adaptiveness from people to whom he can relate, and at the same time, disregards people who do not interest him or who reject him. By the time of adolescence, his social-interpersonal style is fairly uniform and fixed; the quality of his reactivity is determined by the requirements of the sub-milieu that has had the most influence on him.

Behavioral styles vary extremely in *IU* Ss, but each *IU* tends to adopt the social-interpersonal style of his mentor. The early adjustment of the *IU* is very much a function of the quality and effectiveness of his overt responsiveness. His "natural" inclination is to resist pressure to adapt and he does so by withdrawing. This behavior is usually interpreted as stubbornness and often brings increased

pressure to adapt. Ultimately, the *IU* begins to respond, but only after obvious conflict. The *IU* may also withdraw into non-responsiveness or reach such an internalized (autistic) state that no contact can be made. Thus, behavior problems are more apparent in the *IU* than in the *IA* and they may produce the autistic child (*IFU*), the schizophrenic youngster (*IRU*) or the preoccupied, fantasy-prone child with a schizoid adjustment (*IR* or *IF*) often seen in elementary schools. (As noted previously, these same response patterns can be found in *IA* children, but they may not be evident until adolescence.)

More often than not, the *IU* will reach adolescence with much more learning experience and more maturity than the *IA*, but with far less social versatility. The adjustment of the *IA* can be deceptive because he appears to be involved when he really may not be. The *IA* can reach maturity and still remain narcissistic, self-centered, and emotionally uncommitted. The *IU* may make few involvements, but those he does make are intense and subject to little change. Usually, he has been dislodged from his narcissism and self-centeredness and his emotional commitments are more in focus.

In general, the *IU* is more comfortable with the familiar, the known, and the usual. He may have adjustment problems whenever he is forced into situations where his uniform role is unsuitable and, therefore, no longer sustains him. For example, the *IRU* child prodigy may be extremely effective while under direction and control, but later, as an adult, he may be lost and ineffective when he tries to apply a no-longer-appropriate role that he overlearned in childhood. The *IRU* girl may learn to be feminine, vibrant, and socially responsive to her peers but have much difficulty adapting to marriage and motherhood. On the other hand, the *IFU* may be a retiring, succor-dependent child who, as he grows older, becomes more and more aware of the world around him. At first, he may be shy in new situations because he does not know how to respond, but once he learns, he may become an excited and effective participant in (for him) new and unusual situations.

In contrast to the internalized *U*, the externalized *U* is both interactive and overtly emotional. Like the *EA*, his social expressiveness has a reciprocal quality since he is attracted to others, but he is less likely than the *EA* to be *attractive* to others. As an externalizer, his expressiveness is spontaneous, but since he is role uniform, he is expressive in a way likely to be judged excessive, over-reactive, and demanding. As a result, the *EU* has very early experience with rejection. His relations with his peers, in particular, are apt to be difficult and a major source of stress for him. His adjustment in response to the stress may follow any of several courses, ranging from open, defiant emotional conflict, through sublimated or subtly displaced hostility, to stylized conformity, to strict, deliberate control of his overt behavior.

By the time an *EU* reaches adolescence, he usually has learned some type of defensive over-control of his emotions and his social responsiveness. A common, and productive, form of control is overachievement in certain areas. For example, if an *EU* becomes interested in sports, he may practice very hard and become so accomplished that he earns a kind of social acceptance for his athletic skill. If he becomes interested in intellectual activities, he may work diligently to overlearn and overachieve and thus gain a kind of acceptance that still allows him to be socially independent and competitive. Then again, an *EU* may simply become tough, competitive, and unconcerned about his lack of social-interpersonal finesse.

Generally speaking, the *EU* tries to learn and apply whatever he believes to be the uniform social-interpersonal role that fits his particular area of achievement, and he will avoid situations that call for a different role or a different interpersonal style. A common characteristic of the *EU* is that he reacts strongly against early direction and control and seeks an adjustment outside that control where he can feel accepted and comfortable. Unlike the *IU* who, once he begins to respond, learns to live up to the expectations of his parents and teachers, the *EU* often turns sharply away from fulfillment of these expectations. He rejects conventions others would

impose on him and strikes out independently on a course that contradicts or even denies his origins. For example, while the *IU* son of a physician is likely also to become a physician and work with his father, the *EU* son is likely to rebel and "do his own thing."

While the *EA*, as we have seen, appears to learn methods of controlling his expressiveness, the *EU* is often very obvious in his failure to adapt or obvious in appearing not to adapt. This need to be obvious reflects his emotional reaction to those who try to influence him. While the *EA* may ultimately learn to relate effectively, the *EU* is more likely to suppress or repress his "natural" inclination to relate to others. Thus, the adult adjustment of the *EU* almost always includes characteristics of determined, even stubborn, individuality. He tends to be emotionally overcontrolled; competitive in the sense that, more than most people, he expects reward for his achievement; resistant to emotional involvements but jealous and protective of the involvements he does make, and self-assured— even defiant— when his prerogatives are questioned or his principles challenged.

#### ADJUSTMENTS OF THE PRIMITIVE TENDENCIES

A person's need to adapt to a variety of situations requires various adjustments in relation to each of his original personality tendencies. There are two kinds of adjustments available to him. The first, more fundamental adjustment is called *compensation*, a term referring to long-range and comparatively stable adaptations developing in early childhood. *Modification*, the second level of adjustment, includes the less stable adaptations an individual makes in the later phases of his development.

##### COMPENSATION

By definition, *compensation*, the first level of adjustment, is the tendency to acquire the orientation and attributes of opposite primitive tendencies. (This form of adjustment is represented by the solid triangles in Figs. 1, 2 and 3.) For example, the primitive Externalizer learns, through compensation, to be more passive, more ideationally aware, and more self-sufficient. The primitive Internalizer, conversely, compensates by becoming more active, more perceptually aware, and more responsive to and involved with his environment.

Compensatory activities are not inherent in the primitive personality structure. They are learned or acquired tendencies, externally induced and environmentally determined. They are long-range developmental adjustments that, in combination with the person's original tendency, result in characteristic external and internal frames of reference. When compensation has been achieved, usually by adolescence, the person is believed to have reached the second, or basic level of personality development.

Obviously, some compensation is necessary for adequate functioning. Exclusively ideational or perceptual, regulated or flexible, role adaptive or role uniform orientations are clearly insufficient to enable a person to cope successfully with the many different kinds of situations in which he will find himself. An adequate adjustment, then, is greatly facilitated by the development of at least some of the attributes of orientations opposite to the primitive tendencies.

In contrast, a complete lack of compensation, in whatever dimension it may occur, yields a purely one-sided and impoverished development. (This form of adjustment is represented by the outlined triangles in Figs. 1, 2 and 3.) The primitive Internalizer, for example, whose natural tendency remains entirely unchecked, may turn in the direction of autistic withdrawal. The completely uncompensated Externalizer, on the other hand, fails entirely to develop an internal frame of reference. He thus loses the ability to make appropriate discriminations within his perceptual field, becomes indiscriminately reactive, and thus may lose contact with reality. Each, then, may develop some sort of psychological pathology, but for a different reason.

Theoretically, there are three developmental possibilities with respect to primitive tendencies: The person can express them, suppress them or repress them. The particular mode of adaptation toward which he moves depends on a complex combination of internal and external factors. The chief internal factor in determining development is the strength of the primitive tendencies themselves, inherent in the person himself. The precipitating external factors come from the environment in which he develops. Most important among the environmental factors is the amount of pressure put upon a person to become what he is not, and the intensity of the punishment he receives for being what he is.

During the course of his early development, the major factor in determining whether or not a child will develop compensatory tendencies is the quality of the acceptance he receives from his parents or parent-surrogates. If the parents, for example, approve and support the behavior generated by his primitive tendencies, the child will be able to accept himself as he is. He will tend to retain his primary personality features in relatively unaltered form, since he has no great motivation to change them. In effect, then, his development will proceed in accordance with his initial response style, without development in the opposite direction.

When a child has been permitted to develop in this way, he is characteristically relaxed and essentially free from internal conflict, overwhelming guilt feelings, and disruptive anxiety. This type of development occurs, for example, in the primitive Externalizer whose perceptual dominance and naturally high activity level have met, for the most part, with acceptance. It is also characteristic of the primitive internalized child who has not suffered rejection or punishment because of his passivity and inner-directed behavior. The development of personality in each of the other dimensions is comparable. The regulated child who has not been induced by external forces to depart from his primary inclinations will remain temperamentally rigid, just as the flexible child will retain his dominant sensitivity and flexibility. Similarly, primitive social adaptability or uniformity will not be altered or relinquished unless the change is environmentally initiated and externally forced. Whenever a person has not been pressured into developing compensatory activities to offset a primitive tendency, he is considered to be *uncompensated*, that is, he retains his primitive orientation.

In contrast, a child's interaction with the environment may arouse more disapproval than acceptance. The parents may tend to reject or punish a child for being what he *is*, reserving their praise and approval for his attempts to be what he *is not*. In such cases, the child will be pushed away from his natural orientation and forced to develop along opposite lines. He will begin to turn his energies toward altering, rather than expressing, his primitive tendencies. In short, compensation will become his major developmental concern. External pressure begins with the parents or parent-surrogates but it is continued throughout the entire process of socialization, first by other adults in the environment, such as teachers, and later by contemporaries whose influence becomes increasingly important.

Anxiety and guilt, as the Personality Assessment System interprets these terms, force the development of compensation. Compensation allows the individual to reject, and to defend himself against, his original tendencies, a course that is undertaken only if anxiety feelings have been aroused by others' reactions to his behavior. Compensation, then, is closely associated with the attempt to reduce anxiety. Once compensation has begun, any behavior stemming from his primitive orientation arouses feelings of guilt. Unfortunately, while compensation can serve as a method by which anxiety and guilt can be controlled, it also represents a form of adjustment that is achieved and maintained at some psychological cost. A person can conceal his primitive personality from others, and even from himself, with varying degrees of success, but he cannot render it non-existent. Its continuing operation, whether at conscious or unconscious levels, only serves to continue his anxiety and guilt.

Compensated adjustments, thus, are always characterized by tension. In fact, tension may be the most readily observable difference in the respective behaviors of,



for example, a compensated Internalizer and an uncompensated Externalizer. Both will be highly active and perceptually reactive. Both will be relating, outgoing, and dependent on the environment. In a sense, both are extraverts. The compensated Internalizer, however, has learned these attributes at the expense of psychological pain and he maintains them to avoid still further pain. In dynamic terms, compensation is undertaken to protect the ego from threat and, because of its defensive nature, is always accompanied by tension even though the acquired behaviors have become habitual.

If the acquired overlay of compensation is not sufficiently strong to force the primitive tendency entirely out of conscious awareness, the person has the advantage of being at least partially aware of the ensuing conflict. Such an orientation is defined, by PAS, as a *suppressed* state in which partial control of conflict is possible. While a description of the precise nature of the control mechanism is beyond the scope of this introduction, we can state briefly that while the person is able, with effort, to respond in his acquired mode, under stress or fatigue he readily reverts to his primitive orientation.

If the primitive tendency is strong and the intensity of compensation is also great, acute defensiveness results; this is defined as *repression*. Here, the struggle between primitive and acquired tendencies operates at a level beyond the individual's awareness so that conscious control is no longer possible. Tension and anxiety are always present, until discharged in some way, but their source is now entirely unknown to the person.

#### MODIFICATION

*Modification*, defined as the second phase of adjustment, is achieved during the later stages of development. (Modification is represented by the solid circles, and lack of modification, by the outlined circles, in Figs. 1, 2 and 3.) These new adjustments are not applied directly to the primitive tendencies and so do not achieve the powerful masking effect of compensation. However, the fundamental differences between compensation and modification do not lie in direction, but rather in the temporal sequence of their development and their effect on adaptation.

As has been implied above, primitive orientation and compensatory processes interact to form the *basic* level of personality structure. Modification interacts with the basic level to form the *surface* level of this structure. The surface or contact personality is the least tenacious of the three levels of personality and is subject to breakdown quite easily under stress. Its relative vulnerability is in marked contrast to the high degree of stress resistance of the basic level. Theoretically, the primitive structure never changes and once the basic level is fully established, a stress situation of truly disruptive intensity is required to force this level to yield. A breakdown of the basic level is considered, then, as profound regression. For this reason, the basic level is considered the best frame of reference for understanding the personality structure. Normally, adjustment tends to vacillate between the relatively stable basic level and the relatively unstable surface level. While many factors are involved in this vacillation, some indication of the stability of the surface adjustment can be obtained from the Activity Level, described below.

The quality of a person's total adjustment in any dimension depends on the relationships between the learned tendencies at both levels of adaptation. It is the nature of this superstructure, rather than that of the underlying primitive orientation, that determines the person's essential personality features and observable behavior. In highly general terms, and with much simplification, we can say that within each dimension the two poles of primitive tendency and the two levels of adaptation (compensation and modification) each converge into four patterns. These have been represented schematically in Figs. 1, 2 and 3.

First, a person may fail to develop either compensatory or modifying adjustments. In this event, the primitive tendency continues to operate without check. This may result in the failure to acquire an orientation sufficiently well-rounded and

effective to permit him to respond appropriately either to his own reality or to that of his environment. An example of this is an individual characterized by primitive Flexibility with neither compensation nor modification (represented, symbolically, as *Fuu*)<sup>5</sup> (See Fig. 2). This sort of person has failed to develop sufficient regulating characteristics to enable him to limit his sensitivity and to concentrate selectively. The result is likely to be extreme confusion. As might be anticipated, the degree of confusion depends on the strength of the primitive Flexibility and the degree (or lack) of either compensation or modification.

At the other extreme is the person who has reacted against his primitive tendencies by compensation and, later, by modification. In this case, the directions of compensatory and modifying mechanisms are identical, both opposed to the underlying primitive orientation. It is in such combinations that repression is most likely to occur. Modification serves to reinforce the pre-existing compensatory tendency to deny the primitive orientation, so that the person is probably unaware even of its existence. An example of the kind of adaptation that is implied is the *Fcc* (Fig. 2), a primitively flexible person who is both compensated and modified. He is so strongly defended against his primitive flexibility that he may well now deny its existence. Through compensation, he has learned how to focus and to concentrate. The lack of insight and the insensitivity of the regulated person have replaced his natural empathy and insightfulness. The direction of the later modification has moved him still further from his primitive orientation. In fact, he may have become so rigid that the presence of tension may be the only observable indication that his "Regulation" was acquired under pressure. Obviously, again, the tension will be greatest where both the primitive and adjustment tendencies are strong.

Within these two extremes, one representing a complete lack of change and the other a high degree of change, a large number of developmental patterns are possible. For example, the tendencies that we have described are considered only in terms of direction without regard for strength. The fundamental components of personality can occur, at the primitive level, in either moderate or extreme form. At least two degrees of each of two directions of compensation are possible, and ultimately, four developmental pathways are open to each person, allowing for modification. (Theoretically, of course, an infinite gradation is possible for all these factors. The oversimplified description just given recognizes the crudeness of the psychometric device and ignores the true dynamic aspects of PAS.)

Various in-between types of adjustment are also possible, representing attempts to compromise with environmental pressures rather than avoid or succumb to them completely. These modes of adaptation may vary greatly in terms of inter- and intrapersonal efficiency.

A child may develop a compensatory tendency, for example, that masks his primitive orientation, but then fail to adapt further in later life. In such a case, compensation has overshadowed the primitive tendency but modification has failed to reinforce the process. This would be the course of development, for example, of a primitively flexible child (*F*) who compensated by becoming more regulated (*Fc*), but then reacted against his basic personality, the *Fcu*. The kind of orientation that this implies is not likely to be as severely repressed as that of the compensated, modified flexible individual (*Fcc*) where the direction of the two adaptive processes is the same.

The *Fcu* has denied his natural flexibility by compensation but, to some extent, has turned away from his basic adjustment; suppression, rather than repression, is likely. Since his primitive flexibility has remained fairly close to awareness, he does not develop a completely regulated orientation. He will not escape the tension that accompanies compensation, but neither is he cut off entirely from his natural sensitivity and insightfulness.

<sup>5</sup>See Footnote 2.

A somewhat different configuration occurs when there is no compensation, but there is modification. The modified, uncompensated Internalizer (*Iuc*) (Fig. 1) is an example of this. Here, the primitive tendency and the course of early development are both in the internalized direction; externalized tendencies are acquired only fairly late. Such a person has succeeded in achieving enough perceptual reactivity to check a completely one-sided development and to prevent withdrawal from reality, but his ideational characteristics are very near the surface and he will return to them fairly readily under stress. He will not suffer extreme tension, but he may have difficulty integrating his internalized orientation and his recently acquired externalized tendencies.<sup>6</sup>

Only a few examples of each of the developmental patterns have been included in these descriptions. It should be obvious, however, that similar patterns occur in connection with all the primitive dimensions.

#### ACTIVITY LEVEL

Cutting across the three personality dimensions and the three levels of adjustment described above is *Activity Level*, a concept related to the overall quality of functioning. Activity Level is related to drive, motivation, energy output, and other such basic factors. In this sense, Activity Level is more like the primitive dimensions than the adjustment processes. At the same time, since temporary environmental factors frequently influence Activity Level, it is often treated as if it were a modifier.

Activity Level plays a dual role in personality functioning. First, it represents an estimate of the extent to which a person is aware of, in contact with, and motivated toward interaction with the people and the events of his environment. Depending on its position and the total personality constellation with which it is associated, Activity Level may reflect a wide range of attributes, including over-aggressiveness, alertness, negativistic hostility, or anxiety and depression. A very low Activity Level, especially in those patterns that are themselves indicative of anxiety, may indicate profound disablement or even organic dysfunction.

Activity Level also indicates the consistency with which a person can maintain his surface adjustment. This interpretation is related to the PAS definition of *moodiness* as the tendency to vacillate between the characteristics of the basic level and those of the surface level. While extreme moodiness is a function of the amount of disparity between these adjustments, Activity Level still plays an important part. If it is quite high, the individual is likely to maintain his surface adjustment quite consistently and quite effectively in spite of pressure from his environment. A person with a lower Activity Level can be expected to react to stress by mild vacillation between his surface and basic behavior patterns. The amount of anxiety motivating change in his social-interpersonal role, as indicated by scores on the Role Adaptive-Role Uniform dimension, also is important here<sup>(37)</sup>.

