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## ABSTRACT

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INTERRELATIONS IN COGNITION AND AFFECT IN INFANCY:

A COMPARISON OF PIAGETIAN, PSYCHOANALYTIC, AND ERIKSONIAN THEORIES

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## Abstract

This paper undertakes a theoretical and empirical analysis of Piagetian and psychoanalytic theories of infancy to establish the developmental relationships between cognition and affect. Theoretical points of similarity and dissimilarity are cited. Relevant research studies (Bell, Gouin-Décarie, Fraiberg) are reviewed in an attempt to resolve contradictions between the two theories. A possible theoretical convergence is proposed which involves altering the motivational basis for analytic theory so that it is more in line with the Piagetian model of internal drives for mastery and competence. Piagetian theory would necessarily expand from a consideration of only the physical world to include social and affective spheres. Other studies and Erikson's work conclude a discussion of how cognitive development may influence affective behaviors and how affective drives may support the acquisition of new cognitive structures.

## Interrelations in Cognition and Affect in Infancy;

### A Comparison of Piagetian, Psychoanalytic and Eriksonian Theories

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The two major contributors to an understanding of development in infancy have been Piagetian theory and psychoanalytic theory (along with modern ego psychology). The two theories, however, seem to have drastically different conceptions of what the infant is all about. Each theory sees the behaviors described coming from different sources and thus having radically different meanings. The purpose of this paper is to examine the theories of Piaget, psychoanalysis (i.e., Rapaport) and Erikson to specify precisely what the differences and similarities are, to see if a theoretical rapprochement is possible, and to understand if a connection between cognitive and affective development exists. Thus, the relevant aspects of each theory and its assumptions will be contrasted and attempts at synthesis will be reviewed to determine what the relationships between the theories are and how they may contribute to a total theory of development.

#### Piagetian-Psychoanalytic Similarities

Concerning very general trends in development from zero to two years, there are many points of convergence between the two theories. Both theories undoubtedly take a stage-type approach to conceptualizing development. In Piaget's approach, however, the stage criteria are adhered to much more vigorously. Psychoanalytic theory would probably more or less meet some of Piaget's five criteria of stages: invariant order, preparedness for the following stage and achievement of the preceding stage, and equilibrium.

However, stages in psychoanalytic theory are used to denote the dominant characteristic of a period, not a total structure and so preceding stages are not necessarily integrated as substructures of the given stage. As far as all the acquisitions of a particular stage occurring at the same time, Anna Freud writes (1963):

We expect a fairly close correspondence between growth on the individual developmental lines...though reality presents us with many examples to the contrary...[Children] may stand high on some levels...while lagging behind in others...for what singles out individual lines for special promotion in development, we have to look to accidental environmental influences...forces embodied in the parents' personalities, their actions and ideals, the family atmosphere, the impact of the cultural setting as a whole [pp. 262-263].

The criterion of structures d'ensemble, therefore, is not applicable to psychoanalytic theory.

Both theories assume that there exist from birth certain biological givens, although they differ in specifics. For Piaget, these innate characteristics include the reflexes, the principle of organization and the adaptive processes of assimilation and accommodation. In psychoanalytic theory, the biological givens are the instinctual needs and the motor apparatus which serve the discharge of tension and the pleasure principle. Both assume that the infant initially exists in a relatively undifferentiated state. In modern ego psychology theory, the ego is initially given some structure including perceptual and memory mechanisms, etc. The id, however, is chaotic with nondirected instinctual forces. Piaget, at one point, speaks of the "chaotic undifferentiation of accommodation and assimilation." However, some structure is implied in that his theory states that organization must exist

before any adaptation can take place.

Both theories assume that internal and external stimulations play a role in development. Piagetian theory, however, emphasizes the external while psychoanalytic stresses the internal. Both also assume that necessary for development are the existence of a favorable environment to fulfill primary needs and the infant's innate ability to respond to the environment (psychoanalytic theory giving this somewhat more stress than Piagetian). Thus, in both theories importance is accorded to both biological maturation and external environmental stimulation.

Both theories are surprisingly similar in the way they describe the course of human development. The infant is initially in an undifferentiated state, not able to separate himself from his environment or even recognize his own body parts. With development, the infant is increasingly able to differentiate inner and outer worlds. The precision of coordination between the internal (needs, purposes, representations) and the external (need-satisfying objects, "interesting" objects) increases. External objects are experienced more discretely. Both theories agree that motor activity is essential in this process. The process of differentiation is a gradual one and even when the outer world starts to be separated from the self, it is still seen as an extension of the self, conforming to the self's own needs and desires. Thus, development in both models is seen to have directionality--even a certain teleology.

In the process of development, primitive modes of dealing with the environment, e.g., reflexes, hallucinations, are replaced or supplanted by behaviors which are more reality oriented, e.g., understanding of causal connections, the reality principle. The child must give up the belief in the magical power of his activities and accept a more objective causality. In

both theories, the child gradually becomes aware of his autonomy from his surrounding environment. This awareness, and reality adaptation in general, requires that the child has a belief in the permanence of the external environment in order to be able to act on it.

The specific mechanisms involved in development are also quite similar in the two theories. In both, the ability to delay is essential. Equally essential in the course of development, the child must become aware of the direction of his actions. Intention plus delay enable him to construct detour mechanisms (means-ends behaviors or secondary process thought) to achieve more advanced goals. Processes of interacting with the environment come to involve more and more automatized mental processes. Eventually, this leads to the elaboration of mental structures, enabling experiments in thought and thus planned activity.

In very general terms, the process of developmental advance posited by the two theories is also quite similar. In both, development occurs as a result of recurrent disequilibria at successive stages and correction of these at a more advanced level. In psychoanalytic theory, this disequilibrium is caused by frustration in that the instinctual needs cannot be gratified. In Piagetian theory the disequilibrium is an imbalance between assimilation and accommodation (internal capacities and external presentations). In the earliest stages, Piaget also talks about frustration. At the earliest stage, assimilation and accommodation are opposed to each other. "A new accommodation... is at first experienced simply as a troublesome obstacle to habitual assimilation and is performed only under duress" [Piaget in Flavell, p. 60]; it can only be experienced as frustrating. This conflict is, however, necessitated by functional assimilation. Gradually, as the gap between the new and the familiar narrows, "novelty, instead of constituting an annoyance avoided by the subject, becomes a problem and invites searching" [Piaget in



Flavell, p. 61].

