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CONGENITAL BLINDNESS AS AN INSTANCE OF SENSORY DEPRIVATION, IMPLICATIONS FOR REHABILITATION.

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RESEARCH CONCERNING SENSORY DEPRIVATION AND ITS RELATIONSHIP TO PERSONALITY VARIABLES AND SUBSEQUENT BEHAVIORAL AND COGNITIVE CHANGES IS REVIEWED. THREE LIMITATIONS OF THE CONGENITALLY BLIND ARE LISTED (1) RESTRICTION IN THE RANGE AND VARIETY OF EXPERIENCES, (2) DEFICITS IN THE ABILITY TO MOVE ABOUT, (3) DEFICITS IN THE CAPACITY TO CONTROL THE ENVIRONMENT AND THE SELF IN RELATION TO IT. SEVERAL POSSIBLE RELATIONSHIPS BETWEEN THESE LIMITATIONS OF THE CONGENITALLY BLIND AND CERTAIN TRAITS THEY EXHIBIT ARE EXPLORED--(1) BLINDNESS AND AUTO-EROTICISM, (2) LOWERED OBJECT RELATIONS AND NARCISSISM, AND (3) FANTASY. THE RELATIONSHIP BETWEEN SENSORY DEPRIVATION AND CREATIVE THOUGHT IS DISCUSSED. THE REHABILITATION COUNSELOR, KEEPING IN MIND THE FUNCTIONAL NATURE OF THESE TRAITS IN THE BLIND, MUST (1) DESIGN PROGRAMS TAKING THE TRAITS INTO ACCOUNT, (2) USE MULTISENSORY TRAINING TO FACILITATE MEANINGFULNESS OF LEARNING SITUATIONS, (3) EMPHASIZE CREATIVE VOCATIONS SUCH AS DESIGNING, MUSIC, AND ADVERTISING. A REFERENCE LIST OF 19 ITEMS IS INCLUDED. (RS)

CONGENITAL BLINDNESS AS AN INSTANCE OF SENSORY DEPRIVATION: IMPLICATIONS FOR REHABILITATION

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Introduction

Congenital blindness involves the absence or gross decrement in visual sensory data from birth or at an early age. Such a situation, then, suggests that the condition is an instance of sensory deprivation. Unfortunately, however, most recent investigations of sensory deprivation have been concerned with experimentally induced sensory deprivation in laboratory situations with subjects whose sensory apparatus is intact. Whether or not the findings and speculations deriving from such studies are directly applicable to cases of "congenital sensory deprivation" is, at present, tenuous. However, if we permit ourselves to assume that the effects (psychological, physiological, etc.) of experimental and congenital sensory deprivation are similar (although perhaps differing in degree), we may then use the findings of such experimental studies to develop theoretical explanations concerning some of the psychological and behavioral attributes of the congenitally blind. Further, this information may reasonably suggest rehabilitative measures to modify or capitalize on such attributes.

Studies and Speculations in Sensory Deprivation

Although knowledge of the extent and implications of sensory deprivation (especially congenital) is at present quite fragmentary

and speculative, many recent investigations have attempted to determine the relation between certain personality variables and response to sensory deprivation as well as to describe behavioral and cognitive changes that result from sensory deprivation. Thus far, investigations have not produced a clear-out relationship between personality variables and response to sensory deprivation. Nevertheless, a number of studies are highly suggestive that ego-strength may be a dimension of central importance. There is a well documented relationship between reduced exteroceptive stimulation and the occurrence, in certain individuals, of cognitive confusion, hallucinations, hypnogogic imagery, and uncontrolled non-logical sequences of thoughts that do not seem stimulus-bound, but have their origin in preconscious or unconscious states.[1,2,3,4] These occurrences seem related to the ego-strength or ego-maturity of the individual, which may be measured in terms of (1) dependence upon reality, and (2) resistance to regression.