Because of the many roles played by Activity Level and because its interpretation is a function of the total personality structure, its meaning for any given person must be interpreted with care. Thus, the above over-simplified description must be generalized cautiously.

---

<sup>6</sup>*Tension*, a product of unconscious conflict, must be distinguished from *anxiety*, a product of conscious conflict. The *Iuc* is not tense but may experience strong anxiety when stress or other forces require him to function as an *I* rather than as an *E*. (Saunders, Personal Communication, 1972.)

---

# CHAPTER TWO

---

## THE PAS SYMBOL SYSTEM

PAS uses a special notation to express, in shorthand form, the primitive structure and compensatory and modifying tendencies. Although we have made some use of this symbol system in the preceding section without fully defining the terms, this section defines the system in considerable detail.

The primitive orientation is represented by a capital letter— usually the initial letter of the polar extreme. Thus, a primitive Externalizer is designated by the letter *E* while a primitive Internalizer is designated by *I*. Similarly, an *R* refers to one pole of the Regulated-Flexible dimension while an *F* refers to the other. The letters *A* and *U* are used, respectively, for the polar extremes of the Role Adaptive-Role Uniform dimension.

The state of compensation acquired by an individual is shown by a lower case letter placed immediately after the symbol representing the primitive tendency. The letter *c* stands for *compensated* and the letter *u* for *uncompensated*. An *Ic*, thus, represents a compensated Internalizer while an *Eu* symbolizes an uncompensated Externalizer.<sup>7</sup>

For the most part, the same method and, in fact, the same letters are used to indicate the direction of modification.<sup>8</sup> Thus, a *u* usually stands for *unmodified* and a *c* for *modified*. The two levels of adaptation, compensation and modification, are distinguished by the order in which they are written. Each primitive symbol is followed by two qualifying letters, the first indicating the direction of the compensatory process and the second indicating the direction of the modifying tendency. Thus, an Externalizer who is both compensated and modified will be symbolized by *Ecc*; an Internalizer who has compensated but then failed to modify is represented as *Icu*.

No particular combination of symbols, however, necessarily indicates a uniform pattern of adaptation. Individual variation is introduced by factors such as the strength of the primitive tendency and the amount of acceptance this orientation receives from the environment.

PAS recognizes three degrees of strength of the primitive tendency: weak, moderate, and strong. These are differentiated by using a plus or a minus sign after the symbol for the primitive orientation. For example, an *E-* represents a person who has weak tendencies in the direction of Externalization; an *E* is a person who is moderately externalized, and an *E+* is extremely externalized. Similar notation is used for the other primitive symbols.

Two levels of strength of compensatory processes and modifying tendencies are recognized. These are distinguished by the use of the plus sign to indicate a marked degree of change. For example, environmental pressure may be minimal for a moderate Externalizer so that he fails completely to compensate; his basic level is represented by *Eu+*. An *Eu* represents a moderate Externalizer whose failure to compensate has not been as marked as in the first example. A person who is a strong Externalizer and who has developed strong compensation and equally strong modi-

---

<sup>7</sup>A special sort of compensation and modification is represented by the letter *o*. A full treatment of the psychodynamic meaning of this form of compensation is beyond the scope of this paper. Very briefly stated, however, the *o* indicates an ambivalent state that is very likely to change quite radically under stress. An *Io*, for example, will vacillate between *Ic* and *Iu*. At the surface level, a *Uco* will vacillate between *Ucc* and *Ucu*. An *o* is *resolved* in the symbolic notation, as if it were a *c*, although it is interpreted quite differently.

<sup>8</sup>There are some obvious inconsistencies in the symbol system in that the *R-F* and *A-U* dimensions are not entirely parallel with the *I-E* dimension. The rationale for these differences will be given in the discussion of psychometric aspects.

fication is symbolized by  $E+c+c+$ . A primitive Internalizer whose original orientation is quite weak, who has compensated to a moderate degree but has thereafter completely failed to modify, is represented by  $I-cu+$ . Other combinations of compensatory and modifying tendencies, in each dimension, are given similar symbolic expression.

Activity Level is represented by the letters  $H$  (for high),  $M$  (for medium), and  $L$  (for low). The plus sign is again used to express extremes. Thus, a very low Activity Level is represented by  $L+$ , a moderately low level by  $L$ , a middle position by  $M$ , a moderately high level by  $H$ , and a very high level by  $H+$ .

In summary, the PAS symbol system allows one to write a "personality formula" for a person that will represent the direction and strength of his primitive tendencies, the direction and strength of his compensatory and modifying adjustments, and his Activity Level. The full formula will also include his Normal Level, which provides an estimate of his intellectual potential. Thus, a shorthand record of the essential dynamics underlying behavior might be coded as  $12(E-uc\ Fcu+A+u+u)H+.$ <sup>9</sup>

The symbol system presented above has been commonly used with the PAS. It has the two-fold advantage of specifying the direction and degree of each primitive, compensating, and modifying tendency and making specific the relative position of each of the tests from which these personality aspects are inferred (see Psychometric Considerations, following). Nevertheless, the duplications in the symbol system so often lead to confusion that this one disadvantage sometimes outweighs the advantages. A briefer notation system outlined below, avoids this sort of difficulty.

#### BRIEF NOTATION SYSTEM

In this brief notation system, the net direction of compensation and modification is expressed simultaneously by a single symbol, while the strength of adaptation still may be suggested by using a plus sign. Table 1 defines and lists the abbreviated symbols. From this, we see that an  $Euc$  is represented at the basic level as  $e$  and at the surface level  $i'$ . Examination of this table and Figs. 1-3 will reveal that all persons functioning as surface  $e$ , for example, will have an  $e$  as their surface symbol. The uncompensated, unmodified Externalizer is symbolized as  $Euu$  ( $e$  at the basic level,  $i$  at the surface level); the uncompensated, modified Internalizer is  $Iuc$  ( $i$  at the basic level,  $e'$  at the surface level); the compensated unmodified Externalizer is  $Ecu$  ( $i^*$  at the basic level,  $e^o$  at the surface level); and finally, the compensated, modified Internalizer is  $Icc$  ( $e^*$  at the basic level and  $e/$  at the surface level). In many ways, these four types— $e$ ,  $e'$ ,  $e^o$ , and  $e/$ —can be considered surface "look-alikes", for all are apparent Externalizers, although their underlying personality dynamics are quite different. Similarly, the basic  $e$  and basic  $e^*$  are "look-alikes", since both are basic Externalizers, one as an uncompensated primitive Externalizer, the other as a compensated Internalizer.

This brief notation system does not allow the user to express completely the strengths of the primitive orientation and the two levels of adjustment. This sort of precise notation can be accomplished only through a relatively complex system spelled out by Gittinger<sup>(23, Appendix)</sup>.

<sup>9</sup>The large number of patterns obtained by using plus and minus signs reflects the PAS assumption that each dimension is continuous rather than dichotomous. Using only the polar extremes, only 8 clusters are possible ( $ERA$ ,  $ERU$ ,  $EFA$ ,  $EFU$ ,  $IRA$ ,  $IRU$ ,  $IFA$ ,  $IFU$ ) but allowing for 6 positions within each primitive orientation (as, for example,  $E+$ ,  $E$ ,  $E-$ ,  $I-$ ,  $I$ ,  $I+$ ) yields  $(6)^3$  or 216 discrete primitive clusters. With 5 levels of compensation ( $u+$ ,  $u$ ,  $o$ ,  $c$ ,  $c+$ ), we can differentiate  $(30)^3$  or 27,000 basic clusters. Finally, 4 levels of modification ( $u+$ ,  $u$ ,  $c$ ,  $c+$ ) make for  $(120)^3$  or 1,728,000 surface clusters. When Activity Level, Normal Level, age, sex, education, and life experience are considered, an astronomical set of possibilities results. Theretically, each of these differs to some extent in the underlying dynamic processes that explain the personality of any given unique individual. All are possible theoretically, but only a few can be identified by our present psychometric instruments.

TABLE 1. THE PAS BRIEF SYMBOL SYSTEM

Definition	Extended Notation	Brief Notation Primitive	Basic	Surface
Externalized-Internalized Dimension				
Uncompensated, Unmodified	Euu	E	e	e
	Iuu	I	i	i
Uncompensated, Modified	Euc	E	e	i'
	Iuc	I	i	e'
Compensated, Unmodified	Ecu	E	i*	e° <sup>a</sup>
	Icu	I	e*	i° <sup>a</sup>
Compensated, Modified	Ecc	E	i*	<u>i</u> <sup>b</sup>
	Icc	I	e*	<u>e</u> <sup>b</sup>
Regulated-Flexible Dimension				
Uncompensated, Unmodified	Ruc	R	r	r
	Fuu	F	f	f
Uncompensated, Modified	Ruu	R	r	f'
	Fuc	F	f	r'
Compensated, Unmodified	Rec	R	f*	r° <sup>a</sup>
	Fcu	F	r*	f° <sup>a</sup>
Compensated, Modified	Rcu	R	f*	<u>f</u> <sup>b</sup>
	Fcc	F	r*	<u>r</u> <sup>b</sup>
Role Adaptive-Role Uniform Dimension				
Uncompensated, Unmodified	Auu	A	a	a
	Uuu	U	u	u
Uncompensated, Modified	Auc	A	a	u'
	Uuc	U	u	a'
Compensated, Unmodified	Acu	A	u*	<u>u</u> <sup>b</sup>
	Ucu	U	a*	<u>a</u> <sup>b</sup>
Compensated, Modified	Acc	A	u*	a° <sup>a</sup>
	Ucc	U	a*	u° <sup>a</sup>

Note: As indicated in the text, any of these symbols may be followed by a plus sign to indicate a pronounced tendency in the indicated direction.

<sup>a</sup>Notation of the form x. or x<sub>0</sub> are acceptable alternatives as required by computer character sets.

<sup>b</sup>Notation of the form x/ is an acceptable alternative as required by computer character sets.

---

# CHAPTER THREE

---

## PSYCHOMETRIC CONSIDERATIONS

### HISTORICAL NOTE

The seeds of the Personality Assessment System were sown in the late 1940's when Gittinger recognized that certain patterns of Wechsler-Bellevue test performance described the dynamics and the adjustments of a very diverse state hospital population. Gittinger's patterns, however, seemed to bear little relationship to those suggested by Wechsler<sup>(101, 105)</sup>, Rapaport *et al*<sup>(51)</sup> or Schafer<sup>(72)</sup>. Since 1945, the PAS has been refined through experience with large numbers of adults from many backgrounds and cultures, including the collation of relevant behavioral and other psychometric information. The present psychometric statement of the PAS has evolved from this experience and from rigorous investigations of the Wechsler-Bellevue and WAIS batteries carried out by Saunders<sup>(54, 56, 57, 59, 61, 62, 64, 65, 67)</sup>.

Saunders and Aaronson<sup>(69)</sup> and Schucman<sup>(80)</sup> have demonstrated that there are a large number of psychometric devices that may adequately measure some of the separate dimensions described in the PAS. However, as Thetford<sup>(90)</sup> and Rhodes<sup>(62)</sup> point out, no other set of measures comes as neatly packaged as does the Wechsler family of tests. This discussion, therefore, will be limited to the relationship between PAS and the Wechsler subtests.

Experience has shown that PAS can be used with the Wechsler Adult Intelligence Scale (WAIS)<sup>(104)</sup> or with the Wechsler-Bellevue, Form I (W-B I)<sup>(101)</sup>, although Gittinger<sup>10</sup> believes that the W-B I Block Design and Digit Symbol subtests are more systematically informative than the corresponding WAIS subtests and, conversely, that the WAIS Picture Arrangement and Picture Completion subtests appear to be superior. Gittinger<sup>(108)</sup> has developed an amalgam of W-B I verbal subtests and slightly modified WAIS performance subtests for use with both American and foreign groups. This test, the Wechsler-Bellevue-G, also incorporates certain administrative and scoring changes suggested by Saunders<sup>11</sup> in order to make it a more sensitive measure of PAS factors than the standard forms of the Wechsler-Bellevue battery. PAS has not been used very much with the Wechsler Intelligence Scale for Children (WISC)<sup>(102)</sup>. Studies<sup>(47, 61, 67, 74, 109)</sup> that have used the WISC for making PAS determinations have produced conflicting evidence of its appropriateness and validity.

Gittinger<sup>(23)</sup> believes that PAS should not be used with Wechsler-Bellevue II, or for that matter, with any retest. Ideally, of course, tests administered at different periods of time should yield the same primitive and basic patterns, though the surface pattern might change, but experience has shown that the unreliability of the subtests is such that identical patterns cannot always be demonstrated. In part, this is due to the testing process itself, for experience in taking the test allows an *S* to become sufficiently prepared, on retesting, to perform at quite a different level and to produce a different configuration of scores. For PAS purposes, the first test is believed to be the most accurate and subsequent test results should always be interpreted in the context of the initial results.

### NORMAL LEVEL

Saunders and Gittinger<sup>(70)</sup> point out that if we are to attach meaning to profiles or patterns of ability, we must assume that real individual differences in these

---

<sup>10</sup>Gittinger, J. W. Personal Communication, 1965.

<sup>11</sup>Saunders, D. R. Personal Communication, 1966. See also Krauskopf and Davis<sup>(36)</sup>, Appendix A.

profiles exist and that they can be measured. For a typical individual, this implies the existence of areas of relative strength and areas of relative weakness. The major psychological premise of the Personality Assessment System is that most individual behavior may be regarded as an attempt on the part of the person to minimize the significance of his weaknesses. Often, this may be done by exploiting his strengths, but other mechanisms may also be used. This is a fundamental premise of PAS because it provides a link between the fields of "intelligence" and "personality", as they are usually conceived. Indeed, if it is possible to spell out the specific behaviors that provide the required minimization, given a specific configuration of abilities, it is possible to infer "personality" from a test of intelligence.

The psychometric premise underlying the Personality Assessment System is that the Wechsler batteries provide valid information that can be employed to spell out the specific behaviors mentioned above. The psychometric premise, combined with the psychological premise, leads to the conclusion that the Wechsler battery is, then, not only a source of varied patterns of intellectual functioning but also a valid personality measure. What is needed is some way of separating abilities, as measured by Wechsler's tests, into aptitudes and achievements. In PAS terms, certain of the Wechsler subtests must be measures of primitive tendency while others must be measures of subsequent adjustment.

Saunders and Gittinger<sup>(70, p. 379)</sup> write:

After O'Connor (1928), an aptitude is an ability whose development is controlled by maturation, and later by deterioration, primarily beyond the control of the person or his environment. In contrast, an achievement is an ability whose development depends on exertions of either the person or his environment or both. Aptitudes are presumed to depend on polygenic mechanisms leading to normal distributions around average ability, in which each individual occupies his predetermined place. Achievements may be modified, however, and we may recognize individuals as underachievers, normal achievers, or overachievers. Varying degrees of underachievement are common and relatively simple to comprehend. Overachievement is a less common occurrence, particularly if we reserve the term to refer to achievement accomplished at the expense of *disproportionate* underachievement in other areas.

Two predictions follow from this: (1) Distributions of the differences between certain Wechsler subtests (aptitudes) and their corresponding intra-individual average should fall in normal (or, at least symmetrical) distributions and have normal kurtosis. (2) Distributions of the differences between other subtests (achievements) and the intra-individual average should be skewed, have excessive kurtosis, or both. Saunders and Gittinger<sup>(70)</sup> have shown that both predictions are correct. Digit Span, Block Design, Picture Arrangement, and Digit Symbol are distributed in accordance with the first prediction and thus can be considered primitive measures. The remaining subtests are distributed in accordance with the second prediction, and are, therefore, measures of achievement or adjustment. These findings are entirely in accord with Gittinger's theoretical formulation.

The "intra-individual average" occupying this central theoretical position in the Personality Assessment System is known as *Normal Level*. In one sense, it is an estimate of the standard score level an *S* would receive on all the subtests if all personality influences were eliminated from his performance<sup>(53)</sup>. In another sense, Normal Level is a rough estimate of the intellectual potential of a person since it is the point at which he may be expected to perform with normal effort and energy<sup>(23)</sup>.<sup>12</sup> A fundamental tenet of PAS is that Normal Level is an inherent capacity subject to little change or modification by experience or training. This baseline, from which the functional intelligence is derived, is necessary for understanding or

<sup>12</sup>The WAIS Full Scale IQ obviously has a high correlation (well above .90) with Normal Level. FSIQ is not suitable as a Normal Level estimate in the PAS, however, since it is not sensitive to individual extremes in over- and under-achievement that are central to the PAS premises.



predicting a person's effectiveness, for the use a person makes of his potential is subject to modification and variation due to experience, motivation, training, or situational demands. See also: Wechsler<sup>(103)</sup>, Mayman, Schafer and Rapaport<sup>(44)</sup>, and Wallace<sup>(100)</sup>.

Thus, from a psychometric standpoint, PAS is a method of describing personality by relating performance on standardized measures of aptitude and achievement to a baseline defined as Normal Level. Unfortunately, while the concept of Normal Level is obviously required by PAS, there is no single test in the Wechsler battery that measures its value. (Vocabulary, the subtest that has most often been used as an estimate of intellectual level, is *not* used in the PAS and is not even included as one of the subtests of the WB-G<sup>(108)</sup>, the "parent" instrument of PAS, because its obvious cultural loading makes it hopelessly impractical in cross cultural assessment.) Many operational definitions of Normal Level have been tried, but none, to date, have proved entirely satisfactory, particularly in case studies of Ss where errors in determination may have an over-riding influence. Although the only completely safe approach to the individual PAS formulation is through an understanding of the dynamic interplay of all the subtests with consequent minimizing of the effect of Normal Level<sup>(67)</sup>, little progress has been made along these lines. At the present time, Normal Level can be estimated only through rather cumbersome methods. One such method is spelled out in detail in the final section of this paper.

#### RELATION BETWEEN THE WECHSLER SUBTESTS AND PAS

As we have already mentioned, PAS is a theoretical system that can be considered independently of performance on any test. At the same time, since there is a relationship between a person's PAS formulation and his performance on the Wechsler-Bellevue scales, some sort of logical bridge is needed. Thus, this section is not predictive in nature but more an after-the-fact explanation. It is based primarily on observation, although many later research studies are in agreement with these conclusions. These studies will be discussed following this section on psychometrics.