Thus, it seems that in terms of general fundamentals of development, there are several lines of rapprochement between Piagetian and psychoanalytic theory. In terms of what happens, both see the infant progressing from an undifferentiated state to one of increasing reality adaptation and both see him taking some of the same steps in this process (delays, detours, thought representations). There are also general similarities in some assumptions which the two theories make. Both see development as directional and encompassing both learning and maturation, beginning with biological givens plus some innate structural characteristics, and progressing forward as a result of some type of conflict and disequilibrium. However, despite these general similarities, there are profound differences between the two theories. And these differences probably are most crucial to deal with if we are to hope for any serious integration or coordination of the two theories.

#### Differences

The most serious difference between the two theories is in their conception of the motivating force behind human behavior. This difference may be seen to pervade other smaller points of discrepancy between the theories. In the Piagetian system, the infant has a need to function. From birth onwards, he is actively engaging his environment; he is oriented towards exploration. The ideal state is an equilibrium between external reality and internal response, the tendency to assimilate external events to the self. The two principles of development are organization and adaptation. In psychoanalytic theory, however, the organism is not acting but acted upon. The infant's goal is to immediately gratify instinctual needs. His ideal state of nirvana is one of the absence of all stimulation. The fact that this goal

is ultimately unattainable produces frustration and this frustration leads the infant into new forms of behavior, always in an effort to gratify his desires. In the Piagetian system, it is often the presence of an interesting object which motivates the infant to act upon it and modify mental structures. In the psychoanalytic frame it is the absence of the need-gratifying object which forces the infant, in frustration, to turn to other objects or hallucinatory images for substitute gratifications. From this, higher order thought processes develop.

There are also many resultant specific differences between the two theories. In the Piagetian system, delay and detour behaviors are due to structural changes in mental apparatus. In psychoanalytic theory, these behaviors are due to tension discharge controls which transform drive cathexes into neutral attention cathexes. In Piagetian theory, the motive is inextricably bound to the concept of mental structures. All motives are the result of schematic imbalance. In psychoanalytic theory motives (drives) are not directed towards specific objects in the environment but rather towards the pleasure principle and tension discharge. The existence of the motive is thus independent of the related mental structure. The two theories assign different functions to thought--in Piagetian, it replaces motor activity in providing solutions to problems. In psychoanalytic, thought serves as a partial discharge of tension, to bind drive cathexes and mediate between the internal need and the resultant action.

In comparing the two theories, others might have focussed more on the difference in areas covered by each than in the motivational assumptions (e.g., intelligence vs. affect). However, it seems to me that the fact that each theory deals with a particular facet of the individual's life follows directly from each theory's conception of human nature. Any theory which sees man as actively exploring and engaging in his environment will most

likely see this behavior as evidence of a need to know and so concern itself with cognitive development. On the other hand, a theory which sees man striving for instinctual gratification and constantly encountering frustration will, concern itself not only with how his behavior becomes adapted to overcome these barriers but also how he expresses this frustration in affect. Thus, while it is true that the two theories concern themselves with different areas of development, this is not surprising in light of the motivational assumptions made by each.

While affective development is given slight consideration in Piaget's theory, it is not true that it has been overlooked. Rather, Piaget considers it a less primary concern. Affective development, like intellectual, is one form of biological adaptation. Piaget considers affective and intellectual life to be parallel and interdependent. However, the intellectual seems to be more important. Affect may provide the "energetique" (force) behind behavior or express the interests and value attached to a behavior, but cognition provides the structure through which affect and other aspects of behavior are expressed. Piaget's use of the affect of surprise is a good example of this. The child holds an expectation which is not confirmed, resulting in a feeling of surprise. The child then pursues the misexpectation with the eventual resultant being a change in cognitive structures. The previous cognitive structures and their mismatch with reality was what produced the affect in the first place. The positive affect of delight is also seen in Piaget's observations, i.e., when a child makes a successful discovery or masters a problem or is confronted by novelty. Thus, in Piaget's scheme the affective-personal-social realm is seen only in its cognitive context. There may be affective schemas, but each will have its cognitive component.



In psychoanalytic theory, affective and intellectual processes represent different ways of discharging tension and with development, both come under increasing ego control. At the primary process level, affective discharge is an alternate solution to hallucinatory ideation. Affect and idea are "complementary and/or alternative drive representations [Rapaport, 1960, p. 26]."

In the secondary process model, with the hierarchical structure and structuralized delay, affect charges are segregated from the drives and may be used by the ego as signals of mounting drive tension.

In the course of ontogeny, affects change from discharge phenomena into signals, from safety valves for drive tension into anticipations of the means for preventing drive discharge [Rapaport, 1960, p. 32]."

Affects serve as inborn safety valves for discharging excess tension and with development, new more complex means for discharge are created. Affects and intellect are regulated by different types of structures. From my reading, the connection between these two types of structures, if any, is unclear, except that they both emerge with ontogeny and are controlled by the ego.

Psychoanalytic theory also has more to say about individual differences and variations from normal development than the Piagetian approach. This, of course, is due to the clinical origins of the theory--an attempt to understand the individual patient. Psychoanalytic theory focuses on the effects on later development of variations in the individual's inborn equipment (his capacity for adequate discharge) and variations in the environment (its capacity to provide adequate drive-discharge objects).

Neither theory systematically differentiates the role of human from non-human object in the child's development. Piaget assumes humans are more important since they are the objects of many schemas, are most prominently in

contact with the infant and are involved in many interesting experiences, like feeding, but the infant reacts to them like objects. In fact, Piaget claims that it is not until Stage 5 that the social environment is distinct from the physical; "nor, consequently, is there any profound modification of intellectual structures by the social life surrounding him [Piaget, 1966, p. 58]." Psychoanalytic theory likewise assumes humans are more important in that they are most effective in gratifying instinctual needs.

It also seems that both theories have an inadequate view of affect. Piaget has emphasized how cognition may influence affect expression but has eliminated many affects from consideration, e.g., loneliness, despair, pain, to name but a few relevant to this age range. He has also neglected to deal with the possibility that affects may influence cognitive structures. The defense may be raised that Piaget's observations were of home-reared, middle class children where these affects apparently play a small part. Even if this were so, though, a general theory of development should adequately specify its assumptions and consider other areas (non-middle class?) where the assumptions do not hold true and what the possible consequences might be.

Freudian theory considers affects and intellect but makes no systematic attempt at convergence. Freudian man is basically motivated by his instincts--instincts which are bestial in nature. Thought and affect discharge are initially equally likely solutions to this problem. In time, both increasingly come under the control of reality. But the development of the structure of one does not seem to affect the development of the structure of the other. And, positive affects like empathy or delight in mastery are not considered.

Criticisms of psychoanalytic theory with its subdivisions of id, ego,

superego, taking a mechanistic approach to the conceptualization of human behavior are well known (see Yankelovitch & Barrett, 1971). It seems only fair at this point to indicate that similar charges might be levelled against the Piagetian approach, although in a less serious fashion. B. Galanffy (in Piaget, 1971) contends human behavior is an open system and therefore never reaches equilibrium, but rather a steady state, characterized by equifinality. Piaget's theory, of course, posits equilibrium and also reduces cognitive development to the acquisition of particular mental structures. It also seems doubtful as to whether the theory is completely open and dynamic in that it deals with behavior whose development is completed in the acquisition of formal operations. (The theory does not attempt to say that other aspects of behavior besides the intellectual are also completed, but neither does it deal with these behaviors or their dynamics.)

#### Psychoanalytic and Piagetian Theories--A Convergence?

Is it possible to bring together psychoanalytic and Piagetian theories of development? Is it possible to interrelate the developmental attainments, described by each? Can one theory make significant contributions to the other and vice versa? What does one theory imply about the domain covered by the other?

Peter Wolff, in his review of the two theories (1960), finds a complete synthesis impossible. Although his work was originally meant to be a complete comparison of the two theories, he found irreconcilable differences between the two concerning later development, so that he was forced to consider only the sensorimotor period. Essentially, his solution for a synthesis of the two theories is to segregate them and find each applicable to a different aspect of the infant's life. Psychoanalytic theory is relevant in states of inner

tension when concern with external stimulation is minimal. Piagetian theory, however, applies to states where organic need is minimal and the infant can respond optimally to his environment. Thus, the infant also relates differently to objects according to his states of inner need. Where they are high, he relates in the psychoanalytic way--selecting objects according to their drive gratifying abilities with experience modifying his means of contacting the objects. In these states, contacts with some special objects must be maintained to guarantee their constancy. Their absence leads to organic disequilibrium and affective discharge. When the infant is free of internal tension, he relates in the Piagetian way in terms of the object's possibility for assimilation. In this state, he explores and adapts to new objects regardless of their connection to bodily needs. Disequilibrium results from contacts with objects which are not assimilable to existing schematas. Behavior thus shows two tendencies: the Piagetian which is initially reality adaptive and the psychoanalytic which initially operates according to the pleasure principle and is later forced to attend to reality and tame the drive forces. Thought is seen to fulfill two functions, depending on whether drive levels are above or below threshold--the psychoanalytic one of replacing the absent drive object or finding a suitable substitute and the Piagetian one of having an internal representation of the world adaptable to all reality relationships. Likewise, in the course of development, the child must develop two types of autonomy: one from his need for immediate, instinctual gratification (psychoanalytic) and the other from his stimulus-bound perception of reality (Piagetian).

Wolff thus sees states of the organism existing on a continuum from high instinctual needs to tension free. At the former end, the concepts of psychoanalytic theory apply and at the latter end those of Piagetian theory apply. This notion seems rather too simplistic--what we are most interested in is the middle ground, where both theories apply and how they interact. Wolff makes no attempt at such a convergence and in fact his examples dichotomize behavior to the extent

that it seems impossible that both theories would simultaneously apply! There is also no indication of what effect certain types of intellectual structures have on affect expression. Rather, in this approach the two types of structures are completely different and apparently not affected by each other. In any convergence of affective and cognitive development we would also be interested, particularly on an individual level, in how certain affective experiences or quantities or qualities of affective experiences might affect the formation of intellectual structures. On this point also Wolff's comparison is lacking. Finally, it would be helpful if the empirical data from one system could give a critique or support for the theory of the other system. Wolff's monograph and the point in time at which it was written can give no help in this area either.

Since Wolff's monograph a number of other theorists have addressed themselves to the question of convergence between psychoanalytic theory and the Piagetian. We will now consider these contributions.

#### Psychoanalytic Theory and Piagetian--An Empirical Question?

One way to approach the problem of convergence between the two theories is empirically--that is, to experimentally investigate the attainments accorded to a child in a certain developmental period by each theory and then see if and they fit together. For instance, in the sensorimotor period, one primary attainment described by psychoanalytic theory is attachment and its related behavior. Piagetian theory, on the other hand, ascribes importance to acquiring an appreciation of the rules governing the existence of objects. This relationship has been investigated empirically. Gouin-Décarie (1965) investigated the relationship between objectal relations (psychoanalytic) and object permanence (Piagetian) in children 3, 6, 9, 12, 16, and 20 months old, from three different environments (natural home, adopted home and institution). Gouin-Décarie's definition of objectal relations is "the libidinous tie which the subject establishes with any object." Anna Freud's definition of object constancy perhaps more fully delineates the concept Gouin-Décarie is describing: "The child's ability to keep



an object cat...axis' irrespective of frustration or satisfaction" (in Fraiberg, 1969, p. 14). Gouin-Décarie delineates three periods in the formation of objectal relations. In the narcissistic period (0 to 3 months), there is no differentiation of self from environment. Parental objects exist only in so far as they satisfy inner needs. In the intermediate stage (3 to 6 months), there is a beginning differentiation. The first smile appears, signifying that emotional reactions are beginning to be recognized and associated with an external factor, the human face. The superficial attributes of the object come to be recognized. In the true objectal period (from 6 to 12 or 15 months) there is differential smiling, an active expression of affection, and the appearance of anxiety. A scale was developed to measure objectal relations. In addition, a Piagetian scale of object permanence was administered along with the Griffiths Mental Development Scale.