#### THE *E-I* DIMENSION

*Primitive Level.* In practice, the score a person receives on the Digit Span subtest of the Wechsler battery reflects his status with regard to the primitive Externalizer-Internalizer dimension. Digit Span scores well below Normal Level are associated with externalizing tendencies while scores at or above Normal Level are associated with internalizing tendencies. By definition, the term primitive refers to those primary personality features, immutable but maskable, that exert powerful influence on the direction of development even though they may not remain in awareness. As we have seen, Digit Span is, in fact, one of the primitive aptitudes measured by the Wechsler battery<sup>(59, 70)</sup>.

A person can handle this subtest in one of two ways, corresponding to the "natural" approach of the Externalizer or the Internalizer. The first method of dealing with the digits is to treat them as though they were located somewhere in the environment. In this type of approach, the subject may, for example, imagine that the numbers are written on the wall or somewhere in space. He may also associate the digits in some way with objects actually present in the environment. This approach is the natural method of the *E*, for he turns spontaneously to the environment to use it in his problem solving. However, this method is not necessarily very successful, for it tends to restrict recall.

Other characteristics of the Externalizer hamper his performance in Digit Span even more. Since his perception tends to be specific, he is apt to focus on the digits as separate units, without grouping them in his mind to facilitate their recall. Further, since the digits themselves are abstractions, they represent an area that is relatively alien to the Externalizer. Thus, both the content of the task and the more successful ways to handle it are foreign to him. Beyond this, he finds himself

in a situation—the face-to-face administration of this subtest—in which his inadequacies are high-anxiety provoking because of his need for interpersonal approval and his fear of rejection. All of these factors combine to lower the Externalizer's score. In fact, the PAS assumes that the strength of his externalized tendency is precisely indicated by how *poorly* he does on the Digit Span.

Even if the Externalizer should try to improve his performance by shifting to a more abstract approach, the anxiety produced by this attempt to do something that is not natural to him will interfere with his performance. This will be particularly noticeable in Digits Backward, the score for which is likely to drop off sharply for *E* Ss whose total Digit Span score is close to their Normal Level.<sup>13</sup>

To put it another way, the low Digit Span of the Externalizer is largely a function of the test situation. The reduced score is due not so much to an inability to perform the task as such, as to interference arising from his need to be responsive to the examiner. If he were allowed to write his answers, for example, or if the digits were given by a tape recording rather than by a human examiner, even the Externalizer would probably perform at a much higher level.

The *I* has certain advantages over the *E* in Digit Span performance. His thinking tends to be abstract and he is not likely to perceive the digits as separate, concrete units. Since the digits themselves *are* abstractions, the task is one he can handle quite easily. In addition, since he has no vital need for inter-personal approval, the situation is not threatening to him; the human examiner does not upset him. All these factors combine to produce a relatively high Digit Span score.<sup>14</sup> The strength of his internalizing tendency can be precisely measured by how well he performs on the test.

*Basic Level.* The psychometric determinant to describe compensation in the *E-I* dimension is performance on Arithmetic. For both Externalizer and Internalizer, but for somewhat different reasons, a high Arithmetic score indicates that compensation has occurred and a low score indicates that compensation has not occurred. Very briefly, for the Externalizer, with low Digit Span, the score on Arithmetic suggests the degree to which he has acquired facility for concentration, attention, and intellectual discipline. For the Internalizer, with high Digit Span, the score on Arithmetic suggests the extent to which the person has learned to attend to meaningful intellectual tasks imposed by the external environment.

In its simplest form, Arithmetic involves symbolic reasoning. It is, therefore, a skill that the primitive Externalizer achieves slowly and with difficulty. However, skill in arithmetic is often emphasized in school and is something commonly required in the course of daily life. In view of his fundamental difficulties in this area, the Externalizer has two courses open to him. He can admit his inferiority and accept his limitations without attempting to overcome them, a solution that results in poor scores in Arithmetic; these scores indicate that he has failed to compensate. His second choice is to force himself to master this technique, sometimes with great effort, thus compensating for his shortcomings. In so doing, he will develop internalized skills, a process that is reflected in his better Arithmetic score.

The primitive Internalizer, in contrast, has the potential for doing very well in Arithmetic with very little effort. In fact, his facility in this subtest is so great that he may give a spurious impression of mastery, which he may never be called upon to prove and may well not possess. If he has failed to discipline his primitive abstractional tendencies sufficiently to apply them to practical and specific tasks, he may still do poorly on the Arithmetic subtest, thus reflecting his lack of compensation. If, however, he has acquired control by moving in the externalized direction, he will obtain a high score.

<sup>13</sup>Gittinger, J. W. Personal Communication, 1972.

<sup>14</sup>It may be that the *I* arranges the numbers in such a way as to make them more meaningful to himself or that he groups them in a manner that facilitates recall. Both approaches are essentially internalized processes not involving environmental relationships.

*Surface Level.* The Information subtest of the Wechsler is regarded as the indicator of the quality of the surface adjustment ultimately acquired by the mature Externalizer or Internalizer. For either, a high Information score is considered a sign that modification has taken place. Conversely, a low Information score is considered a sign that modification has not taken place.

The kind of response that the Information subtest requires is primarily cognitive. Further, the retention required by the subtest involves the type of verbal memory that is characteristic of the Internalizer. Thus, both the content and the form of the task call for internalizing abilities and the Externalizer is "automatically" penalized. To do well on the task, he must modify his externalized orientation by acquiring internalized abilities. Alternatively, a failure to modify his original orientation will result in low Information scores.

In some cases, a person may discipline his externalizing tendencies without simulating the skills of the Internalizer. Such Ss will strongly repress or suppress primitive externalized tendencies but will have low Information scores (*Ec+u* or *Ecu*). Whenever this does occur, it is important for the adjustment of the person. If he is to receive social acceptance, that he maintain some kind of mechanical-procedural or social activity. Without such activities, he is likely to be preoccupied with introspective attitudes or daydreaming.

While the Internalizer has the primary skills for performing well on Information, he is unlikely to obtain a high score unless he learns to modify his usual unresponsiveness to the environment. Without such modification, he is likely to remain unaware of the environmental events to which the items refer. A low Information score in a primitive Internalizer has two possible meanings. First, it may indicate that he has not departed from his original autistic tendencies and has failed to adapt his ideational skills to specific external events. This is usually the case with the *Iuu*. If, however, the Internalizer has denied his ideational dominance through compensation, a low Information score suggests that the use of his repressed or suppressed internalized skills is threatening to him. This is usually the case with the *Icu*. In either case, the surface adjustment is seen as unmodified—the uniform interpretation of a low Information score.

*Differential Interpretation.* It is sometimes difficult to distinguish, psychometrically, between bright *Ecc* and bright *Ecu*. Since the most discriminating items of the Information subtest come at the end of the test, Externalizers with high Normal Level may be able to achieve at a reasonably high level without really having to exert themselves very much. To correct for this, most *Ecc* records should be interpreted as *Ecu* unless there is a marked *rise* in Information over Normal Level.<sup>15</sup>

For somewhat different reasons, the differentiation between the *Icc* and the *Icu* of average intellectual ability is difficult. Internalizers, because of their good memory, may achieve quite respectable scores on Information in spite of a lack of interest in external events. With average Normal Levels (*NL* = 9-10) most *Icc* records should be interpreted as *Icu* unless there is a marked *rise* in Information above Normal Level.

## THE R-F DIMENSION

*Primitive Level.* The primitive position in the Regulated-Flexible dimension is indicated by the score received on Block Design. This subtest, like Digit Span, involves a task that can be handled in one of two fundamentally different ways. The two approaches correspond to the problem-solving methods inherent in primi-

<sup>15</sup>Krauskopf (Personal Communication, 1971) points out that most of the persistent mathematics and hard science students he has tested have Information scores about equal (within one point) to their Arithmetic scores. Gittinger<sup>(24, p. 266)</sup> writes that in some cases such patterns may occur "in individuals who have strong quantitative interests rather than verbal ones; such persons learn numbers and symbols easily, to the exclusion of verbal facts." Krauskopf's Ss appear to fit into this category of people and should, thus, be interpreted as *Ecu* rather than *Ecc*.

tive Regulation and primitive Flexibility. Very briefly, the *R* accepts the premise that there is only one solution to each Block Design problem and he moves deliberately and systematically to find it. The *F* is less certain that there is only one way to do the task; this, together with other elements of distractibility leads to tentative approaches and more post-solution examination, with consequent loss of time in completing the designs.

The first approach to Block Design involves breaking down each problem to its component parts, thus facilitating the accurate reproduction of the individual units that make up the total configuration. This is the natural approach of the regulated person, for he has the ability to focus and concentrate on narrow, specific aspects of a problem. Since this method of handling the Block Design subtest tasks tends to result in superior performance, the primitive *R* will achieve a relatively high score as compared to his Normal Level.

Other characteristics of Regulation contribute to a high Block Design score. The regulated person usually works in an orderly fashion, rarely placing a block until he has recognized its correct final position. He is not readily distracted, nor does he find concentration on minute details irksome. He neither needs to look for the relationships of the parts to each other nor to derive their meanings from an understanding of the whole. He tends to proceed by rote, perseverating with one specific unit until it has been properly placed. Above all, the test situation itself is not distracting to the regulated subject. He can concentrate on his task, unaware of the interpersonal aspects, and unaffected by anxiety concerning the impression his performance is making. Insulated from external and internal interference, he is able to reproduce the designs by accurate imitation of their elements. The special combination of abilities and personality traits stemming from Regulation are so well suited to successful Block Design performance that the strength of primitive tendencies can be accurately estimated on the basis of how *well* he does on the subtest.<sup>16</sup>

The second approach to Block Design is to perceive the stimulus in terms of its overall effect. In this method of handling the task, the subject responds to and reconstructs each design from the total *gestalt*. As a result, slow and cautious assembly and minor initial errors are likely and the total score will be lowered. This is the typical approach of the primitive *F*.

Other attributes of the primitive *F* contribute to a further reduction in his Block Design score. He is distractible and finds concentration difficult. Attention to details tends to irritate him, and the small, discrete units of the design are apt to escape him completely, because they are essentially meaningless to him. He has a need to look for the relationships of the various parts to one another and to seek for their meaning through an understanding of the whole. Thus, he is likely to lose points in terms of accuracy as well as time.

The primitive *F* is also likely to find the test situation itself distracting, so that both external and internal stimuli interfere with his performance. He may be aware of the interpersonal aspects of the testing situation and highly responsive to them. (This awareness will be enhanced if he is an *EF*.) His wide range of perception not only prevents him from focusing on the task but it also makes him regard the problem as only one aspect of the total situation. Thus, his peculiar combination of skills and attributes are so poorly suited to good performance on Block Design that the strength of his *F* tendencies can be measured by how *poorly* he performs.

**Basic Level.** The Similarities subtest of the Wechsler battery reflects the quality of an individual's basic adjustment in the Regulated-Flexible dimension. However, high and low Similarities scores represent different basic conditions for the primitive *R* and the primitive *F*. For the *R*, a *high* Similarities score indicates that compensation has taken place and a low score indicates lack of compensation. The opposite relationships hold for the primitive *F*; for him, a low Similarities

<sup>16</sup>Since there is some natural decline in Block Design scores with age, scores that are *F* — according to Tables 7-19 should, for *Ss* aged 50 and over, be interpreted as *R*.

score indicates compensation, and a high score, lack of compensation. This conversion is handled automatically by the use of separate schemas for the primitive  $R$  and the primitive  $F$  in the PAS formulation tables. (See also Tables 1 and 2 and Fig. 2.)

Essentially, the Similarities subtest involves the ability to perceive abstract relationships, an ability that is primitively alien to the regulated subject. If, therefore, an  $R$  does do well on the test in comparison with his Normal Level, he must have acquired the ability through compensation. If he does relatively poorly, this is an indication that he has retained his primitive  $R$  orientation and that no compensation has taken place.

In contrast, since the ability to make these sorts of abstractions is natural for the primitive  $F$ , a high Similarities score indicates that he is functioning in accordance with his primary tendencies and that compensation has failed to occur. A relatively poor Similarities score for the primitive  $F$ , on the other hand, is an indication that he has reacted against his primary orientation by displaying some of the lack of insight into relationships that is characteristic of the regulated individual. A low Similarities score in the primitive  $F$ , then, indicates compensation.

*Surface Level.* The Comprehension subtest indicates the nature of the modification that has taken place in the Regulated-Flexible dimension. In the dynamics of PAS, scores on Comprehension reflect cultural conventionality and the extent to which a person accepts or rejects behaviors and attitudes that are normal, expected, accepted, or approved in his environment.

The symbols used for this test are inconsistent with those described earlier in that  $c$  and  $u$  do not represent modification and lack of modification for both  $F$  and  $R$ . Arbitrarily, a  $c$  always indicates a *high* score, while  $u$  always represents a *low* score on Comprehension. Tables 1 and 2 and Fig. 2 illustrate that the relationship for Comprehension follows a different pattern than that described for the  $I-E$  dimension.

A primitive  $R$  can achieve scores at or above his Normal Level with little effort since the acquisition and retention of the answers to the questions in this subtest are essentially practical and procedural in nature, depending largely upon rote memory and acceptance of the obvious and conventional. A high score for the  $R$ , symbolized by  $c$ , indicates that he has done little to change himself in this regard while a low score, symbolized by  $u$ , indicates either a lack of mechanical-procedural discipline or that he is attempting, by modification, to develop  $F$  skills. In other words, a  $S$  with high Block Design, low Similarities, and high Comprehension is symbolized as  $Ruc$ ; he is a primitive  $R$ , basic  $r$ , and surface  $c$ . The  $Ruu$  with low Comprehension, is a primitive  $R$ , basic  $r$ , and surface  $f'$ .

The primitive  $F$ , on the other hand, is relatively inept in rote memory and lacks mechanical-procedural discipline; he is likely to perform relatively poorly on Comprehension. A low score for him, symbolized by  $u$ , indicates that he has not achieved any modification while a high score, symbolized by  $c$ , suggests that he has reacted against his primitive flexibility and is attempting to discipline himself. Thus, a high score for the primitive  $F$  indicates modification. In the symbol system, an  $S$  with low Block Design, high Similarities, and low Comprehension is  $Fuu$ ; he is primitive  $F$ , basic  $f$ , and surface  $f$ . The individual with low Block Design, high Similarities and high Comprehension is  $Fuc$ , a primitive  $F$ , basic  $f$ , and surface  $c$ .

#### THE A-U DIMENSION

*Primitive Level.* The Picture Arrangement subtest is regarded as the indicator of a person's primitive tendency with regard to the Role Adaptive-Role Uniform dimension. Like Digit Span and Block Design, Picture Arrangement presents problems that can be handled in either of two ways. Here, the two approaches reflect the primary differences in social perception that characterize Role Adaptivity and Role Uniformity.

The natural approach of the primitive *A*, with his high degree of social-interpersonal awareness, is to interpret the Picture Arrangement items as social-interpersonal situations. The nature of the *A*'s perceptual preference tends to yield a high Picture Arrangement score since the subtest requires, primarily, insight into total social situations with predominantly human content.

The relationship of Picture Arrangement to social skill was noted many years ago by Wechsler. In discussing the adolescent psychopath's test pattern, he wrote (191, p. 155):

Also worthy of note is the good score frequently made by the psychopath on the Picture Arrangement test, a finding that is surprising because this test has been interpreted as measuring social intelligence. If this interpretation is correct, a distinction must be made between understanding and resultant behavior. Psychopaths generally have a grasp of social situations, but they are inclined to manipulate them to their own advantage in an anti-social way . . .

In PAS terms, the completely undisciplined *A* (that is, an  $A + u + u +$ ) is the person most likely to exhibit psychopathic tendencies.

Primitive Role Adaptivity provides certain advantages on the Picture Arrangement test. Since he can appreciate quickly the social relationships involved and can identify appropriate behavior, he can readily empathize with the characters in the problems and predict their "behavior". He will also gain points for time because he is rapid, as well as appropriate, in his social judgments. The primitive *A* has the further ability to handle "unfamiliar" situations effectively, so he is not upset by what others regard as the novelty of this subtest. All in all, his special pattern of personality attributes and mental skills is quite likely to result in high scores on Picture Arrangement.

The alternative approach to Picture Arrangement, characteristic of the Primitive *U* who, by definition, lacks social awareness, is to regard the items apart from the implied social context. This is a relatively inefficient approach since it ignores the built-in cues that point to the correct answer. As a result, the primitive *U*'s Picture Arrangement will be low, as compared with his Normal Level.

The Role Uniform *S* has two further disadvantages on Picture Arrangement as compared with the primitive *A*. First, his weakness in social awareness not only prevents him from correctly identifying the area involved in the subtest, but also makes it difficult for him to empathize with the characters in the problem. As a result, he will either predict the outcome of the story inaccurately or he will lose considerable time because he is working in an area for which he lacks fundamental understanding. His second disadvantage arises from his tendency to become upset in novel situations. Since he has limited social versatility, unfamiliar situations are quite threatening to him; the anxiety aroused by this relatively unusual form of test problem will tend to depress his score.<sup>17</sup> All in all, low scores in Picture Arrangement are associated with the *U* pole of the social variable.

*Basic Level.* The Picture Completion subtest of the Wechsler battery is used as the psychometric indicator of presence or absence of compensation in the *A-U* dimension. Essentially, Picture Completion is a measure of the ability to recognize and respond to the objects in one's external environment. As such, it is a measure of "reality orientation"—the degree to which a person is keeping up with the "real" things in his world.

As will be seen from Tables 7-19, a *low* Picture Completion score indicates compensation for the primitive *A*, while a *high* Picture Completion score indicates compensation for the primitive *U*. Rhodes has provided a graphic explanation for this reversal.<sup>18</sup>

<sup>17</sup>A good summary of the predicament faced by the Role Uniform was given by one *S* who said, in the midst of the Picture Arrangement test, "I don't understand what's going on!" This is precisely the problem the Role Uniform often faces in the realities of social interaction.

<sup>18</sup>D. A. Rhodes, Personal Communication, 1958.