In Gouin-Décarie's results, irreversibility and other stage-related properties were confirmed for the Piagetian Scale. For the Objectal Scale, three series were hypothesized to have an invariant order: I - specific feeding reaction, automatic smile, differentiated smile and signs of affection; II - negative affect at play interruption, negative affect at loss of toy; and III - complies with requests, complies with prohibitions and discriminates signs of communication. Series I was confirmed to be invariant for all but one subject for whom the last item appeared early (it seemed possible that this subject had been taught to caress). Series II was inconsistent for about one-third of the subjects. Gouin-Décarie implies from this that absence of affect may not always mean immaturity but may sometimes mean more advanced development, e.g., greater frustration tolerance or greater trust. (We will see later from a study by Bell how a similar finding may have a different basis.) The third series was confirmed for all subjects.

Looking at the complete protocols of all the subjects, it was found that the objectal relations scale did not possess the same invariant characteristics

and stage properties as did the Piagetian scale. Only 50% of the profiles were homogeneous, i.e., having all items passed up to a certain point and none passed beyond that point (invariant). It is thus clearly impossible to establish a rigid parallel between attainments in the objectal relations sphere and the Piagetian stages. Analysis of the homogeneous protocols did, however, establish a rough correspondence between the two scales. In general, infants in Stages I and II are in the intermediate stage of objectal relations. That is to say, infants in cognitive stages described as undifferentiated and reflex-dependent (but with an emergent appreciation of the external world) can react to a smiling human with an automatic smile, react negatively to play interruption and be soothed by a human voice. Infants in Stages III and IV are in the intermediate period. When the infant has an appreciation of object constancy, although it is still linked to his own actions on the object in that he does not attribute permanence to a vanished object with visible displacements, he is able to distinguish a familiar person in his environment and show signs of affection. Finally, the infants in Stages V and VI score in the true objectal period of the scale. These infants, who have attained internal representation and a concept of the permanence of the object, are able to endow the love object with objectal stability; attachment exists through states of pleasure or dissatisfaction. As stated previously, these relationships were not invariant. There were, however, certain absolute limits. No infant from Stages I to III reached the true objectal period and no subjects in the true objectal period were below Stage V.

The above general conclusions concerning a relationship between cognitive development and objectal relations gained further support from an analysis which included the heterogeneous profiles. It is interesting to note that in this group of children, those from institutions and adopted homes were proportionately over-represented. The institutional group showed less cognitive development in general (lower IQ), much retardation in objectal relations development and profound deviations from the expected course. The method used in the statistical

analysis of the combined group of homogeneous and heterogeneous protocols was to rank order the profiles on the basis of genetic advance. This rank was the subject's score on objectal relations. In a multiple regression model, the four variables of environment, objectal relations rank, C.A. & M.A. account for 85% of the variance in the Piagetian score. All variables are significant contributors, M.A. being highly significant. With the objectal relations score as the dependent variable, the other variables account for 77% of the variance. Surprisingly environment makes the greatest contribution, followed by the Piagetian scale score and finally by M.A. and C.A. which contribute equally.

Thus, it seems that cognitive development à la Piagetian measurement is most influenced by mental age. However, objectal relations, chronological age and environment all are equally significant in accounting for the remaining variance. However, in analyzing the objectal relations score, the story is quite different. In this case, environment is the preponderant factor accounting for its variance. Thus, while important for cognitive development, environment seems much more crucial for emotional development. The score on the Piagetian scale is the second strongest explanatory factor, exceeding C.A. and M.A. Gouin-Décarie's study shows that cognitive and emotional development definitely are related in this age period, although in no simple, straightforward way.

A more recent study has also looked at the relationship between the two aspects of development. Bell (1970) studied the relationship between the baby's attachment to his mother and his development of object and person permanence. The study was longitudinal--babies being tested 3 times between the ages of 8 1/2 and 11 months (some again at 13 1/2 months). Object permanence was determined with a Piagetian scale of items. The same items were used to determine person permanence--here the hidden object was the mother and screens consisted of doors, furniture, shields, etc. The discrepancies between the object and person permanence levels attained made it possible to classify subjects into three groups.

Group I (the largest with about 70% of the subjects) showed positive décalage-- person permanence preceding object permanence. Group II (no décalage) showed no difference between object and person permanence (less than 10% of the sample). Group III (negative décalage) showed a discrepancy in favor of the object (about 20% of the subjects). Negative and no décalage may be related to Gouin-Décarié's finding that for one-third of her subjects, negative affect at play interruption did not precede negative affect at loss of a toy. Over time, Bell found that the discrepancy between object and person permanence decreased, indicating that eventually the concepts of object and person permanence catch up with each other.

Attachment was measured by "Behavior in a Strange Situation" which permits observation of the baby's response to brief separations from the mother, which relates to the quality of the mother-infant interaction during the first year of life. Subjects were also classified into groups on the basis of their attachment behaviors. Group A infants (15% of the sample) showed striking proximity-avoidance behaviors upon the mother's return. Group B infants (about 70% of the sample) demonstrated approach behaviors towards the mother upon reunion. Finally, Group C babies (15% of the sample) showed ambivalence or passivity.

All but one of the Group B (attached) babies showed a positive décalage. On the other hand, most of the babies in Groups A and C (negative relationship or ambivalence) showed negative décalage. That is, only the babies who showed attachment behavior showed an advance in the concept of person permanence compared to object. Maternal attitudes also differentiated the positive and negative décalage groups. Furthermore, it was found that babies in this positive décalage group were significantly more advanced in the development of the object concept than were other babies at every testing session. The babies in the negative or no décalage groups were not more advanced even in the object concept of things. This study thus confirms the previous one in establishing the connection between cognitive and emotional development. Here it was shown that the development of the object concept is intimately tied to the baby's attachment to his mother.

Indeed, there was almost a perfect correspondence between type of décalage and the quality of attachment to the mother. Furthermore, the attachment to the mother relates to more advanced cognitive development overall. This also provides support for Gouin-Décarie's findings concerning the importance of environment for the development of objectal relations. It seems that Piaget's assertion that the social sphere plays no significant role in cognitive development is definitely in error. Interestingly enough, Piaget himself includes examples of a schema being first applied to a human and then later to an inanimate object, for instance, prehension and imitation of the hand before other objects (Piaget, 1962, p. 15).

Thus the Gouin-Décarie and Bell studies have established the fact of a definite connection between emotional and cognitive development. Now, what implication do these findings have for a theoretical convergence or reevaluation?

In her analysis, Gouin-Décarie focuses on the contradictions between psychoanalytic and Piagetian theory concerning the advent of mental representations. Psychoanalytic theory claims the presence of true representation in the intermediate period (3 to 6 months), the capability of imitating an internal model before 12 months and the existence in his first year of a universe of fantasies at the infant's disposal. In Piagetian theory, however, true representation is not achieved until 16 to 20 months and thus before this the infant is incapable of imitating (or even having) an internal model and incapable of imagination. Clearly, one or the other theory is wrong and the data indicate it is the psychoanalytic theory. A cognitive behavior that clearly requires mental representation is not observed until the 16 to 20 months age range. A reexamination of the objectal relations scale reveals that none of the early attainments require representation at all. Instead they are related to anticipatory behavior, reaction to signals, recognition and direct imitation. Gouin-Décarie asserts that the early existence of representation via hallucinatory ideation requires reformulation. In psychoanalytic theory, the child's ability to obey prohibitions also

requires an internal representation and imitation of the represented figure (identification). This achievement is also discrepant from Piagetian theory. She accounts for this by hypothesizing a three month developmental lag between attainments with people and with objects. This, however, seems to be quite an assumption. Bell's data are not presented in a form which permits direct testing of this assumption, but from what one can infer, this does seem to be an over-estimation of the time length of the positive décalage between acquisition of object and person permanence. Bell's data also indicate that even in the positive décalage group, a complete internal representation of the person-object is definitely not attained before a year, probably not until about 13 1/2 months. Furthermore, Gouin-Décarie's proposed three month developmental lag between object and person permanence does not take into account the negative décalage group for whom objects acquire permanence before persons. Thus it would seem more parsimonious and closer to the empirical truth to apply Gouin-Décarie's critique of the psychoanalytic theory of early representation via wish fulfillment to all of the theory's postulations concerning ideation in infancy, that is, they all definitely require reformulation.

Psychoanalytic theory used the concept of internal representation of the object to answer many questions, e.g., the development of thought, why the infant at a certain age begins to cry for the absent mother, why he obeys commands, etc. If however, a complete mental representation, which allows deferred imitation, is not achieved until 16 to 20 months, these earlier attainments necessitate some other explanation. Fraiberg (1969) has done this by pointing out two different types of memory: evocative and recognitory. Her description of her dog's behavior presents this difference concretely. The dog would wake up from a nap and being hungry, go to the kitchen. If he wanted a biscuit, he would stand before the packaged food cupboard and bark; if he wanted something more substantial, he would go over to the refrigerator. It

seems very unlikely that the dog has developed the ability for an internal mental representation of his environment. Indeed, he tested at only Stage IV in his attainment of the concept of the permanence of an object. It seems even more unlikely to posit a developmental lag for the dog between an internal representation of food and that of all other objects! How then does the dog know where to go? Here is where the idea of recognition memory fits in.

The existence of a complete internal representation constitutes evocative memory--the image of an object and its surrounding context can be called up into memory at any time. This is a purposeful, intentional, mental act. Recognition memory is not intentional. In it, the image of the object may be called into memory but only by its direct association with some specific external or internal stimulation. The image is not free--"it is entirely at the disposal of the stimulation." Clearly, recognition memory is more primitive than evocative memory. Thus, getting back to the dog, it seems probable that the image of food was tied to a hunger stimulation. Thus his feeling of hunger produced the images which then guided his behavior: weak hunger pains led to the 'biscuit in the cabinet' image, while strong hunger pains led to an image of 'meat in the refrigerator.' For Brandy the dog, it was his hunger pains which produced the internal representation which guided behavior, not Brandy himself.

Fraiberg points out that this analysis of the dog's behavior is equally applicable to the Stage III to V infant. The infant presented with a particular stimulation may image the object connected with that stimulus. For example, the stimulation resulting from an unfulfilled need, like hunger or lack of social stimulation, may produce the image of the need-gratifying object--the bottle, the mother, etc. The image of the object is not free but is a part of the need and so when the need is experienced, the object image is too. This behavior is clearly different, however, from that of Stages I and II where there was no differentiation at all: the object was merely a fulfiller

of needs and so could be substituted by any other suitable object (e.g., any other suitable caretaker). In the recognition memory of Stages III to V, however, the mother or caretaker still does not have a complete existence of its own. This achievement does not occur until the 16 to 20 month level. In Stages III to V, the love object has an existence, but it is tied to the child's actions upon it or needs connected to it.

Schaffer's work (1969) has some relevance in this discussion. He finds that infants have an early (6 months) perceptual ability to classify objects on the basis of familiarity (they show differential visual attention to subtly novel objects). However, there seems to be no integration of this information on familiarity with selective approach-avoidance behavior. That is, it is not until 12 months that the infant displays discriminatory manipulation (motor actions) toward a new object. Likewise, the younger infant chooses objects on the basis of perceptual attributes, irrespective of experience. It seems that for the six month old, stored images are ineffective in guiding motor responses. Schaffer postulates two mechanisms to account for this. The earliest one, involving perceptual learning is achieved at about three months. It involves acquiring some central representation which permits differential attention to stimuli, varying in their degree of familiarity. A much later acquisition is a response-selection mechanism. Here, memory plays a mediating role so that the appropriateness of a response can be determined by past experience. It is clear from this research that the existence of some central representation, which permits recognition to occur, does not automatically mean that the infant can retrieve the image and act selectively under its guidance. These latter two are much later attainments.