Success in *PC* represents an awareness or sensitivity to the detailed cues of the environment. The *A* individual, if he is to defend against his natural tendency to adapt his role and to establish a single identifiable role, must become less sensitive to the real environment. It is as if he takes off his glasses to destroy his 20/20 vision in order to blur the fact of changing reality so that he can better maintain his single-minded approach. To put it another way, he attempts to get "out of focus" and, consequently, he will do poorly in a task like *PC*. Therefore, a low *PC* is compensation for the *A* and a high *PC* indicates that he has not compensated his *A* tendencies.

The reverse is true for the *U* individual. If he is to become more adaptable, a better role-player, he must be more sensitive to the cues that indicate changing reality. In short, he must increase his awareness of the subtle aspects of reality, even at the expense of his own feelings, in order to adapt his role. Consequently, a high *PC* represents compensation for the *U*, and a low *PC*, the reverse.

*Surface Level.* The Object Assembly subtest indicates the presence or absence of modifying tendencies in the *A-U* dimension. This subtest requires an *S* to put together three puzzles, each containing human content, with no model to follow. (The WB-G differs from the WAIS by returning to the original, Form I, Object Assembly, eliminating the ELEPHANT.) Lanfeld and Saunders<sup>(36)</sup> have demonstrated that the anxiety-provoking feature of Object Assembly is due, largely, to the effect of uncertainty about the desired product. However, the crucial feature of the subtest, as far as the *A-U* dimension is concerned, is the human content.

The *A-U* dimension differs from the *I-E* and *R-F* dimensions in that the modification process *counteracts*, rather than supports, compensation.<sup>19</sup> Whatever change is made in arriving at one's surface adjustment is due to anxiety about the basic adjustment pattern. Low Object Assembly scores are indicative, for all basic adjustments, of what might be called motivational anxiety for personality change. A person anxious about his basic adjustment will exert considerable energy to modify. However, he is apt to lack confidence in his modified state since he recognizes, albeit perhaps only unconsciously, that it is tenuous and vulnerable. This anxiety and insecurity will also be reflected in a lack of confidence in his ability to deal with the content of the test items and in an overconcern with the examiner's expectations. In brief, the same difficulties that induced the modifying process will lead to poor performance on the test. Thus, low Object Assembly scores are associated with modification.

The *S* who accepts his basic adjustment will have little motivational anxiety for personality change and will not undertake modification. His favorable self-perception will also be reflected in freedom from anxiety about the test and in relatively little concern about the examiner's expectations. His performance on the subtest, at or above his Normal Level, reflects his lack of modification.

#### MEASUREMENT OF ACTIVITY LEVEL

*Activity Level* is estimated by performance on the Digit Symbol subtest. Saunders<sup>(64, 64, 65)</sup> has demonstrated that this test has unique variance not accounted for by other test factors. From this, and from the nature of the distribution statistics, Saunders and Gittinger<sup>(70)</sup> concluded that Digit Symbol behaves more like a primitive measure than a measure of compensation or modification. This subtest requires an *S* to associate certain symbols with certain other symbols; the speed and accuracy with which he does this determines his score. In actuality, mistakes in the test are relatively rare, occurring almost entirely in careless, elderly, or brain-damaged *Ss*. The major factor contributing to the score is speed. Performance varies in suc-

<sup>19</sup>The reader is reminded that modification is represented symbolically by *c* for the *I-E* dimension and for the *F* pole of the *R-F* dimension, but by *u* for the *R* pole. See the discussion for the surface level of the *R-F* dimension.

TABLE 2. PAS FORMULATION AS A FUNCTION OF TEST PERFORMANCE

Subtest Triad			Extended Notation	Brief Notation		Surface
				Primitive	Basic	
Externalized-Internalized Dimension						
-D	-A	-I	Euu	E	e	e
-D	-A	+I	Euc	E	e	i'
-D	+A	-I	Ecu	E	i*	e <sup>o</sup> <sup>a</sup>
-D	+A	+I	Ecc	E	i*	<u>i</u> <sup>b</sup>
+D	-A	-I	Iuu	I	i	i
+D	-A	+I	Iuc	I	i	e'
+D	+A	-I	Icu	I	e*	i <sup>o</sup> <sup>a</sup>
+D	+A	+I	Icc	I	e*	<u>e</u> <sup>b</sup>
Regulated-Flexible Dimension						
-BD	-S	-C	Fcu	F	r*	f <sup>o</sup> <sup>a</sup>
-BD	-S	+C	Fcc	F	r*	<u>r</u> <sup>b</sup>
-BD	+S	-C	Fuu	F	f	f
-BD	+S	+C	Fuc	F	f	r'
+BD	-S	-C	Ruu	R	r	f'
+BD	-S	+C	Ruc	R	r	r
+BD	+S	-C	Rcu	R	f*	<u>f</u> <sup>b</sup>
+BD	+S	+C	Rcc	R	f*	r <sup>o</sup> <sup>a</sup>
Role Adaptive-Role Uniform Dimension						
-PA	-PC	-OA	Uuc	U	u	a'
-PA	-PC	+OA	Uuu	U	u	u
-PA	+PC	-OA	Ucc	U	a*	u <sup>o</sup> <sup>a</sup>
-PA	+PC	+OA	Ucu	U	a*	<u>a</u> <sup>b</sup>
+PA	-PC	-OA	Acc	A	u*	a <sup>o</sup> <sup>a</sup>
+PA	-PC	+OA	Acu	A	u*	<u>u</u> <sup>b</sup>
+PA	+PC	-OA	Auc	A	a	u'
+PA	+PC	+OA	Auu	A	a	a

Note: As indicated in the text, any of these symbols may be followed by a plus sign to indicate a pronounced tendency in the indicated direction. In addition to the standard abbreviations for the WAIS tests, the following are used: + indicates performance at or above Normal Level; - indicates performance below Normal Level.

<sup>a</sup>Notation of the form x. or x<sub>o</sub> are acceptable alternatives as required by computer character sets.

<sup>b</sup>Notation of the form x/ is an acceptable alternative as required by computer character sets.



cessive administrations of the subtest, however, reflecting the importance of mood, attitude, activity level, or energy available at the time of testing.

It is quite likely that low scores are natural for most Ss, since a high score requires considerable marshalling of energy. Few persons are able to perform this task blandly and mechanically, as is possible for the other primitive measures. Moreover, since in the WB-G Digit Symbol is given at the end of the battery, it is natural for all Ss to be somewhat fatigued. Nevertheless, the attention and effort required for retained or moderately high scores are easily produced by most co-operative adults so that the resulting performance is close to Normal Level. Anxiety, depression, and fatigue are the environmental factors primarily interfering with normal performance. Over-achievement on the task is related to high motivation and aggressiveness. Familiarity with this kind of task is also a compounding factor. For example, stenographers and telegraphers commonly do very well on Digit Symbol, regardless of their mood or attitude; for them, the test must be interpreted with this in mind.

We have already defined, in the discussion of the symbol system, the scoring of Activity Level as a function of Digit Symbol. Scores much below Normal Level are indicated by *L* +, low scores are indicated by *L*, medium scores by *M*, moderately high scores by *H*, and very high scores by *H* +.

Table 2 summarizes the PAS formulation as a function of Wechsler subtest performance.

---



---

## CHAPTER FOUR

---



---

### PAS-RELATED RESEARCH

One of the primary strengths of the Personality Assessment System is that it makes it possible to generate very specific testable hypotheses<sup>(12, 35, 80, 91)</sup>. To a great extent, the complexities of PAS can be expressed in operational terms based, on the one hand, on the subtest structure of the Wechsler battery or, on the other, on observable behavior patterns.

There have been two major areas of research activity within the general framework of PAS. Most of the results have been made public only through theses<sup>(19, 47, 84, 85, 88)</sup>, dissertations<sup>(2, 6, 20, 29, 40, 42, 76, 86, 87, 99)</sup>, symposia<sup>(1, 12, 41, 91, 92, 98)</sup>, or privately published papers<sup>(22, 23, 24, 25, 49, 50, 93, 107, 108)</sup>. The first of these areas has been concerned, primarily, with the validity of the Wechsler battery as a measure of PAS constructs. The other area has dealt with the testing of specific hypotheses generated from the descriptive system. Since these are quite different approaches, they will be discussed separately.

### THE WECHSLER BATTERY AND PAS

The vast majority of the work in this area has been carried out by David R. Saunders, now at the University of Colorado. He wrote<sup>(67, p. 1)</sup>:

At the time that I first became aware of the PAS, pattern or scatter analysis of the Wechsler was not regarded as a very promising line of research—at least not by those whose papers were being published in the journals. It was fashionable then to observe that scatter analysis involves at least the implicit use of difference scores, and that the reliability of difference scores is notoriously low—

certainly too low for valid assessment of individual differences in behavior. It was also fashionable to observe, in line with the relatively consistent findings of various persons, that the Wechsler battery measures only three—or maybe four or five—common factors; certainly this did not provide a basis for confidence in the ability of the PAS to discern both gross and subtle personality differences among all sorts of persons and populations. Had it not been possible for me to witness several remarkably valid profile interpretations, on subjects known to me but not to John Gittinger, I am sure I would have quit before I began. As it was, I could not deny the evidence afforded by my own eyes and ears, and was forced into a critical examination of the then fashionable assumptions and conclusions.

Saunders<sup>(54, 56, 58, 61)</sup> first demonstrated in a series of factor analyses of items in the subtests of the Wechsler battery that the test contained far more than 3 or 4 factors, the result usually found when subtests are treated as a unit<sup>(10, 17)</sup>. He found 11 factors in one sample and replicated this finding with another factor analysis. He has recently reported<sup>(67)</sup> the results of factoring all the items in a single matrix for a sample of 6-year-olds, using the WISC; a sample of 18-year-olds, using the WAIS; and an adult male sample, using the Japanese WAIS<sup>(32)</sup>. These analyses indicated that the Wechsler actually samples material from an 18-factor domain. This finding supports Cattell's<sup>(8, 9)</sup> conclusions that there are 18 to 21 factors derivable from objective personality tests.

Having verified that the Wechsler is indeed very complex factorially, Saunders then turned his attention to the relative "primitivity" of certain traits. His findings were reported in a series of papers and symposia<sup>(58, 59, 62, 64, 67, 70)</sup>. In brief, Saunders demonstrated that several different lines of approach support the hypothesis that Digit Span, Block Design, Picture Arrangement, and Digit Symbol are measures of relatively primitive traits, perhaps genetically based, while the other Wechsler subtests are measures of learned or acquired characteristics.

On the basis of this work, Saunders<sup>(67)</sup> has suggested that interpretations of personality based only on the 10 subtests of the Wechsler battery may be an oversimplification of the power of the test and a "harmful limitation" of PAS. He has suggested, and has begun to generate, certain cluster scores allowing for finer discrimination within standard PAS groups. This approach leads to the formation of reference groups<sup>(14)</sup> composed "of real individuals who are both behaviorally and psychometrically relatively homogeneous and distinct." The study by Martin and Saunders<sup>(43)</sup>, described below, is a fine example of the reference group approach.

## TESTS OF PAS CONSTRUCTS AND HYPOTHESES

### INTERPRETATION OF INDIVIDUAL DIMENSIONS

Wagner<sup>(99)</sup> studied the Externalizer-Internalizer dimension using, as his point of departure, the apparent similarity of this continuum to the classical concept of Introversion-Extraversion<sup>(6)</sup>. He factored the intercorrelations of 13 variables selected from objective personality questionnaire measures of introversion and extraversion, Digit Span and Arithmetic—the variables defined by PAS as being related to internalization and externalization—and a specially designed *I-E* questionnaire. Four factors emerged, 2 of which seemed to represent Introversion and 2, Extraversion. At the same time, 3 of these factors could be interpreted in terms of PAS developmental levels—primitive, basic, surface—within the *I-E* dimension. Wagner concluded that the results supported his hypothesis that there is considerable overlap between trait concepts (Introversion-Extraversion) and process concepts (Internalizer-Externalizer) but that neither can be substituted for the other.

Thetford and Schucman<sup>(80, 95)</sup> have tested several hypotheses relating to the Regulated-Flexible dimension and the processes of compensation and repression.

Descriptions of 4 kinds of people were given to 152 white, male adults, each of whom had been given the WAIS so that his PAS formulation was known. These descriptions each corresponded to one of four basic personality types within the *R-F* dimension: *Ru*, *Rc*, *Fu*, and *Fc*. Each *S* was asked to select the description he believed to be most like himself and then to rank all four in the order of his preference.

Nine hypotheses were developed and tested. Five of these were upheld at the .05 level of confidence while three others, though not reaching statistical significance, were also in the expected direction. The five supported hypotheses are as follows:

a. Uncompensated *F* choose the *Fu* and uncompensated *R* choose the *Ru* writeups as most descriptive of themselves. That is, both groups describe themselves accurately.

b. Uncompensated *F* prefer the *Fu* and uncompensated *R* prefer the *Ru* writeups as representing what they would like to be. That is, both groups are satisfied with their basic adjustment.

c. Similarly, the description opposite to the WAIS-developed formulation was rejected (least preferred) by these same two groups. That is, *Fu* reject the *Ru* description, and *Ru* reject the *Fu* description. As in (b) above, these choices reflect satisfaction.

d. Compensated *R* tend to prefer the *Fu* description as representing their self-concept. Compensation has thus pushed these subjects into thinking of themselves as *F*.

e. *Ss* who are compensated and modified tend to prefer the descriptions opposite to their primitive personality. That is, the *F* who is both basic and surface *R* prefers the *Ru* writeup while the *R* who is both basic and surface *F* prefers the *Fu* description.

#### STUDIES OF SPECIFIC SYMPTOMATOLOGY

Over a period of several years, Schucman and Thetford have tested many PAS-derived hypotheses concerning specific symptomatology in clinical groups. The first investigations were based on a sample of conversion hysterics. In at least three independent studies<sup>(78, 82, 96)</sup>, they found that sensory-motor symptoms predominate in primitive Externalizers but are largely absent in primitive Internalizers. A second hypothesis, based on the PAS interpretation of a low Picture Completion score as indicating withdrawal<sup>(23)</sup> was also tested. The experimenters found, in all their studies, that Internalizers with low Picture Completion suffered from headaches, a theoretically internalized symptom largely absent from both low Picture Completion Externalizers and from all high Picture Completion *Ss*.

A second series of studies<sup>(79, 80, 81, 83)</sup> has dealt with the differences in PAS pattern for patients with migraine headache and ulcerative colitis. Migraine patients are predominantly primitive Externalizers while ulcer patients are predominantly Internalizers. Moreover, the typical patient in both groups was uncompensated but modified. The discrepancy between primitive and basic patterns, on the one hand, and the surface adjustment, on the other hand, produces very high tension, according to these researchers because the patient senses that his surface orientation is precarious. "He is thus vulnerable to so-called tension disorders, the nature of which depends on his particular personality features and predispositions."<sup>(96, p. 450)</sup>

These investigators also found that the groups were significantly different on the *A-U* dimension at all three theoretical levels. Migraine *Ss* were fairly equally divided between *A* and *U*, but the vast majority of ulcerative colitis patients were *A* at the primitive level and remained uncompensated and unmodified. The authors believe that this finding reflects the pronounced immaturity that has long been noted in ulcerative colitis patients.

While the *R-F* dimension did not differentiate between migraine and ulcer patients, it was a factor in ulcerative colitis. *Unimproved* ulcerative colitis patients tended to be *Fuu*, while *improved* ulcerative colitis patients tended to be *Fuc*. Moreover, improved patients were more apt to be uncompensated Externalizers but surface Internalizers (*Euc*), while the unimproved ulcerative colitis group consisted largely of uncompensated Internalizers who had moved in the externalizing direction only at the surface level (*Iuc*). The improved patients, thus, were perhaps not "true" ulcerative colitis types.<sup>20</sup>

Davis<sup>(16)</sup>, in surveying the case records of clients at the University of Colorado Counseling Service, has discovered several interesting relationships between PAS formulation and behavior. These findings are stated as hypotheses that, in Davis' opinion, deserve further systematic study and testing.

In practice, he observed, some primitive and basic Externalizers ( $Eu = e$ ) were described as having severe menstrual problems; in some cases, there was a medically diagnosed problem of endometriosis. Davis found that the case folders of 6 out of 17 *Eu* Ss contained notations of menstrual problems, while other groups of randomly selected folders rarely had such notations. This observation by Davis may be related to findings that sensory-motor symptoms are most likely in primitive Externalizers<sup>(96)</sup>.

Gittinger<sup>(23, 24)</sup> describes compensated primitive *F* ( $Fc = r^*$ ) as having considerable hostility and defensiveness. He further noted that this is a rather rare personality pattern among normals. Davis<sup>(16)</sup> inspected the case folders of 16 Ss with this pattern with the following results:

"The most frequent notations which were made on the records of these individuals were that they appear to be very hostile, have very high tension, deny that they have problems, operate in many cases in delusional states bordering on paranoia, have problems in relating to other people but always see the problems as the other person's . . ." (16, p. 62). Only in rare cases were these people seen on self-referral; they were most often referred because of some difficulty that caused another person to recommend counseling. When counseling "did move into a personal problem area, the individual usually did not progress and terminated therapy without making any significant progress." (16, p. 62)

The third hypothesis-forming observation of Davis has to do with the compensated primitive *A* ( $Ac = u^*$ ). Davis suggests that persons with this personality formulation have problems stemming from the conflict between family loyalty and a desire to achieve in some given area. The parent-child relationship is likely to be one in which the child is sin ultaneously over-protected and pushed into the world. Examination of 45 case records with this personality formulation yielded substantiating notations in 16 cases; no relevant information was available in the other cases. However, no such notation was found in the folders of 100 Ss who were primitive and basic *U* ( $Uu = u$ ). Apparently, the *U* is more apt to become manipulative or conciliatory in situations of this kind, while the *A* is likely to become disabled.