How does the explanation of recognition versus evocative memory fit in with the behaviors which need explanation? Stranger anxiety conforms well--the sudden crying elicited by a stranger's coming close seems very much like a mismatch phenomena. The psychoanalytic explanation has been that the negative affect



produced comes from disappointment that the object internalized in the ego cannot be found in reality. The present hypothesis actually fits the data better. We hypothesize that at this point the recognition of the mother encompasses her bodily shape as well as her face. So, from afar, recognition and the attached feelings become elicited from other humans as well. The child comes to expect that his mother is approaching. When these expectations are disconfirmed, he is upset and displays stranger anxiety.

an expectation that a familiar and beloved face should manifest itself in a familiar surround does not require the intervention of evocative memory (Fraiberg, 1969, p. 24).

The child also shows anxiety at brief separations from the mother. The psychoanalytic explanation has been that the infant must have a stable picture of his mother for this to occur. On the other hand we might hypothesize that an image of the mother, as the most frequent gratifier, is tied to feelings of loneliness, fear, or hunger. When the infant experiences these feelings, the mother's image is elicited; he searches for her and when she is not present, he experiences anxiety. If the mother's image were really stable in this period, why would she be regarded as lost when she is not perceived? It seems rather that there is anxiety during brief separations precisely because the image is unstable and not independent of perception, requiring visual affirmation.

If we regard tolerance for brief separations at 20 to 26 months as an indicator of the stability of mental representation, intolerance, bordering on severe anxiety states between the ages of 8 and 13 months, must testify to the instability of mental representations (Fraiberg, 1969, p. 25).

The fact that mental representation is not necessary in the achievement of objectal relations in the first year was also confirmed through Fraiberg's study of blind infants. These infants met all the criteria for objectal relations.

as for sighted children. Their scores on an object permanence test, however, placed them 3 to 6 months behind other infants.

Perception, recognition, evocative memory follow the same structural and maturational laws for human objects and inanimate objects; the differences that we discern in psychoanalysis are affective and are defined in energetic terms; we can speak of degrees of cathexis but not of a different kind of mental representation (Fraiberg, 1969, p. 32).

It is difficult to imagine that the baby at 8 months can employ mental operations on one level for exteroceptive data and another level, one of higher complexity for the stimuli of need states (Fraiberg, 1969, p. 44).

Thus, it seems that the empirical data necessitates a definite revamping of psychoanalytic theory. A complete mental representation cannot occur at the ages specified nor is it necessary to the affective achievements of the period. According to Rapaport, in the absence of the drive object, the drive reaching threshold intensity produces the hallucinatory idea of previous gratification. This, we have seen, is possible, as a vague image of the object may be tied to the internal stimulus. His next conclusion is definitely not possible, though, for Rapaport imbues the hallucination with an intentional character; he views it as a purposive mechanism the infant employs for substitute gratification, to rid himself of his frustrations. We have seen that at this point thought has not yet achieved the status of a problem-solving mechanism. The infant is much more likely to take action, to express himself directly. So, while hallucinatory ideation may occur, it does not have the causal character attributed to it and cannot provide the basis for the development of thought. Psychoanalytic theory also presumes that the Stage IV child must be following an internal model in order to obey prohibitions. This assumption is not necessary either as this can be seen as another example of recognition memory, where the image is evoked by the situation of being told not to do something.

The empirical evidence also shows us that Wolff's conclusion of separating Piagetian and psychoanalytic theories as applying to two different realms is also inadequate. Cognitive and affective developments are definitely related. Attainments in one area have definite effects on the other, and two separate types of mental functioning do not occur. Thus, both theories cannot simultaneously or alternately be upheld. Empirical data must provide the criterion for a choice of one over the other or rejection of aspects of each.

#### Cognitive and Affective Development--What Is the Relationship?

Piagetian theory and cognitive data have shown us that the psychoanalytic theory of thought development is in error. Can we imply from these sources anything else about the theory that needs alteration?

As stated previously, the most basic difference between Piagetian theory and psychoanalytic is in their concepts of motivation. In any real integration of the two, this difference would have to be resolved. The general experimental evidence probably piles up on the side of Piaget. Rats and other animals are not just motivated by the satisfaction of basic drives. Behavior has been noted which is motivated by a need to explore, to have the company of other animals, curiosity, or even a desire for environmental change. If this is true for animals, it must be all the more so for humans (see Schachtel, 1959). And, as Yankelovich and Barrett (1971) point out, instincts in animals have a more dynamic, less narrow character than they are portrayed as having in psychoanalytic theory.

This difference might be resolved if one were to alter the motivational basis of each theory. In this new conceptualization the basic motivational principle would be a drive to master reality. In Piagetian theory, the process of cognitive development basically involves the construction of invariants amidst a perceptual flux, i.e., the invariance of the object's existence and its properties--mastering the reality of the physical world. We hypothesize that the child can

be seen doing the same thing with other aspects of his existence--that is, finding invariants in perception of self and others: discovering the underlying continuity and sameness in his concept of himself, in the behavior of other people, in social conduct and in belief and value systems. All these present different aspects of reality that he will try to master. Cognitive structures are differentially applied to physical and then to personal and social aspects of the individual's life. This differential application is similar to horizontal décalage, or in Flavell and Wohlwill's terms (1969), competence preceding performance. Piaget's assumptions that structures d'ensemble appear simultaneously would be completely untenable if these additional areas of development are considered. All in all, however, this conceptualization is not diverging too far from Piaget's theory, for he himself speaks of development proceeding along two poles: externalization--increasing knowledge of physical experience--and internalization--increasing knowledge of internal operations.

The motivational basis of psychoanalytic theory would be altered in that the reality principle would be the original directing force, rather than a mode of existence which society and civilization forces the individual into--a mode that is completely opposed to his basic desires of immediate gratification and nonstimulation. Positing a drive towards mastering reality changes the psychoanalytic conception of man--from one that is acted upon, to one that is actively engaging his surroundings. In this new conception, fulfilling the basic needs is but one aspect of the basic motivational force. The child will attain the most reality-adaptive ways to fill these needs along with a mastery of other aspects of his life in the course of development. However, this conceptualization does not ignore the tension in affective functioning which Schachtel (1959) and others have pointed out--that is the tension between active exploration (activity-affect) and maintenance of the status quo (embeddedness affect). A similar tension is seen in cognitions of the physical world in Piaget's writing: the

infant is constantly taking in new stimuli and accommodating to them (activity), yet a stimulus which is too discrepant from expectations will be ignored (maintenance of stability). In the present schema, this tension is to be accepted as given; the infant, in mastering reality will try to cope with it and minimize it. It should also be pointed out that this new conception does not mean that every child will automatically develop an ideal way of functioning. Rather, in this theory reality is not an absolute state but is different for each child. So, for instance, a deviant "reality" necessitates a deviant way of functioning and adapting. Thus, this principle fits in readily with an examination of individual differences and environmental variations as well as with Erikson's notions (1963) that the expression of the behavior in any epigenetic stage is dictated by the individual's culture.

The mastery of reality will be more difficult in some areas of the child's life than others. The physical environment presents the least difficulties. Here the invariance is relatively easy to abstract since physical objects are consistent and operate according to certain laws. Mastering bodily functions is more difficult. One must abstract certain signs and associate them with certain bodily operations. In this sphere, the invariance is less clear-cut and there is more inconsistency. The problems involved in abstracting principles behind others' behaviors are even greater. Greater still are the difficulties in abstracting the rules governing socially approved ways of behaving or the consistency and proper application of value and belief systems or even the control of affect expression. Some of the areas are so difficult, so filled with inconsistencies and governed by such imprecise rules that complete control over them, complete mastery, may never be achieved at all. (Although some invariants governing functioning in any area are probably known by everyone.) That is to say, cognitive structures developed in one area (the physical environment is probably the first) are not applied to other areas (e.g., social relations) until much later. The

cognitive structures are available, but they may not be applied to all areas. Working with the physical environment alone, Piaget has a parallel finding (vertical décalage), that is, the achievements of the sensorimotor period (the level of action) must be repeated on the level of symbolic thought. This lag or décalage in application of cognitive structures to other areas of development is similar to Piaget's theories of both vertical and horizontal décalage and may imply that all décalages exist on a continuum and may be explainable with similar concepts. In this case the décalage seems to result from three sources: first, the material itself--the personal and social world may possess less invariance than the physical; second, the individual's recognition--in certain areas the individual may be less able to see the invariances; and third, the individual's autonomy--the individual may feel he has less control over certain areas and so be less likely to act on the invariances he perceives. The extent of these lags is likely to differ with age. At the youngest ages, achievements in the various areas may not be too far apart, but are likely to spread with age. Thus, we found a strong relationship between object permanence and objectal relations in the first two years, but at later ages we may expect that this relationship will not be as clear-cut.

Regarding the role of cognition in affect expression, it seems possible, according to the previous findings and based on the new theory of motivation, to construct stages in the development of affect expression. Affect would differ at the different stages in the way it was expressed and the conditions which evoked it. Progression from stage to stage would be dependent upon the cognitive structures which have evolved (probably from other areas of behavior, but the evolution of new cognitive structures does not automatically imply advancement in affective stage. Before this can happen, the child must be provided with the appropriate environmental cues, must abstract the relevant features to which the structure can be applied, and feel the autonomy necessary to act on these abstractions. Certain conditions, like severe affective upheaval, excessive affective

inconsistencies or environmental interference may make this abstraction and application impossible.

We have concluded that affective and cognitive development are related. I have hypothesized how cognition may affect the expression of affect--that is, certain cognitive achievements are necessary before particular affective stages in development can be attained. However, the existence of the necessary cognitive structures does not necessitate affective advance--other events may interfere causing a developmental lag or even causing a stage never to be achieved at all.

We turn now to the other side of the coin--how can affect have an effect on the development of cognitive structures? This is certainly possible as was seen in Bell's study where infants with an ambivalent or negative attachment to their mothers showed lesser overall development on the concept of the permanence of the object or in Gouin-Décarie's study where home-reared infants surpassed adopted and institutionalized infants in cognitive and affective development. The ego psychologists have approached this problem, although indirectly. Erikson's theory is most relevant to this issue. Erikson covers two basic accomplishments in the period from zero to two years: basic trust and personal autonomy--both highly related. In the first year of life, Erikson states it is crucial that the infant acquire a sense of basic trust. Trust in this usage is much more than the usual meaning. It includes trustfulness concerning others as well as oneself. It is trustfulness that the world is put together in an orderly fashion, according to certain consistent principles; trust that the world will not deceive him, will not turn on him. Is not this trust, then, necessary for the infant to be open to experience, to go out and explore his world and make the necessary abstractions to attain a sense of the invariances of the objects around him? The critical period for the acquisition of this sense of basic trust is up through 12 months, just the time at which an appreciation of the existence and permanence of the external world begins to appear. In order to gain the sense of basic trust, the infant must have his needs met reliably and in a

consistent manner, free from experiencing a great deal of frustration or deprivation. Thus, a certain amount of positive affect is necessary for the infant to have the confidence to engage in the type of behavior necessary for cognitive advancement to occur.

The second of Erikson's stages emerges out of the first. Basic trust included an attitude toward oneself and one's own functioning. In the second stage, this attitude is expanded into a sense of autonomy and control. Up to the age of two we are dealing with the early attainments of this period. This involves a sense of control over one's actions as well as one's bodily functions, a concern with holding on and letting go. Both classical psychoanalytic and Piagetian theory have stressed the importance of a sense of personal autonomy and awareness of separateness of self from the environment for development in the second year of life. Having gained a sense of basic trust permits the child to achieve a sense of autonomy which then permits him to explore unknown aspects of reality and invent new combinations to solve problems. In Piagetian theory, a concern with control over objects is evident in Stage V. Throwing and dropping behaviors are characteristic of this period. Psychoanalytic theory has stressed muscular control and the sense of control the child must develop over his own elimination processes. Erikson also asserts that interactions with physical objects may represent a way to deal with affective needs. In this way, by providing practice with objects, affective needs may further cognitive advancement. As an example, Erikson notes that the infant begins experimenting with dropping and throwing away objects at the time when separation anxiety begins. Erikson hypothesizes that the infant engages in this behavior in an effort to master the idea of going away and coming back so that he may also feel more in control of his mother's appearing and disappearing and so experience less anxiety. (As an example he quotes Freud's description of repetition compulsion--his grandson's play with a ring on a string, persistently throwing it away and drawing it back, symbolizing gaining control over the mother's disappearances. The verbal label



which the child gave to this play, he subsequently applied to his own appearance and disappearance in a mirror.) The child tries to master a situation which in its original form had been too much for him by meeting it repeatedly and of his own accord (p. 216).