#### STUDIES OF FOREIGN GROUPS

Although the Wechsler-Bellevue-G<sup>(108)</sup> was specifically designed for use with foreign groups, only one study making use of this adaptation has been reported in the professional literature. Goodnow<sup>(27)</sup> compared the performance of Chinese schizophrenics on the WB-G with the expected WAIS performance of schizophrenics as reported by Wechsler<sup>(105)</sup>. The patterns were very similar—both primitive *IRU*,

<sup>20</sup>Thetford and Schucman<sup>(97)</sup> have recently shown that discrepancies between basic and contact patterns in either the *E-I* or *A-U* dimension predominate in disturbed adolescents who required hospitalization but are rarely found in disturbed adolescents who did not require hospitalization. The investigators interpret the discrepancy as indicating low tolerance for stress and greater vulnerability to disruption.

in PAS terms. To this extent, at least, cross-cultural usefulness of the Wechsler battery is present.<sup>21</sup>

The hypothesis that the Wechsler battery is applicable cross-culturally is supported by Saunders' (67) analysis of the Kodama-WAIS (32). The factors derived from this study were clearly the same as those obtained in studies with American samples. The Japanese WAIS, at least, appears to measure the same aptitudes and achievements as Wechsler's American battery.

Shepanek (85) reviewed the development of social and political institutions in the Soviet Union and then translated his findings into PAS terminology. He concluded that while environmental pressures in the Soviet culture are such that "Soviet man today is being cramped into a rather narrow drone-like personality structure (*ERU*) . . . the ideal personality structure required for life under total social integration is substantially different . . . the *IRA*," (85, pp. 42, 59).

### LEARNING STUDIES

Eldred (18) reports a study on the use of programmed instruction with a small group of disturbed children in the elementary and secondary school programs at Vermont State Hospital. Although Wechsler scores were available for only 21 Ss, PAS appeared to be a promising tool for predicting success with programmed instruction. Gittinger correctly predicted 13 out of 15 cases, while Eldred predicted 5 out of 6. By and large, those who profit from this kind of instruction are basic *iru* (*Iu* or *Ec*, *Ru* or *Fc*, *I'u* or *Ac*).

### THE PAS AND OBSERVED BEHAVIOR

York (111) reported a study of the extent to which overt behavior could be categorized so as to allow prediction of actual test scores. For example, if a person is predicted to be *Iu* on the basis of his overt behavior, his test scores, unknown to the observer, must also be *Iu* (high Digit Span, relatively low Arithmetic). Of 30 such predictions (10 subjects  $\times$  3 dimensions), 17 were completely correct and only two were completely wrong. In spite of the problems anticipated as a result of compensation, the primitive indicator was not missed any more frequently when compensated than when not compensated. Two of the 10 Ss were correctly identified in all three dimensions. Of the 60 separate test predictions, 44 were correct; this result is significant at the .01 level of confidence.

York also reported a study of actors, psychiatric residents, and psychological technicians. He predicted, first, that actors and residents should be, primarily, basic *efa*, while technicians should be, primarily, basic *iru*. In addition, he predicted that actors would be least compensated and technicians most compensated, with residents falling in between. In 15 out of 18 cases, persons were placed in the correct occupational group. This study also supported Carrigan's (6) thesis that there are at least two kinds of extraverts. York found that the actors were primarily *EuRcAu* (basic *ef\*a*), corresponding to the emotionally expressive, impulsive, interpersonally fickle ("French") extravert. Psychiatric residents, in contrast, were primarily *IcRcUc* (basic *ef\*a\**), corresponding to the intellectually disciplined, organized, role stereotyped ("American") extravert. Starting from different primitive configurations, each has converged to a basic *efa* pattern.

<sup>21</sup>Two students at the University of Hong Kong have recently completed Master's theses comparing the *E-I* dimension of the Wechsler Bellevue-G with scores derived from the Maudsley Personality Inventory. They found, first, a slight positive correlation between position on the basic level of the PAS *I-E* scale and the *E* score of the MPI and, second, a significant relationship between surface *A-U* and the *N* scale of the MPI. (Shum Kit Hing and Or Ching Fai. Personal communication, 1971.) Other students at Hong Kong University have studied Digit Span performance of Chinese students under various conditions of administration and recall. Their results support Goodnow's finding that Chinese seem to do relatively better on recall of digits than do American subjects. (M. M. McCoy. Personal Communication, 1972.)

Tetrault<sup>(89)</sup> studied the personality characteristics of 20 soldiers aged 18-24 who were considered to be chronically AWOL. The full PAS formulations are given in Table 3. She found that 9 of the 20 were primitive *IRA*—a much larger pro-

TABLE 3. PAS FORMULATIONS FOR AWOL SAMPLE

Subject Number	Full Formulation			Basic	Surface
Primitive IRA Group					
1	(I c u	R c u	A u u )	H e* f* a	i° f/ a
2	(I c c	R c u	A u+u+)	L e* f* a+	e/ f/ a+
3	(I c c	R c u	A u+u+)	H e* f* a+	e/ f/ a+
4	(I c u	R +u u	A u+u+)	H e* r a+	i° f' a+
5	(I c c	R c+u	A u+u )	H e* f*+a+	e/ f/ a
6	(I +c c	R u u	A u+u )	H e* r a+	e/ f' a
7	(I u u	R +u u	A u u )	H i r a	i f' a
8	(I c+c	R u c	A u u )	H e*+r a	e/ r a
9	(I u u	R u c	A u+u+)	H i r a+	i r a+
Primitive A Group					
10	(E c u+	R c c	A u u )	L+i* f* a	e°+r° a
11	(I c u	F c c	A u u )	H e* r* a	i° r/ a
12	(I c c	F u c	A u c )	H e* f a	e/ r' u'
13	(E c c+	F u c	A u c )	H i* f' a	i/+r' u'
14	(E c u	F u u	A u u )	H i* f a	e° f a
Basic Uc Group					
15	(I u u	R c c	U c u )	H i f* a*	i r° a/
16	(E u u	R c c	U c u )	H e f* a*	e r° a/
17	(I u u	R u c	U c c )	H i r a*	i r u°
18	(I c u	R c c	U c+u )	H e* f* a*+	i° r° a/
19	(E c c	F u c	U c c+)	H i* f a*	i/ r' u°
20	(I u u	F u c	U c+u+)	H i f a*+	i r' a/+

Note: Adapted from Tetrault<sup>(89, p. 82)</sup>.

portion than is found in the population<sup>22</sup> at large, but one that is relatively common in prison samples—all of whom were uncompensated and unmodified *A*. Three of the other five *A* were also uncompensated and unmodified. The 6 Role Uniform soldiers were all compensated, that is *a\*(Uc)*. Thus, the group consisted primarily of persons exhibiting either exploitive dependency or rebellious negativism. In addition, five *Iuu Ss* can be described as non-perceptive, apathetic, unresponsive, and unadaptable. While this is only a preliminary study, it is entirely consistent with Gittinger's<sup>(23, 24)</sup> predictions.

<sup>22</sup>In a sample of 18,953 *Ss*, aged 17 to 60, only 2807 or 14.8% are primitive *IRA*. In contrast, 25 (36.8%) of 68 adolescent car thieves aged 16 and 17 are primitive *IRA*, lending support to Tetrault's thesis that *IRA* is a common pattern in prison samples.

Willis<sup>(106)</sup> studied the PAS patterns of three groups of mathematics majors. The PAS formulations are given in Table 4. The first group, consisting of 8 National Science Foundation Students and their instructor, showed extremely consistent PAS formulations. Seven of the nine were primitive  $R$ , basic  $f^*(Rc)$ ; one was an uncompensated  $F$ , the other an uncompensated  $R$ . All 9 were compensated in the  $I$ - $E$  dimension ( $Ec$  or  $Ic$ ). Seven of the 9 were primitive  $U$ , 6 were basic  $a$  or  $a^*$ , and 7 were surface  $a$  ( $a$ ,  $a'$ ,  $a^\circ$  or  $a/$ ).

TABLE 4. PAS FORMULATIONS FOR MATHEMATICS SAMPLES

Subject Number	Full Formulation			Basic	Surface
NSF Sample					
I-1	(E c+c+	R+c+c+	U c u ) L	i*+f*+a*	i/ +r°+a/
S-1	(E c+c+	R c+c+	U c u ) H	i*+f*+a*	i/ +r°+a/
S-2	(E c c	R+c+c+	U c+u ) L	i* f*+a*+	i/ r°+a/
S-3	(E c+c+	R+c+c+	U c+c ) L	i*+f*+a*+	i/+r°+u°
S-4	(I +c+c+	R c+u	U u c ) H+	e*+f*+u	e/+f/ a'
S-5	(I c+c+	R+c+c+	A c+c+) H+	e*+f*+u*+	e/+r°+a°+
S-6	(I c+c+	R c c+	A u+u+) H+	e*+f* a+	e/+r°+a+
S-7	(I c+c+	F u u	U u u ) H	e*+f u	e/+f u
S-8	(I +c+u	R+u c	U c u ) L	e*+r a*	i° r a/
Other Mathematics Students					
S-9	(I c c	R c c+	U c c ) H	e* f* a*	e/ r°+u°
S-10	(I u c	R+c c+	U c c+) L	i f* a*	e' r°+u°+
S-11	(E c c+	F c c+	A u c+) H	i* r* a	i/ +r/+u'+
S-12	(I c c	R+u c	A u u ) H+	e* r a	e/ r a
S-13	(E c+c	R c c+	U u c ) H+	i*+f* u	i/ r°+a'
I-2	(E c+c	R+c+c+	U u u+) H+	i*+f* u	i/ r°+u+
I-3	(I c+c	R+c c+	U u+c ) H	e*+f* u+	e/ r°+a'
I-4	(I +c+c+	R+u c	U c u ) H+	e*+r a*	e/+r a/
I-5	(I +c+c	R c c	A c+c+) L	e*+f* u*+	e/ r° a°+
I-6	(E c c	R c c+	A c c ) L	i* f* u*	i/ r°+a°
I-7	(I c+c+	R c c+	A u+u ) H	e*+f* a+	e/+r°+a
I-8	(E c+c	F u+c+	A c u ) H	i*+f+ u*	i/ r'+u/
I-9	(I u c+	R c c	A u+u+) H	i f* a+	e'+r° a+
I-10	(I c+c	R u c	A+c u ) L	e*+r u*	e/ r u/

Note: Adapted from Willis (106, pp. 80, 83). S indicates student, and I indicates instructor.

Willis observes that the single  $Fu$  student (Case S-7) made the lowest scores on the Missouri Mathematics Placement Test and the Missouri College English Test and was second lowest on the quantitative portion of the School and College Ability Test. In contrast, the single  $Ru$  student (Case S-8) made a perfect score on the MMPT (the second person out of more than 29,000 to do so), the highest score on the MCET, and tied for highest score on the SCAT. Even more interesting, this student is not planning to continue in mathematics. He is the only one of the group

who seemed unhappy to be doing research in this area and plans to do graduate work in engineering, a much more *R*-like endeavor<sup>(23)</sup>.

In view of the consistency just reported, Willis then examined the PAS formulations of two other small samples: 5 senior mathematics majors and 9 graduate students assigned as teaching assistants. Of the 14, all but two are compensated in the *E-I* dimension and all are modified, while 12 are primitive *R*, of whom 9 are basic *f\** (*Rc*). There was no consistency in the *A-U* dimension.

Admittedly, Willis used very small samples, but all were chosen solely because they were competent high-level mathematicians, not because of the PAS formulations. His study certainly suggests a hypothesis that can be tested with larger samples.

Cartwright<sup>(6, 7)</sup> has examined risk-taking behavior in a verbal skill, physical skill, and luck situation. His *Ss* were 62 persons equally divided between the highest scorers and the lowest scorers from a sample of 300 persons given the Torrance and Ziller Life Expectancy Inventory. He predicted the risk-taking behavior for each of the 16 basic personality patterns derived from the *I-E* and *R-F* dimensions with results only slightly worse than those obtained from a specially designed test instrument. Later analysis of the data indicated that some of his predictions were incorrect. After changing 14 of the original 48 predictions, *when these changes could be justified as being consistent with PAS constructs*, "the absolute number of correct predictions shifted in favor of the PAS, significantly so in two cases. The revised predictions should be cross-validated with a new sample."<sup>(7, p. 37)</sup>

Bielefeld<sup>(2, 3, 4)</sup> looked at the relationship between PAS variables and concept attainment in 52 males and 44 females, using three tasks ranging in difficulty level from relatively easy to very difficult. Although he had predicted that the *R-F* and *I-E* dimensions would aid in the prediction of success over and above the predictability afforded by intellectual ability (*NL*), he found that only the *A-U* dimension provided useful predictors. Important differences in the ways males and females approached the task were also noted.

Normal Level was the best single predictor for the moderately difficult and the very difficult tasks for both sexes, although personality variables (different for each sex) play a role in both tasks for females and in the moderately difficult task for males. In the relatively easy problem, only personality variables play a role. On the whole, females seem to approach these tasks in an intuitive way, consistent with their predominantly *Fu* and *Rc* basic personality, while males are more logical in accordance with their *Ru* and *Fc* patterns.

Bielefeld also found that *Uuu Ss* were generally best at the tasks and *Ucc* generally poorest. He observed that Object Assembly performance was a consistent predictor of success, particularly in the easiest task. What seems to be operating here is not a simple *A-U* distinction, as Bielefeld suggests, but the anxiety reflected in test performance and behavior<sup>(37)</sup>.

Martin and Saunders<sup>(43)</sup> reported a study of WAIS profiles of 221 women in 7 professional groups: attorneys, physicians, pharmacists, realtors, mathematicians-physicists-programmers, social workers, and high school science teachers. "Their preliminary analyses demonstrated that even for isolated PAS dimensions the WAIS is capable of making some distinctions between the seven occupational groups. . . . There are ample indications of ways in which the WAIS can be used to distinguish the seven occupational groups from one another."<sup>(43, p. 1)</sup>

The experimenters<sup>(44, 67, 68)</sup> then turned their attention to the formation of meaningful reference groups. 8 such groups were developed. The largest and most stable of these groups, defined as being composed of Professional Generalists, was made up of 129 persons drawn from only five of the professions; no Social Workers or Realtors were included. These Professional Generalists are characterized by low Picture Arrangement, indicative of low initial social skill, necessitating ". . . the development in these individuals of genuinely socially useful skills."<sup>(43, p. 2)</sup> Other dimensions of internal variability allow the differentiation within this reference group between mathematicians, physicists, and programmers, between pharmacists



employed in hospitals and those employed in the community, and between various medical specialties.

"When, from the master file of 20,000 WAIS profiles, we isolated those 200 individuals whose profiles most clearly matched the specifications of these professional generalists, we found unmistakable evidence of the professional orientation of these persons as well. Though the master file includes the original WAIS/WISC standardization group of 4,000 Ss, only five of these (four of whom were male) were among the 200 most similar to our professional generalists, indicating that such professional type PAS patterns are normatively rare." (43, p. 2)

Other stable reference groups drawn from the same five professions included Procedural Specialists and Intuitive Specialists. In PAS terms, the Procedural Specialists are primarily primitive  $E+RU$ , basic  $i^*f^*u$ , and surface  $i/r^{\circ}a'$  (*Ecc Rcc Uuc*) while the Intuitive Specialists are best represented by primitive  $E+FU$ , basic  $efu$  and surface  $i' r' u$  (*Euc Fuc Uuu*) coupled with high Activity Level.

Three distinct reference groups emerged from the Realtor sample. Realtor reference group A is made up primarily of saleswomen who are primitive A, basic ( $e$  or  $e^*$ ), basic F ( $f$  or  $f^*$ ), and basic A. These are women who exploit their personal acceptability within the short-run context of a saleswoman-customer relationship. Realtor reference group B is also composed of saleswomen, primarily primitive  $U+$ , basic I ( $i$  or  $i^*$ ), basic F ( $f$  or  $f^*$ ), and basic U. "The major dimension of differences within the group contrasts a high activity  $i/r'u$  (*Ecc Fuc Uuu*) with a low activity  $i/r'a$  (*Ecc Fuc Auu*)." (43, p. 42) These are women with strong social values that help them discharge their intensity in the most useful and effective ways. The third Realtor reference group is made up of brokers who are primitive  $IFU$ , basic  $e^*r^*u$ , and surface  $e/r/u$  or  $e/r/a'$  (*Ecc Fcc Uuu/Uuc*). These are women who tend to be rather ruthless in dealing with situations they do not understand, who are individual competitors, and who make few modifications in their interests and principles in order to gain acceptance from others.

The Social Work professional group yielded two reference groups. The first is made up of case workers who are primarily primitive  $IRU$ , basic  $e^*f^*u$ , and surface  $e/r^{\circ}a'$  (*Icc Rcc Uuc*). These are women who are likely to be more effective in the rituals, techniques, and procedures of their profession than in the areas of human understanding and compassion. Reference group B is composed largely of administrators; they are typically primitive  $EFA$ , basic  $i^*fa$  or  $efu^*$ , and surface  $i/r'u'$  (*Ecc Fuc Auc*) or  $i'r'a^{\circ}$  (*Euc Fuc Acc*). Both groups recognize the need to be cautious in social-interpersonal relations, prefer working in well-disciplined situations where there are well-defined procedures enforced by external authority, but are able to recognize and describe the feelings, emotions, attitudes, and interests of other people without becoming too much involved with them.

"Though this study has been exploratory in nature, it has nonetheless been sufficiently productive of meaningful results to suggest that for a university woman whose WAIS/PAS pattern fits one of the reference groups we have established, it should be possible to suggest that she consider preparing for a career in the profession or in one of the professions represented in that reference group. Since these reference groups show job-related intra-group variabilities, it is further possible to suggest to such a student that she would be likely to find greater satisfaction in one aspect of the chosen profession rather than another."

(43, pp. 3-4)

The studies cited above suggest that PAS is "... a measurement system which is as accurate as the MMPI, with a theoretical construct system that suggests ways to improve both measurement system and the theory. And, it is a construct system subject to empirical test." (25, p. 89) None of the studies can prove the validity of the Personality Assessment System, of course, but as Schucman<sup>(80)</sup> stated, they "can nevertheless establish the theory's claim to serious consideration."

# CHAPTER FIVE

## DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION

### COMPUTATION OF NORMAL LEVEL 32<sup>23</sup>

Step 1. Convert the Weighted Scores from any acceptable version of the Wechsler battery to Normal Level Weights (NLW) by Table 5.

Step 2. Rank the four highest NLW from high to low, always putting primitive measure NLW at the top of any series of equal weights. (If there are two or more equal primitive measures, the relative order of these is irrelevant.)

TABLE 5. NORMAL LEVEL WEIGHTS (NLW)

NLW	Weighted Scores (WTS)									NLW
	D	A	I	BD	S	C	PA	PC	OA	
15	—	19-20	19-20	19-20	19-20	19-20	19-20	—	—	15
14	17-20	18	18	17-18	18	18	17-18	—	—	14
13	15-16	17	17	15-16	17	17	15-16	—	—	13
12	14	15-16	15-16	14	15-16	15-16	14	17-19	—	12
11	13	14	14	13	14	14	13	14-16	18-19	11
10	12	13	13	12	13	13	12	13	14-17	10
9	11	12	12	11	12	12	11	12	13	9
8	10	11	11	10	11	11	10	11	12	8
7	9	10	10	9	10	10	9	10	11	7
6	8	9	9	8	9	9	8	9	10	6
5	7	8	8	7	8	8	7	8	9	5
4	6	7	7	6	7	7	6	7	8	4
3	5	6	6	5	6	6	5	6	7	3
2	4	5	5	4	5	5	4	5	6	2
1	0-3	0-4	0-4	0-3	0-4	0-4	0-3	0-4	0-5	1

Step 3. Observe the top *three* NLW:

- If the first NLW is a primitive measure, go to Step 4;
- If there are no primitive measures within the top three NLW, go to Step 6;
- In all other cases, go to Step 5.

<sup>23</sup>Normal Level 32 replaces Normal Level 29, used since May 1966<sup>(107)</sup>. It differs from Normal Level 29 by making use of Normal Level Weights (NLW), a method of linear transformation designed to increase the relative weight given to the three primitive measures and to decrease the relative weight of Picture Completion and Object Assembly. Examples of the method of computation are given in Figs. 4-9.

FIG. 4. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 1.

SUBJECT		EXAMPLE 1		TEST DATE		GROUP	
AGE		SEX		NATIONALITY		TEST LANGUAGE	
NATIVE LANGUAGE		EDUCATION (YRS)		NUMBER PRIOR TESTS		ID NUMBER	
TEST VERSION		MANUAL		ADMINISTRATOR		FORM	
COMMENTS		CONDITION 1; COLUMN A <sub>1</sub> ADJUSTED UP					

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
L	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
C	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
PA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
PC	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	
QA	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
DS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	

	WTS	NLW
D	17 *	14 *
A	13	10
C	13	10

	WTS	NLW
BD	16 *	13 *
L	18	14
C	13	10

	WTS	NLW
PA	12 *	10 *
PC	16	11
QA	16	10

	WTS
DS	10

FORMULATION	SUM	$14^* + 14 + 13^* = 41$	(Step 4a)
	CORRECTION	1	(Step 4b)
	ADJUSTED SUM	$41 - 1 = 40$	(Step 4b)
	NL APPROXIMATION	15	(Column A)
	ADJUSTMENT TO NL	Increase by 1	(Step 7a)
	FINAL NORMAL LEVEL	16	
PAS FORMULATION	$(I+ou \quad R+c+u \quad U-c+u)+[$		(Table 19)

FIG. 5. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 2.

SUBJECT		EXAMPLE 2		TEST DATE		GROUP	
AGE		SEX	NATIONALITY		TEST LANGUAGE		ID NUMBER
NATIVE LANGUAGE		EDUCATION (YRS)		NUMBER PRIOR TESTS		INSTITUTIONAL CODE	
TEST VERSION		MANUAL		ADMINISTRATOR		FORM	CONDITION
COMMENTS CONDITION 1; COLUMN B; NO ADJUSTMENT							

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
D																						
A																						
V																						

WTS	17 *	NLW	14 *	1
A	14		11	<input type="checkbox"/>
V	16		12	<input type="checkbox"/>

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BO																						
V																						
C																						

WTS	17 *	NLW	14 *	2
BO	13		10	<input type="checkbox"/>
C	13		10	<input type="checkbox"/>

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
PA																						
PC																						
PA																						

WTS	14 *	NLW	12 *	3
PA	15		11	<input type="checkbox"/>
PA	14		10	<input type="checkbox"/>

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
BO																						

WTS	11			<input type="checkbox"/>
-----	----	--	--	--------------------------

FORMULATION	SUM	$14^* + 14^* + 12^* = 40$	(Step 4a)
	CORRECTION	1	(Step 4b)
	ADJUSTED SUM	$40 - 1 = 39$	
	NL APPROXIMATION	15	(Column B)
	ADJUSTMENT TO NL	None	(Step 7b)
	FINAL NORMAL LEVEL	15	
PAS FORMULATION	[I + c R + o A u u] L		(Table 10)

- Step 4. Condition 1: the first NLW is a primitive measure.
- Add the 1st, 2nd, and 3rd NLW;
  - Subtract 1 from this sum;
  - Go to Step 7.
- Step 5. Condition 2: there are primitive measure NLW within the top three NLW but the first NLW is *not* a primitive measure.
- Add the 2nd, 3rd, and 4th NLW;
  - Add 1 to this sum for *each* primitive measure within the top *three* NLW;
  - Go to Step 8.
- Step 6. Condition 3: no primitive measures within the top three NLW.
- Add the 2nd, 3rd, and 4th NLW;
  - Subtract the 4th NLW from the 2nd NLW;
  - If the 4th NLW *is not* a primitive measure, reduce this difference by 1; if the 4th NLW *is* a primitive measure, do not reduce the difference;
  - Add the difference (adjusted differences, if required by Step 6, (c) to the sum found in Step 6, a;
  - Go to Step 8.
- Step 7. Find the first approximation to Normal Level opposite the corrected sum in Table 6.
- If this approximation falls in the column entitled Group A, *increase* the approximation by 1 if there are four *weighted* scores, excluding Object Assembly and Digit Symbol, greater than the tabled entry. If this condition is not met, the tabled entry is the final Normal Level.
  - If this approximation falls in the column entitled Group B, *increase* the approximation by 1 if there are three weighted scores, excluding Object Assembly and Digit Symbol, greater than the tabled entry. *Decrease* the approximation by 1 unless there are three weighted scores, excluding Object Assembly and Digit Symbol, equal to or greater than the tabled entry. If neither of these conditions is met, the tabled entry is the final Normal Level.
  - If this approximation falls in the column entitled Group C, *decrease* the approximation by 1 unless there are four weighted scores, excluding Object Assembly and Digit Symbol, equal to or greater than the tabled entry. If this condition is not met, the tabled entry is the final Normal Level.
- Step 8. Find the first approximation to Normal Level opposite the corrected sum in Table 6.
- If this approximation falls in the column entitled Group A, *increase* the approximation by 1 if there are three weighted scores, excluding Object Assembly and Digit Symbol, greater than the tabled entry. If this condition is not met, the tabled entry is the final Normal Level.
  - If this approximation falls in the column entitled Group B, *increase* the approximation if there are three weighted scores, excluding Object Assembly and Digit Symbol, greater than the tabled entry. *Decrease* the approximation by 1 unless there are three weighted scores, excluding Object Assembly and Digit Symbol, equal to or greater than the tabled entry. If neither of these conditions is met, the tabled entry is the final Normal Level.
  - If this approximation falls in the column entitled Group C, *decrease* the approximation by 1 unless there are three weighted scores, excluding Object Assembly and Digit Symbol, equal to or greater than the tabled entry. If this condition is not met, the tabled entry is the final Normal Level.

Fig. 6. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 3.

For Office Use Only

SUBJECT		EXAMPLE 3		TEST DATE		GROUP	
AGE	SEX	NATIONALITY		TEST LANGUAGE		ID NUMBER	
NATIVE LANGUAGE		EDUCATION (YRS)		NUMBER PRIOR TESTS		INSTITUTIONAL CODE	
TEST VERSION		MANUAL		ADMINISTRATOR		FORM	CONDITION
COMMENTS CONDITION 2; COLUMN B; ADJUST DOWN							

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

B

A

I

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BO

C

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PA

PC

DA

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PO

WTS

10\*

19

12

NLW

8\*

15

9

1

3

WTS

17\*

12

11

NLW

14\*

9

8

2

4

WTS

10\*

11

12

NLW

8\*

8

8

WTS

10

1

FORMULATION:

SUM

14\* + 9 + 9 = 32

(Step 5a)

CORRECTION

1

(Step 5b)

ADJUSTED SUM

32 + 1 = 33

NL APPROXIMATION

13

(Column B)

ADJUSTMENT TO NL

Decrease by 1

(Step 8b)

FINAL NORMAL LEVEL

12

PAS FORMULATION

(E-c+c R+c c A-o u )M

(Table 15)

Fig. 7. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 4.

For Office Use Only

SUBJECT		EXAMPLE 4		TEST DATE		GROUP	
AGE	SEX	NATIONALITY		TEST LANGUAGE		ID NUMBER	
NATIVE LANGUAGE		EDUCATION (YRS)		NUMBER PRIOR TESTS		INSTITUTIONAL CODE	
TEST VERSION		MANUAL		ADMINISTRATOR		FORM	CONDITION
COMMENTS CONDITION 2; COLUMN C; ADJUST DOWN							

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

B

A

I

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BO

C

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PA

PC

DA

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PO

WTS

14\*

14

18

NLW

12\*

11

14

3

4

1

WTS

15\*

13

13

NLW

13\*

10

10

2

WTS

12\*

13

14

NLW

10\*

10

10

WTS

10

1

FORMULATION:

SUM

13\* + 12\* + 11 = 36

(Step 5a)

CORRECTION

2

(Step 5b)

ADJUSTED SUM

36 + 2 = 38

NL APPROXIMATION

15

(Column C)

ADJUSTMENT TO NL

Decrease by 1

(Step 8c)

FINAL NORMAL LEVEL

14

PAS FORMULATION

(I c c+ R a c U-a u )L

(Table 17)

TABLE 6. NORMAL LEVEL 32 AS A FUNCTION OF NORMAL LEVEL WEIGHTS

Group A <sup>a</sup>		Group B <sup>a, b</sup>		Group C <sup>b</sup>	
Corrected Sum	NL	Corrected Sum	NL	Corrected Sum	NL
46 & up	17	45	17	44	17
43	16	42	16	41	16
40	15	39	15	38	15
37	14	36	14	35	14
34	13	33	13	32	13
31	12	30	12	29	12
28	11	27	11	26	11
25	10	24	10	23	10
22	9	21	9	20	9
19	8	18	8	17	8
16	7	15	7	14	7
13	6	12	6	11	6
10	5	9	5	8	5
7	4	6	4	5 & below	4

<sup>a</sup>Increase Normal Level by 1 if the number of Weighted Scores, excluding *Object Assembly* and *Digit Symbol*, that are greater than the tabled approximation exceeds the criterion defined in Step 7 or Step 8 (as appropriate).

<sup>b</sup>Decrease Normal Level by 1 unless the number of Weighted Scores, excluding *Object Assembly* and *Digit Symbol*, that are equal to or greater than the tabled approximation exceeds the criterion defined in Step 7 or Step 8 (as appropriate).

#### DERIVATION OF THE PAS FORMULATION

Once the Normal Level has been determined by the method described above, the PAS formulation is readily obtained by relating each weighted score to the Normal Level. Care must be taken to use the correct Normal Level table for obtaining the formulation. PAS formulations for the complete range of Normal Levels are given in Tables 7-19. Examples of the computation process and derivation of the PAS formulation are given in Fig. 4-9.

#### AN APPLICATION OF PAS

Let us consider LEX 157 whose test profile is found in Fig. 9. At the time of testing, LEX 157 was a patient at the United States Public Health Service Hospital in Lexington, Kentucky. We know almost nothing about him except that he was 33 years old when given the WB-I and that he had been hospitalized because of drug addiction.

His PAS formulation is 10(E-uc Fuc U-c+u+)L. His basic adjustment, by Table 1, is *efa*\*+ and his surface pattern is *i'r'a*/+. Gittinger's<sup>(24, pp. 136-140)</sup> description of these clusters is not likely to be completely accurate as far as this unique individual is concerned but illustrates the power of the PAS, even when used in blind analysis.

FIG. 8. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 5.

For Office Use Only

SUBJECT			EXAMPLE 5		TEST DATE		GROUP	
AGE		SEX	NATIONALITY		TEST LANGUAGE		ID NUMBER	
NATIVE LANGUAGE			EDUCATION (YRS)		NUMBER PRIOR TESTS		INSTITUTIONAL CODE	
TEST VERSION			MANUAL		ADMINISTRATOR		FORM	CONDITION
COMMENTS								
CONDITION 3; COLUMN C; NO ADJUSTMENT								

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

B

A

I

11\*

17

17

NLW

9\*

13

13

1

2

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BB

B

C

10\*

12

12

NLW

8\*

9

9

3

4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PA

PC

DA

12\*

17

11

NLW

10\*

12

7

4

3

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BS

10

WTS

10

FORMULATION

SUM

13 + 12 + 10\* = 35

(Step 6a)

CORRECTION

13 - 10 = 3

(Steps 6b,c)

ADJUSTED SUM

35 + 3 = 38

NL APPROXIMATION

15

(Column C)

ADJUSTMENT TO NL

None

(Step 8c)

FINAL NORMAL LEVEL

15

PAS FORMULATION

(E-c+c+ F c u U-c+o )L+

(Table 18)

FIG. 9. DERIVATION OF NORMAL LEVEL AND THE PAS FORMULATION: EXAMPLE 6—LEX 157.

For Office Use Only

SUBJECT			LEX 157		TEST DATE		GROUP	
AGE		SEX	NATIONALITY		TEST LANGUAGE		ID NUMBER	
NATIVE LANGUAGE			EDUCATION (YRS)		NUMBER PRIOR TESTS		INSTITUTIONAL CODE	
TEST VERSION			MANUAL		ADMINISTRATOR		FORM	CONDITION
COMMENTS								
DRUG ADDICT (CONDITION 3; COLUMN A; NO ADJUSTMENT)								

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

B

A

I

7\*

7

10

NLW

5\*

4

7

3

4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BB

B

C

7\*

11

10

NLW

5\*

8

7

3

4

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

PA

PC

DA

7\*

13

13

NLW

5\*

10

9

1

2

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21

BS

6

WTS

6

FORMULATION

SUM

9 + 8 + 7 = 24

(Step 6a)

CORRECTION

(9 - 7) - 1 = 1

(Steps 6b,c)

ADJUSTED SUM

24 + 1 = 25

NL APPROXIMATION

10

(Column A)

ADJUSTMENT TO NL

None

(Step 8a)

FINAL NORMAL LEVEL

10

PAS FORMULATION

(E-u c F u c U-c+u+)L

(Table 13)

BASIC

e

f

a\*+

SURFACE

i'

r'

g+

The *i'r'a/* adjustment is an extremely common and generally efficient *efa\** surface adaptation. The *i'r'a/* actively seeks and accepts principles, ideals and goals for which to strive and attempt to accomplish. Inspiration, purpose, and dedication are all aspects of the adjustment. The *i'r'a/* will actively identify with religions, patriotic organizations, fraternal groups, and ideologies. Once he has made an identification, he will be passionately loyal and highly motivated to learn the rituals, beliefs, and expectations of the group. Instead of a need to please people as such, he will have a need to live up to their ideals, meet their expectations, and take on responsibilities they expect him to assume. Many active lay church workers, fraternal club members, active and dedicated reserve officers, Boy Scout and Little League volunteer workers, and political campaign workers come from this cluster. In most instances, they are highly motivated people who take what they do very seriously, and expect other people to do the same. Any failure to take assigned responsibilities is guilt producing, and each task is performed with intensity (and anxiety) for fear that it will be done inadequately or in an inferior way.

An individual with this surface adjustment is very introspective. He constantly tries to compare his performance with others and becomes very insecure when he feels inadequate. He wants his productivity to be recognized and rewarded; consequently, he greatly treasures prizes, cups, and medals awarded for achievement. In spite of his interest in prizes and recognition, however, he is seldom a competitive person. His feelings of inadequacy tend to make him doubtful and too insecure to be truly competitive. In some instances, the *i'r'a/* will have very strong feelings of envy, but he can usually disguise these feelings. Some poison pen letters may originate from disgruntled *i'r'a/* people. Generally speaking, however, the *i'r'a/* will greatly admire competitive people. Many assistants, disciples, and "palace guards" come from this group. The low threshold for disillusionment characteristic of the basic *efa\** adjustment is, of course, present here. The *i'r'a/* is prone to become bitter and vindictive toward those he feels have rejected him. He rarely can express these feelings directly; thus, underhanded and indirect methods of getting revenge are not too uncommon.

Depressions, anxiety states, and inferiority panic reactions are the primary problems that occur in the *i'r'a/*. Alcohol will often precipitate these reactions. As a result, many *i'r'a/* individuals will avoid alcohol, but those who do use it are apt to be seriously alcoholic. Barbiturates and tranquilizers are very comforting for these people, and there is a tendency toward overuse, particularly in middle age. This is a conscious tension state adjustment pattern so hypertension is common.