Utilizing his mastery over objects, the child can arrange them in such a way that they permit him to imagine that he is master of his life predicament as well. . . He has . . . turned passivity into activity (Erikson, 1963, p. 217).

Thus, Erikson's theory points out how affective relationships may be tied to cognitive development--positive affective development may be a preconditioner to provide the child the necessary support and self-confidence, and affective needs may supply the necessary push to engage in reality-oriented behaviors. The basic attainments of Erikson's first two stages, trust in the world and autonomy over one's own behavior, are strongly related to the necessary preconditions for acquisition of a concept, as stressed by Pinard (1973) and others, that is, a realization of the relevant features of the objects under study, and the recognition that one can act on these features.

In surprise reactions we can see how affect and cognition are linked. Surprise, in Charlesworth's terms (1969) results when an expectation is not confirmed. This implies that surprise is dependent on the existence of some representation of the object in question and a cognitive structure relevant to it. The capacity to be surprised. . . requires an ability to recognize a sign and anticipate or expect the event the signal signifies; it is a capacity that develops slowly over time and at different rates in different areas of cognitive competence (Charlesworth, 1969, p. 272).

The affective reaction of surprise may have a facilitating effect on cognitive development. With surprise, gross motor behaviors are inhibited and more attention may be directed towards the surprising effect. Surprise is also thought to have a general arousal effect on stimulus reception and information processing,

Either effect can cause an increase in approach behavior and attempts at assimilation and accommodation.

Surprise reactions...help to insure that the organism behaves in such a way as to produce new knowledge about problematic properties of the environment.

Martin (1968) offers another theoretical position, detailing how the mother may function to enhance the autonomy of the child's ego and the development of ego functions. He employs the concept of the stimulus barrier. In the immature organism, the role of the barrier protecting the infant from excessive stimulation and consequent disruption may be filled by organic factors, e.g., immature neural connections. Later in infancy, while the ego is still developing, the role of the barrier may be played by the mother and the protection she supplies (similar to the sense of basic trust she gives to the infant). With further development, the child may rely on his own active ego processes--processes like attention which can serve a blocking function (screening out irrelevant features)--by raising the threshold for some stimuli and lowering it for others; or the process of concept formation which permits delay, and so adequate secondary process thinking. If, however, the mother's barrier is removed before these processes are ready, they may never fully develop.

Mahler (1967) has also addressed herself to the question of a stimulus barrier. She speaks of data which indicate an increasing sensitivity to external stimuli around the age of one month, implying that at this point the neural stimulus barrier is beginning to crack. A stimulus shield begins to form around the mother-child unity. This symbiotic state is important for the child's development: While pleasure in outer sensory perceptions as well as maturational pressures stimulate outward-directed attention cathexes--while inside there is an optimal level of pleasure and therefore safe anchorage within the symbiotic orbit--these two forms of attention cathexes can oscillate freely. The result is an optimal symbiotic state from which smooth differentiation--and expansion beyond the symbiotic orbit--can take place (Mahler, 1967, p. 748).

Affect may be conceptualized as related to cognitive development in yet another way. This relationship comes out of the psychoanalytic theory of introjection. Introjection is a primitive internal reproduction of an interaction with the environment. It includes a representation of an object and of the self in interaction with the object plus affective coloring of the experience. While the form of mental representation may be questioned here as in other aspects of psychoanalytic theory, the course which the theory hypothesizes introjects follow may represent an important addition. The affect associated with introjects causes them to separate and be categorized into positive and negative clusters (splitting). Within these clusters, homologous introjects tend to fuse so that self becomes separated from other. Further differentiations occur in a similar fashion.

Introjections . . . may be considered as precipitants around which ego nuclei consolidate. . . fusion of similar positive introjects constitute such ego nuclei [which] have an essential function in directing the organization of perception, memory, and indirectly that of other autonomous ego functions. . . the general level of psychomotor activity; control over delay; orientation and planning of activities; flexibility in shifting attention; differentiation of all kind of stimuli; and integrating of experience and actions (Kernberg, 1966, p. 244).

Kernberg goes on to show how an excessive degree of this process, that is positive and negative introjects so intense that later they cannot be reunited, can have later deleterious effects:

Excessive pathological splitting. . . interferes not only with the integration of affects, but also with integration of the self and with the development of the representational world (Kernberg, 1966, p. 245).

Thus, positive and negative affective experiences associated with the very young infant's contact with the external world or bodily sensations may provide the first basis for categorization, the foundation for cognitive development. The further operation of this process, clustering into content areas may help in the cognitive process of differentiation of self from the environment. Furthermore,

it can be inferred that deviations in this process may negatively affect other, more general areas of development.

In general, it should be pointed out that the role that affect plays in cognition is so far only hypothesized. The preceding statements are only suggestive, not empirically supported. They are, however, not inconsistent with other theory and research in this area. For instance, in regard to the relationship between cognitive and affective factors in development, Loevinger (1970) writes:

The issue appears to be a relic of outworn categories of thought, for integration of observations into a coherent frame of reference is obviously cognitive, while anxiety is obviously affective. But the failure to attain a meaningful and coherent integration is precisely what generates anxiety.

Thus, the search for coherent meaning in experience [mastering reality]\* is the essence of the ego or ego functioning rather than just one among many equally important ego functions (p. 8).

That affect does play a role in cognitive development seems to be without question.

The mechanisms involved, though, have yet to be established. Drawing upon various sources (e.g., Erikson, Martin, Kernberg), the preceding section has suggested that affective states act as preconditioners for cognitive development to occur-- that a certain amount of positive affect is necessary for such development to occur and that affective needs may lead to certain behaviors which facilitate cognitive advance.

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\*Author's insert

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