TABLE 7. PAS FORMULATION FOR NORMAL LEVEL = 4 AND BELOW

Subtest	Weighted Scores											Resolution of X, Y, Z	
	0	1	2	3	4	5	6	7	8	9	10		11
Digit Span (D)	E+	E	X	X	I	I	I+	I+	I+	I+	I+	I+	X is I- when A < 2; otherwise X is E-
Arithmetic (A)	u+	u	u	o	o	c	c+	c+	c+	c+	c+	c+	
Information (I)	u+	u+	u	u	c	c	c	c+	c+	c+	c+	c+	
Block Design (BD)	F+	F	F	F	R-	R	R	R+	R+	R+	R+	R+	
Similarities (S)	u+	u	u	u	c	c	c	c+	c+	c+	c+	c+	
	R												
Comprehension (C)	c+	c	c	c	u	u	u	u+	u+	u+	u+	u+	
	F												
P. Arrangement (PA)	u+	u	u	u	c	c	c	c+	c+	c+	c+	c+	
P. Completion (PC)	U+	U	U-	Z	A	A	A+	A+	A+	A+	A+	A+	Z is U- when PC > 5; otherwise Z is A-
	A	c+	c+	c	c	u	u	u	u+	u+	u+	u+	
Obj. Assembly (OA)	u+	u+	u	u	c	c	c	c+	c+	c+	c+	c+	
	U												
Digit Symbol (DS)	c+	c	c	u	u	u	u+	u+	u+	u+	u+	u+	
	L+	L+	L	M	M	H	H	H+	H+	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 8. PAS FORMULATION FOR NORMAL LEVEL = 5

Subtest	Weighted Scores											Resolution of X, Y, Z	
	0	1	2	3	4	5	6	7	8	9	10		11
Digit Span (D)	E+	E	E	X	X	I	I	I+	I+	I+	I+	I+	X is I- when $A < 2$ ; otherwise X is E-.
Arithmetic (A)	u+	u	u	u	o	o	c	c+	c+	c+	c+	c+	
Information (I)	u+	u+	u	u	u	c	c	c	c+	c+	c+	c+	
Block Design (BD)	F+	F+	F	F	F-	R-	R	R	R+	R+	R+	R+	
Similarities (S)	u+	u+	u	u	u	c	c	c	c+	c+	c+	c+	
	R												
Comprehension (C)	F												
	c+	c+	c	c	c	u	u	u	u+	u+	u+	u+	
P. Arrangement (PA)	u+	u+	u	u	u	c	c	c	c+	c+	c+	c+	
	U+	U	U	U-	Z	A	A	A+	A+	A+	A+	A+	Z is U- when $PC > 6$ ; otherwise Z is A-.
P. Completion (PC)	A												
	c+	c+	c	c	c	u	u	u	u+	u+	u+	u+	
Obj. Assembly (OA)	U												
	u+	u+	u	u	u	c	c	c	c+	c+	c+	c+	
Digit Symbol (DS)	c+	c	c	c	u	u	u	u+	u+	u+	u+	u+	
	L+	L+	L	M	M	H	H	H+	H+	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when  $A < 3$ ; otherwise interpret as E+.

TABLE 9. PAS FORMULATION FOR NORMAL LEVEL = 6

Subtest	Weighted Scores											Resolution of X, Y, Z	
	0	1	2	3	4	5	6	7	8	9	10		11
Digit Span (D)	E+	E+	E	X	X	I	I	I	I+	I+	I+	I+	X is I- when $A < 3$ ; otherwise X is E-
Arithmetic (A)	u+	u+	u	u	o	o	c	c+	c+	c+	c+	c+	
Information (I)	u+	u+	u+	u	u	c	c	c	c+	c+	c+	c+	
Block Design (BD)	F+	F+	F	F	F-	R-	R	R	R+	R+	R+	R+	
Similarities (S)	R	u+	u+	u+	u	u	c	c	c+	c+	c+	c+	
	F	c+	c+	c+	c	c	u	u	u	u+	u+	u+	
Comprehension (C)	u+	u+	u	u	u	c	c	c	c+	c+	c+	c+	
P. Arrangement (PA)	U+	U+	U	U-	Z	A	A	A	A+	A+	A+	A+	Z is U- when $PC > 6$ ; otherwise Z is A-
P. Completion (PC)	A	c+	c+	c+	c	c	u	u	u	u+	u+	u+	
	U	u+	u+	u+	u	u	c	c	c	c+	c+	c+	
Obj. Assembly (OA)	c+	c+	c	c	u	u	u	u	u+	u+	u+	u+	
Digit Symbol (DS)	L+	L+	L+	L	M	M	H	H	H+	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when  $A < 3$ ; otherwise interpret as E+.

TABLE 10. PAS FORMULATION FOR NORMAL LEVEL = 7

Subtest	Weighted Scores											Resolution of X, Y, Z	
	0	1	2	3	4	5	6	7	8	9	10		11
Digit Span (D)	E+	E+	E	X	X	X	I	I	I+	I+	I+	I+	X is I - when A > 4; otherwise X is E -.
Arithmetic (A)	u+	u+	u	u	u	o	o	c	c+	c+	+c	c+	
Information (I)	u+	u+	u+	u	u	u	c	c	c	c+	c+	c+	
Block Design (BD)	F+	F+	F+	F	F	F-	R-	R	R	R+	R+	R+	
Similarities (S)	u+	u+	u+	u+	u	u	c	c	c	c+	c+	c+	
	c+	c+	c+	c+	c	c	u	u	u	u+	u+	u+	
Comprehension (C)	u+	u+	u+	u	u	u	c	c	c	c+	c+	c+	
P. Arrangement (PA)	U+	U+	U	U	U-	Z	A	A	A+	A+	A+	A+	Z is U - when PC > 7; otherwise Z is A -.
P. Completion (PC)	A	c+	c+	c	c	c	u	u	u	u+	u+	u+	
	U	u+	u+	u	u	u	c	c	c	c+	c+	c+	
Obj. Assembly (OA)	c+	c+	c	c	c	o	o	u	u	u+	u+	u+	
Digit Symbol (DS)	L+	L+	L+	L	M	M	H	H	H+	H+	H+	H+	

Note: For Similarities, use R w R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3, otherwise interpret as E+.

TABLE 11. PAS FORMULATION FOR NORMAL LEVEL = 8

Subtest	Weighted Scores											Resolution of X, Y, Z X is I- when $A < 4$ ; otherwise X is E-.
	0	1	2	3	4	5	6	7	8	9	10	
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+
Arithmetic (A)	u+	u+	u+	u	u	u	o	o	c	c	c+	c+
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+
Block Design (BD))	F+	F+	F+	F+	F	F	F-	R-	R	R	R+	R+
Similarities (S)	u+	u+	u+	u+	u+	u	u	o	c	c	c+	c+
Comprehension (C)	F	c+	c+	c+	c+	c	c	o	u	u	u+	u+
		u+	u+	u+	u	u	u	c	c	c	c+	c+
		U+	U+	U	U	U-	Z	A	A	A+	A+	A+
P. Arrangement (PA)		c+	c+	c+	c	c	c	o	o	u	u	u+
	A	u+	u+	u+	u	u	u	o	o	c	c	c+
P. Completion (PC)		c+	c+	c	c	c	c	o	o	u	u	u+
	U	u+	u+	u+	u	u	u	o	o	c	c	c+
Obj. Assembly (OA)		c+	c+	c	c	c	o	o	u	u	u+	u+
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	H	H	H+	H+	H+

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If  $D = 0$ , interpret as I+ when  $A < 3$ ; otherwise interpret as E+.

TABLE 12. PAS FORMULATION FOR NORMAL LEVEL = 9

Subtest	Weighted Scores											Resolution of X, Y, Z	
	1	2	3	4	5	6	7	8	9	10	11	12	X is I - when $A < 5$ ; otherwise X is B-.
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	
Arithmetic (A)	u+	u+	u+	u	u	u	u	o	c	c	c+	c+	
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
Block Design (BD)	F+	F+	F+	F+	F	F	F-	R-	R	R	R+	R+	
Similarities (S)	R	u+	u+	u+	u+	u	u	o	c	c	c+	c+	
	F	c+	c+	c+	c+	c	c	o	u	u	u+	u+	
Comprehension (C)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
P. Arrangement (PA)	U+	U+	U+	U	U	U-	Z	A	A	A+	A+	A+	Z is U- when $PC > 9$ ; otherwise Z is A-.
P. Completion (PC)	A	c+	c+	c+	c	c	o	o	u	u	u+	u+	
	U	u+	u+	u+	u	u	o	o	c	c	c+	c+	
Obj. Assembly (OA)	c+	c+	c+	c	c	c	o	o	u	u	u+	u+	
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	H	H	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If  $D = 0$ , interpret as I+ when  $A < 3$ ; otherwise interpret as E+.

TABLE 13. PAS FORMULATION FOR NORMAL LEVEL = 10

Subtest	Weighted Scores													Resolution of Y, Y, Z
	2	3	4	5	6	7	8	9	10	11	12	13		
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I— when A < 6; otherwise X is E—.	
Arithmetic (A)	u+	u+	u+	u	u	u	o	o	c	c+	c+	c+		
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+		
Block Design (BD)	F+	F+	F+	F+	F	F	F—	Y	R	R	R+	R+	Y is F when S > 11; otherwise Y is R—.	
Similarities (S)	R	u+	u+	u+	u+	u	u	o	c	c	c+	c+		
	F	c+	c+	c+	c+	c+	c	o	u	u	u+	u+		
Comprehension (C)		u+	u+	u+	u+	u	u	c	c	c	c+	c+		
P. Arrangement (PA)		U+	U+	U	U	U—	Z	A	A	A+	A+	A+	Z is U— when PC > 10; otherwise Z is A—.	
P. Completion (PC)	A	c+	c+	c+	c+	c	c	o	o	u	u+	u+		
	U	u+	u+	u+	u+	u	u	o	c	c	c+	c+		
Obj. Assembly (OA)		c+	c+	c+	c	c	c	o	o	u	u+	u+		
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	H	H+	H+	H+	H+		

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 14. PAS FORMULATION FOR NORMAL LEVEL = 11

Subtest	Weighted Scores														Resolution of X, Y, Z
	3	4	5	6	7	8	9	10	11	12	13	14			
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	I+	X is I - when A < 7; otherwise X is E -.	
Arithmetic (A)	u+	u+	u+	u	u	o	o	c	c	c+	c+	c+	c+		
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	c+		
Block Design (BD)	F+	F+	F+	F+	F	F	F-	Y	R	R	R+	R+	R+	Y is F - when S > 12; otherwise Y is R -.	
Similarities (S)	R	u+	u+	u+	u+	u	u	o	c	c	c+	c+	c+		
	F	c+	c+	c+	c+	c	c	o	u	u	u+	u+	u+		
Comprehension (C)		u+	u+	u+	u	u	u	c	c	c	c+	c+	c+		
P. Arrangement (PA)		U+	U+	U	U	U-	Z	A	A	A+	A+	A+	A+	Z is U - when PC > 11; otherwise Z is A -.	
P. Completion (PC)	A	c+	c+	c+	c+	c	c	o	o	u	u	u+	u+		
	U	u+	u+	u+	u+	u	u	o	o	c	c	c+	c+		
Obj. Assembly (OA)		c+	c+	c+	c+	c	c	o	o	u	u	u+	u+		
Digit Symbol (DS)		L+	L+	L+	L+	L	M	M	H	H+	H+	H+	H+		

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
For notation purposes, always resolve o as if it were c.  
If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.



TABLE 15. PAS FORMULATION FOR NORMAL LEVEL = 12

Subtest	Weighted Scores												Resolution of X, Y, Z
	4	5	6	7	8	9	10	11	12	13	14	15	
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I- when A < 8; otherwise X is E-
Arithmetic (A)	u+	u+	u+	u	u	u	o	o	c	c	c+	c+	
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
Block Design (BD)	F+	F+	F+	F+	F	F	I-	Y	R	R	R+	R+	Y is F- when S > 13; otherwise Y is R-
Similarities (S)	u+	u+	u+	u+	u+	u	u	o	c	c	c+	c+	
	F-	c+	c+	c+	c+	c	c	o	u	u	u+	u+	
Comprehension (C)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
P. Arrangement (PA)	U+	U+	U+	U	U	Z	Z	A	A	A+	A+	A+	Z is U- when PC < 11; otherwise Z is A-
P. Completion (PC)	A	c+	c+	c+	c	c	o	o	u	u	u+	u+	
	U	u+	u+	u+	u	u	o	o	c	c	c+	c+	
Obj. Assembly (OA)	c+	c+	c+	c	c	o	o	u	u	u+	u+	u+	
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	H	H+	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
For notation purposes, always resolve o as if it were c.  
If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 16. PAS FORMULATION FOR NORMAL LEVEL = 13

Subtest	Weighted Scores												Resolution of X, Y, Z
	5	6	7	8	9	10	11	12	13	14	15	16	
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I— when A < 9; otherwise X is E—.
Arithmetic (A)	u+	u+	u+	u	u	o	o	c	c	c+	c+	c+	
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
Block Design (BD)	F+	F+	F+	F+	F	F	F—	Y	R	R	R+	R+	Y is F— when S > 14; otherwise Y is R—.
Similarities (S)	R	u+	u+	u+	u+	u	u	o	c	c	c+	c+	
	F	c+	c+	c+	c+	c	c	o	u	u	u+	u+	
Comprehension (C)		u+	u+	u+	u	u	u	c	c	c	c+	c+	
P. Arrangement (PA)		U+	U+	U	U	Z	Z	A	A	A+	A+	A+	Z is U— when PC > 12; otherwise Z is A—.
P. Completion (PC)	A	c+	c+	c+	c	c	o	o	u	u	u+	u+	
	U	u+	u+	u+	u	u	o	o	c	c	c+	c+	
Obj. Assembly (OA)		c+	c+	c	c	c	o	o	u	u	u+	u+	
Digit Symbol (DS)		L+	L+	L+	L	M	M	H	H+	H+	H+	H+	

Note: For Similarities, use Row, R if BD is R; use Row F if BD is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 17. PAS FORMULATION FOR NORMAL LEVEL = 14

Subtest	Weighted Scores												Resolution of X, Y, Z
	6	7	8	9	10	11	12	13	14	15	16	17	
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I- when A < 11; otherwise X is E-.
Arithmetic (A)	u+	u+	u+	u	u	o	o	c	c	c+	c+	c+	
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
Block Design (BD)	F+	F+	F+	F+	F	F	F-	Y	R	R	R+	R+	Y is F- when S > 15; otherwise Y is R-.
Similarities (S)	R	u+	u+	u+	u+	u	u	o	c	c	c+	c+	
	F	c+	c+	c+	c+	c	c	o	u	u	u+	u+	
Comprehension (C)		u+	u+	u+	u	u	u	c	c	c	c+	c+	
P. Arrangement (PA)		U+	U+	U	U	Z	Z	A	A	A	A+	A+	Z is U- when P' > 12; otherwise Z is A-.
P. Completion (PC)	A	c+	c+	c+	c	c	o	o	u	u	u+	u+	
	U	u+	u+	u+	u	u	o	o	c	c	c+	c+	
Obj. Assembly (OA)		c+	c+	c+	c	o	o	u	u	u+	u+	u+	
Digit Symbol (DS)		L+	L+	L+	L	M	M	H	H+	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
 For Picture completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 18. PAS FORMULATION FOR NORMAL LEVEL = 15

Subtest	Weighted Scores												Resolution of X, Y, Z		
	7	8	9	10	11	12	13	14	15	16	17	18			
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I- when A < 12; otherwise X is E-.		
Arithmetic (A)	u+	u+	u+	u	u	o	o	c	c	c+	c+	c+			
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	Y is F- when S > 14; otherwise Y is R-.		
Block Design (BD)	F+	F+	F+	F	F	F-	Y	R	R	R+	R+	R+			
Similarities (S)	R	u+	u+	u+	u	u	o	o	c	c	c+	c+	Z is U- when PC > 12; otherwise Z is A-.		
	F	c+	c+	c+	c	c	o	o	u	u	u+	u+			
Comprehension (C)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+			
P. Arrangement (PA)	U+	U+	U+	U	U	Z	Z	A	A	A+	A+	A+			
P. Completion (PC)	A	c+	c+	c+	c	o	o	u	u	u+	u+	u+			
	U	u+	u+	u	u	o	o	c	c	c+	c+	c+			
Obj. Assembly (OA)	c+	c+	c	c	o	o	u	u	u+	u+	u+	u+			
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	H	H+	H+	H+	H+			

Note: For Similarities, use Row R if BD is R; use Row F if BD, is F.  
 For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
 For notation purposes, always resolve o as if it were c.  
 If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

TABLE 19. PAS FORMULATION FOR NORMAL LEVEL = 16 AND ABOVE

Subtest	Weighted Scores												Resolution of X, Y, Z
	7	8	9	10	11	12	13	14	15	16	17	18	
Digit Span (D)	E+	E+	E+	E	X	X	X	I	I	I+	I+	I+	X is I - when A < 12; otherwise X is E -.
Arithmetic (A)	u+	u+	u+	u	u	o	o	c	c	c+	c+	c+	
Information (I)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	Y is F - when S > 14; otherwise Y is R -.
Block Design (BD)	F+	F+	F+	F	F	F-	Y	R	R	R+	R+	R+	
Similarities (S)	R	u+	u+	u+	u	u	o	o	c	c	c+	c+	Z is U - when PC > 12; otherwise Z is A -.
	F	c+	c+	c+	c	c	o	o	u	u	u+	u+	
Comprehension (C)	u+	u+	u+	u+	u	u	u	c	c	c	c+	c+	
P. Arrangement (PA)	U+	U+	U+	U	U	Z	Z	A	A	A+	A+	A+	
P. Completion (PC)	A	c+	c+	c	o	o	u	u	u+	u+	u+	u+	
	U	u+	u+	u	o	o	c	c	c+	c+	c+	c+	
Obj. Assembly (OA)	c+	c+	c	c	o	o	u	u	u+	u+	u+	u+	
Digit Symbol (DS)	L+	L+	L+	L+	L	M	M	M	H	H+	H+	H+	

Note: For Similarities, use Row R if BD is R; use Row F if BD is F.  
For Picture Completion, use Row A if PA is A; use Row U if PA is U.  
For notation purposes, always resolve o as if it were c.  
If D = 0, interpret as I+ when A < 3; otherwise interpret as E+.

# REFERENCES

1. ANDERSON, W. (Chm.) Practical problems in personality research. Symposium presented at APA, Miami Beach, September 1970.
2. BIELEFELD, M. O. Prediction of concept attainment from the PAS. Unpublished doctoral dissertation, University of Missouri at Columbia, 1968.
3. BIELEFELD, M. O. Prediction of concept attainment from the PAS. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare. Pp. 65-80.
4. BIELEFELD, M. O. Prediction of concept formation from the PAS. In Anderson, W. (Chm.) Practical Problems in personality research. Symposium presented at APA, Miami Beach, September 1970.
5. CARRIGAN, P. M. Extraversion-Introversion as a dimension of personality: A reappraisal. *Psychol. Bull.*, 1960, 57, 329-360.
6. CARTWRIGHT, J. L. A comparison of a generalized and a differential predictor of risk taking. Unpublished doctoral dissertation, University of Missouri at Columbia, 1968.
7. CARTWRIGHT, J. L. Risk taking and the Personality Assessment System. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare. Pp. 27-40.
8. CATTELL, R. B. *Personality: A Systematic Theoretical and Factual Study*. New York: McGraw-Hill, 1950.
9. CATTELL, R. B. *Personality and Motivation—Structure and Measurement*. Yonkers-on-Hudson: World Book, 1957.
10. COHEN, J. A factor-analytically based rationale for the Wechsler Adult Intelligence Scale. *J. consult. Psychol.*, 1957, 21, 451-457.
11. COHEN, J. The factorial structure of the WAIS between early adulthood and old age. *J. consult. Psychol.*, 1957, 21, 283-290.
12. COHEN, J. (Chm.) Measurement of personality traits resulting from the interaction of abilities and environment. Symposium presented at APA, New York, September 1961.
13. DAVIS, K. G. The relationship of PAS concepts to other existing psychological concepts. In Volsky, T. C. Jr. (Chm.) The classification of clients: A new approach based on abilities. Symposium presented at the American College Personnel Association (APGA), Dallas, March 1967.
14. DAVIS, K. G. Personality Assessment System reference groups. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare. Pp. 41-48.
15. DAVIS, K. G. Reading improvement laboratory subjects. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education and Welfare. Pp. 55-57.
16. DAVIS, KEITH G. Validation of certain specific concepts in the PAS. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare. Pp. 59-63.
17. DAVIS, P. C. A factor-analysis of the Wechsler-Bellevue Scale. *Educ. psychol. Meas.*, 1956, 16, 127-146.
18. ELDRED, D. M. The use of programmed instruction with disturbed students. Final Progress Report, 1966, Vermont State Hospital, USPHS Grant No. MH-01076, National Institute of Mental Health.
19. ELLIOT, T. B. Intellectual abilities of suicidal neuro-psychiatric patients. Unpublished master's thesis, University of Missouri at Columbia, 1970.
20. FRANK, H. The interrelations among three personality systems. Unpublished doctoral dissertation, University of Colorado, 1969.
21. GITTINGER, JOHN W. On female types and the social model of American women. Unpublished manuscript, Butler Health Center, Providence, R. I., 1957.
22. GITTINGER, J. W. *The IRA Personality*, Washington, D. C.: Author, 1958.
23. GITTINGER, J. W. *Personality Descriptive System*. Washington, D. C.: Psychological Assessment Associates, 1961.
24. GITTINGER, J. W. *Personality Assessment System*. Washington, D. C.: Psychological Assessment Associates, 1964, 2 vols.
25. GITTINGER, J. W. *Interpretation of Ambivalent Records—X, Y, Z*. Washington, D. C.: Psychological Assessment Associates, 1964.
26. GITTINGER, JOHN W. Introduction to the Personality Assessment System. In Volsky, T. C. Jr., (Chm.) The classification of clients: A new approach based on abilities. Symposium presented at the American College Personnel Association (APGA), Dallas, March 1967.
27. GOODNOW, R. E. Analysis of differential abilities in the Chinese. In Cohen, J. (Chm.) Measurement of personality traits resulting from the interaction of abilities and environment. Symposium presented at APA, New York, September 1961.
28. HARONIAN, F. and SAUNDERS, D. R. Some intellectual correlates of physique: A review and a study. *J. psychol. Studies*, 1967, 15, 57-105.

29. JOHNSON, J. C. A comparison of two personality systems: The PAS and Witkin's field-dependence-independence. Unpublished doctoral dissertation, University of Missouri at Columbia, 1970.
30. JOHNSON, J. C. The relationship of Witkin's field-dependence and field-independence to the PAS. In Anderson, W. (Chm.) Practical problems in personality research. Symposium presented at APA, Miami Beach, September 1970.
31. KATZ, M. M., COLE, J. O. and BARTON, W. E. (Eds.) *The Role and Methodology of Classification in Psychiatry and Psychopathology*. (United States Public Health Service No. 1584) Washington, D. C.: Government Printing Office, 1968.
32. KODAMA, H., SHINAGAWA, F. and INDO, T. *WAIS: Japanese edition*. Tokyo: Nihon Bunka Kagakusha, 1958.
33. KRAUSKOPF, C. J. The PAS System. In Anderson, W. (Chm.) Practical problems in personality research. Symposium presented at APA, Miami Beach, September 1970.
34. KRAUSKOPF, C. J. and BIELEFELD, M. O. The prediction of achievement in a senior level course. Unpublished manuscript, University of Missouri at Columbia, 1968.
35. KRAUSKOPF, C. J. and DAVIS, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education and Welfare.
36. LANFELD, E. S. and SAUNDERS, D. R. Some determiners of performance on an experimental sentence arrangement test. (Research Memorandum 59-12). Princeton: Educational Testing Service, 1959.
37. LANFELD, E. S. and SAUNDERS, D. R. Anxiety as "effect of uncertainty": An experiment illuminating the OA subtest of the WAIS. *J. clin. Psychol.*, 1961, 17, 238-241.
38. LEWINSON, T. S. Möglichkeiten der Handschriftenanalyse nach dem System PAS. *Graphologisches Spektrum*, 1969, 5-25.
39. LEWINSON, T. S. Eine neue Anwendung der Graphologie in den U. S. A.: Beziehungen zwischen den Wechsler Intelligenz Untertesten und den Lewinson-Zubin Handschriftskalen. *Zeitschrift für Menschenkunde* (Wilhelm Braumüller, Wien u. Stuttgart), in press.
40. LUND, R. D. Wechsler subtest patterns and personality: An application of Gittinger's Personality Assessment System to verbal activity, self descriptions and sociometric choices. Unpublished doctoral dissertation, University of Colorado (Boulder), 1968.
41. LYERLY, S. B. (Chm.) Exploration in typology with special reference to psychotics. Symposium presented at APA, Los Angeles, September 1964.
42. MALON, J. V. The PAS study of delinquency and race. Unpublished doctoral dissertation, University of Missouri at Columbia, 1971.
43. MARTIN, D. L. and SAUNDERS, D. R. An analysis of personality patterns of women in selected professions. Final Report, December 1969, University of Colorado, Project No. 8-H-026, Grant No. OEG-8-8-080026-2009 (057), Department of Health, Education, and Welfare.
44. MAYMAN, M., SCHAFER, R. and RAPAPORT, D. Interpretation of the Wechsler-Bellevue Intelligence Scale in personality appraisal. In Anderson, H. H. and Anderson, G. L. (Eds.) *An Introduction to Projective Techniques*. Englewood Cliffs, N. J.: Prentice-Hall, 1951, pp. 541-580.
45. MUNDY-CASTLE, A. C. Electrophysiological correlates of intelligence. *J. Personal.*, 1958, 27, 184-199.
46. MUNDY-CASTLE, A. C. Comments on Saunders' "Further implications of Mundy-Castle's correlations between EEG and Wechsler-Bellevue variables." *J. nat. Inst. person. Res.*, Johannesburg, 1960, 8, 102-105.
47. NICHOLSON, J. A. The WISC as a predictor of socioeconomic class and diagnostic differences in outpatient children at Mid-Missouri Mental Health Center. Unpublished master's thesis, University of Missouri at Columbia, 1970.
48. O'CONNOR, J. *Born that Way*. Baltimore: Williams and Wilkins, 1928.
49. PASTERNAK, W. P. (Ed.) *Personality Assessment System: An Introduction*. Washington, D. C.: Psychological Assessment Associates, 1963.
50. PASTERNAK, W. P. (Ed.) *Personality Assessment System: Primitive Types*. Washington, D. C.: Psychological Assessment Associates, 1964.
51. RAPAPORT, D., GILL, M. and SCHAFER, R. *Diagnostic Psychological Testing*. Chicago: Year Book Publishers, 1945-46. 2 vols.
52. RHODES, D. A. A theoretical framework for the investigation of personality structure and function. In Thetford, W. N. (Chm.) Multitrait, multilevel personality assessment: Theory, measurement, evaluation. Symposium presented at APA, Philadelphia, September 1963.
53. SAUNDERS, D. R. An outline of Gittinger's personality theory as applied to the Wechsler. (Research Memorandum 59-3) Princeton: Educational Testing Service, 1959.
54. SAUNDERS, D. R. On the dimensionality of the WAIS battery for two groups of normal males. *Psychol. Rep.*, 1959, 5, 529-541.
55. SAUNDERS, D. R. A computer program to find the best fitting orthogonal factors for a given hypothesis. *Psychometrika*, 1960, 25, 199-205.
56. SAUNDERS, D. R. A factor analysis of the Information and Arithmetic items of the WAIS. *Psychol. Rep.*, 1960, 6, 367-383.
57. SAUNDERS, D. R. A factor analysis of the Picture Completion Items of the WAIS. *J. clin. Psychol.*, 1960, 16, 146-149.
58. SAUNDERS, D. R. Further implications of Mundy-Castle's correlations between EEG and Wechsler-Bellevue variables. *J. nat. Inst. person. Res.*, Johannesburg, 1960, 8, 91-101.

59. SAUNDERS, D. R. Digit Span and alpha frequency: A cross-validation. *J. clin. Psychol.*, 1961, 17, 165-167.
60. SAUNDERS, D. R. How to tell computers from people. *Educ. Psychol. Meas.*, 1961, 21, 158-183.
61. SAUNDERS, D. R. Operational definition through factor analysis. In Cohen, J. (Chm.) Measurement of personality traits resulting from the interaction of abilities and environment. Symposium presented at APA, New York, September 1961.
62. SAUNDERS, D. R. *Factor Analysis of Comprehension and Similarities Items from the WAIS*. Princeton: Author, 1962.
63. SAUNDERS, D. R. Trans-varimax: Some properties of the ratiomax and equamax criteria for blind orthogonal rotation. Paper presented at APA, St. Louis, September 1962.
64. SAUNDERS, D. R. Evidence for the relative primitivity of certain traits. In Thetford, W. N. (Chm.) Multitrait, multilevel personality assessment: Theory, measurement, evaluation. Symposium presented at APA, Philadelphia, September 1963.
65. SAUNDERS, D. R. The factorial structure of the Kodama-WAIS for males. *Jap. J. educ. Psychol.*, 1964, 12, 436-438; 508-512.
66. SAUNDERS, D. R. Some varieties of schizophrenia. In Lysterly, S. B. (Chm.) Explorations in typology with special reference to psychotics. Symposium presented at APA, Los Angeles, September 1964.
67. SAUNDERS, D. R. Some conclusions drawn from research stimulated by the PAS. In Volsky, T. C., Jr. (Chm.) The classification of clients: A new approach based on abilities. Symposium presented at the American College Personnel Association (APGA), Dallas, March 1967.
68. SAUNDERS, D. R. On the statistical treatment of remarkable data. *Educ. Psychol. Meas.*, 1970, 30, 533-545.
69. SAUNDERS, D. R. and AARONSON, B. S. Functional factors common to the Wechsler and Halstead batteries, based on Reitan's data for control and brain-damaged groups. Paper presented at EPA, Atlantic City, April 1962.
70. SAUNDERS, D. R. and GITTINGER, J. W. Patterns of intellectual functioning and their implications for the dynamics of behavior. In Katz, M. M., Cole, J. O. and Barton, W. E. (Eds.) *The Role and Methodology of Classification in Psychiatry and Psychopathology*. (United States Public Health Service No. 1584) Washington, D. C.: Government Printing Office, 1968, Pp. 377-390.
71. SAUNDERS, D. R. and SCHUCMAN, H. Syndrome analysis: An efficient procedure for isolating meaningful sub-groups in a non-random sample of a population. Paper presented at the Psychonomic Society, St. Louis, September 1962.
72. SCHAFER, R. *The Clinical Application of Psychological Tests*. New York: International Universities Press, 1948.
73. SCHOFIELD, L. F. and KUNCE, J. T. The WAIS Adaptability Scale and Vocational Behavior. *J. voc. Behav.*, 1971, 1, 355-360.
74. SCHOONOVER, S. M. and HERTEL, R. K. Diagnostic implications of WISC scores. *Psychol. Rep.*, 1970, 26, 967-973.
75. SCHOWENGERDT, G. C. A summary of the Personality Assessment System. Unpublished manuscript, University of Missouri at Columbia, 1968.
76. SCHOWENGERDT, G. C. The relationship of student and instructor PAS type to student achievement in calculus. Unpublished doctoral dissertation, University of Missouri at Columbia, 1969.
77. SCHOWENGERDT, G. C. The relationship of student and instructor PAS type to student achievement in calculus. In Anderson, W. (Chm.) Practical problems in personality research. Symposium presented at APA, Miami Beach, September 1970.
78. SCHUCMAN, H. Overt symptoms and theoretical categories in conversion hysterics. In Cohen, J. (Chm.) Measurement of personality traits resulting from the interaction of abilities and environment. Symposium presented at APA, New York, September 1961.
79. SCHUCMAN, H. Differential modifications of behavior in patient groups. In Thetford, W. N. (Chm.) Multitrait, multilevel personality assessment: Theory, measurement, evaluation. Symposium presented at APA, Philadelphia, September 1963.
80. SCHUCMAN, H. Personality features and adaptation associated with somatic reactions to stress. In Thetford, W. N. (Chm.) Human ecology: Studies in social and personality adaptation. Symposium presented at APA, Los Angeles, September 1964.
81. SCHUCMAN, H., SAUNDERS, D. R. and THETFORD, W. N. An application of syndrome analysis to subjects with ulcerative colitis. Paper presented at APA, St. Louis, September 1962.
82. SCHUCMAN, H. and THETFORD, W. N. Expressed symptoms and personality traits in conversion hysteria. *Psychol. Rep.*, 1968, 23, 231-243.
83. SCHUCMAN, H. and THETFORD, W. N. A comparison of personality traits in ulcerative colitis and migraine patients. *J. abnorm. Psychol.*, 1970, 76, 443-452.
84. SELL, J. M. A comparison of two personality theories: The theory of anxiety and hysteria and the Personality Assessment System. Unpublished master's thesis, University of Missouri at Columbia, 1971.
85. SHEPANER, N. A. The human ecological problems of total social integration in the USSR. Unpublished master's thesis, George Washington University and Army War College (Carlisle Barracks, Pennsylvania), 1964.
86. SMITH, W. A. A study of the Personality Assessment System and its utility in the prediction of performance in a reading improvement course. Unpublished doctoral dissertation, University of Missouri at Columbia, 1970.



87. SOLTZ, W. H. Comparative study of Negro-white differences on the MMPI and PAS. Unpublished doctoral dissertation, University of Missouri at Columbia, 1970.
88. STURM, W. M. The relationships of the Personality Assessment System and the Drake Rhythm Test. Unpublished master's thesis, University of Missouri at Columbia, 1970.
89. TETRAULT, S. PAS description of chronic AWOL soldiers. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare, pp. 81-84.
90. THETFORD, W. N. Theoretical formulations underlying the research. In Cohen, J. (Chm.) Measurement of personality traits resulting from the interaction of abilities and environment. Symposium presented at APA, New York, September 1961.
91. THETFORD, W. N. (Chm.) Multitrait, multilevel personality assessment: Theory, measurement, evaluation. Symposium presented at APA, Philadelphia, September 1963.
92. THETFORD, W. N. (Chm.) Human ecology: Studies in social and personality adaptation. Symposium presented at APA, Los Angeles, September 1964.
93. THETFORD, W. N. and SCHUCMAN, H. *The Personality Theory of John Gittinger*. New York: Human Ecology Fund, 1962.
94. THETFORD, W. N. and SCHUCMAN, H. Personality patterns in migraine and ulcerative colitis patients. *Psychol. Rep.*, 1968, 23, 1206.
95. THETFORD, W. N. and SCHUCMAN, H. Self-choices, preferences, and personality traits. *Psychol. Rep.*, 1969, 25, 659-667.
96. THETFORD, W. N. and SCHUCMAN, H. Conversion reactions and personality traits. *Psychol. Rep.*, 1970, 27, 1005-1006.
97. THETFORD, W. N. and SCHUCMAN, H. Personality traits in adolescent adjustment reactions. *Psychol. Rep.*, 1972, 31, 591-598.
98. VOLSKY, T. C., Jr. (Chm.) The classification of clients: A new approach based on abilities. Symposium presented at the American College Personnel Association (APGA), Dallas, March 1967.
99. WAGNER, R. F. An explication of Gittinger's Internalizer dimension by factor analysis based upon related personality measures. Unpublished doctoral dissertation, George Washington University, 1967.
100. WALLACE, J. An abilities conception of personality: Some implications for personality measurement. *Amer. Psychol.*, 1966, 21, 132-138.
101. WECHSLER, D. *The Measurement of Adult Intelligence*. (3rd ed.) Baltimore: Williams and Wilkins, 1944.
102. WECHSLER, D. *Wechsler Intelligence Scale for Children*. New York: Psychological Corporation, 1949.
103. WECHSLER, D. Cognitive, conative, and non-intellective intelligence. *Amer. Psychol.*, 1950, 5, 78-83.
104. WECHSLER, D. *Wechsler Adult Intelligence Scale*. New York: Psychological Corporation, 1955.
105. WECHSLER, D. *The Measurement and Appraisal of Adult Intelligence*. (4th ed.) Baltimore: Williams and Wilkins, 1958.
106. WILLIS, C. PAS Patterns of Mathematics Students. In Krauskopf, C. J. and Davis, K. G. Studies of the normal personality. Final Report, April 1969, University of Missouri, RD-2734-P-68, Department of Health, Education, and Welfare. Pp. 49-57.
107. WINNE, J. F. (Ed.) *A Summary of the Personality Assessment System*. Washington, D. C.: Psychological Assessment Associates, 1966.
108. WINNE, J. F. (Ed.) *Manual for Administering and Scoring the Wechsler-Bellevue (G)*. Washington, D. C.: Psychological Assessment Associates, 1966.
109. WINNE, J. F. and SCHOONOVER, S. M. Diagnostic implications of WISC scores—A reanalysis. *Psychol. Rep.*, 1972, 30, 823-828.
110. YORK, R. H., SALVATORE, S. and RAPPERPORT, A. The predictive potential of Gittinger's theory. Unpublished manuscript, Massachusetts Mental Health Center, Boston, Mass., 1954.
111. YORK, R. H. The significance of acquired compensation for prediction of basic behavior patterns. In Thetford, W. N. (Chm.). Multitrait, multilevel personality assessment: Theory, measurement, evaluation. Symposium presented at APA, Philadelphia, September 1963.