Studies in sensory deprivation have reported a variety of behavioral and cognitive consequences. Perhaps the most recurrent finding is the deterioration of normal ego function. Subjects report a free-floating sensation, changes in body image, inability to distinguish sleeping from waking, and difficulty or impossibility of guided, purposive thinking. In general, the absence of external stimuli seems to promote reality dissassociation. Ruff and others[4]

concur with this position by asserting that ego-integrity depends on external stimulation. Without such extra-cognitive stimulation, conscious (ego) function loses its reality orientation and becomes more dependent upon intra-cognitive stimuli; thus free flow of fantasy, imagery, and hallucinations is promoted.[5] Walter[6] suggests that sensory deprivation may magnify personality traits, thereby making a more detailed analysis of the personality possible. Likewise, Rapaport[7] postulates the emergence of unconscious material in the absence of external stimulation due to the collapse of ego-autonomy in opposition to the unconscious. Kubie[8] refers to the same phenomonon in terms of a shift from exteroceptive to enteroceptive dominance of cognition.

Based on a general orientation provided by Hebb[9], Heron[2] indicates that the brain stem reticular formation is the neural system most immediately affected by reduced environmental stimulation. The ascending brain stem system is physically and functionally connected with sensory systems and higher brain function; therefore, sensory decrement or deprivation disrupts the normal alliance between the brain stem and the rest of the brain. Lindsley[3] has summarized recent investigations of the ascending reticular activating system and suggests that its role may be central to an explanation of some of the effects of sensory deprivation. He emphasizes the role of the ascending reticular activating system as a channel

for all in-going and out-going messages and, he notes its capacity to sample such traffic and synthesize from it an alerting or attention function. In review, Lindsley also discusses the importance of the reciprocal influence between the brain-stem and its associated neural systems. In view of the physical and functional integration of the brain-stem and the rest of the brain, mutual stimulation, then, is possible. Lindsley, therefore, suggests that in the absence of exteroceptive stimuli there is a shift of dominance of the brain-stem function from external stimuli to cortical dominance. Sensory deprivation permits the already present cortical content to dominate the brain-stem and thereby provide its own stimulation for further cortical activity. Hence, the imagery and fantasy that is so often experienced under sensory deprivation results from cortically generated stimulation in the absence of external stimuli dominance.

Behavioral Correlates of Congenital Blindness

Burns and Kimura[1] have listed four conditions or processes that produce sensory deprivation: (a) absence at birth or in early age of a sensory input channel, (b) diminuation of the utility of a sensory input channel with increasing age, (c) destruction of sensory input through sudden accident, (d) experimentally induced sensory deprivation through manipulation of the sense organs or manipulation of the environment in order to deprive a sense organ of incoming stimulation. Absence at birth or an "early age" (condition (b) above) must be further qualified; "early age" of onset includes those years

wherein, although a sense modality is used, no useful memory or cognitive organization (peculiar to the effects of that sense organ) have taken place. Burns and Kimura, therefore, combine absence of a sense modality at birth with absence at an early age into one category: congenital.

A common definition of congenital blindness concurs very nicely with the above described definition of congenital sensory deprivation; thus, Lowenfeld[10] states: "It is generally agreed that individuals who lose their sight before about five years of age do not retain any useful visual imagery" (p. 84). Such persons, then, will have no visual frame of reference; that is, they will not be able to interpret future sensory input (via other modalities) in the light of prior visual experience and memory. Meyerson[11] suggests that persons with a congenital loss must slowly organize or differentiate their life space via remaining reality contacts whereas persons with an adventitious loss are faced with a re-organization of existing life-space. We may speculate, then, that persons with a congenital loss may have quantitatively (less differentiation) and qualitatively (no visual frame of reference) different life-space organizations.

Lowenfeld[10] lists three basic limitations the congenitally blind suffer: (a) restriction in the range and variety of experiences, (b) deficits in the ability to get about, (c) deficits in the capacity

to control the environment and self in relation to it. It may be seen that all three limitations are not only the consequences of sensory deprivation, but further operate to escalate the degree and, therefore, the effects of sensory deprivation.

Not only may the congenitally blind encounter psychological stress (implicit in their reduced capacity to control the environment and the self in relation to it), but they may also suffer increased physiological stress. Ruff[12] suggests that such an individual r y not function properly when confronted with information, out of or quite low in his hierarchy of probabilities of events; the disruption of event expectancies may initiate physiological stress. Ruff continues by stating that not only events from a physical aspect must be considered, but the meaning such events have for the person is crucial; meaning depends upon the person's personality and past experience (present cognitive structure). Even any potential deprivation may be viewed as extremely threatening, especially in view of present or previous deprivation experiences.

Perhaps the most critical factor that differentiates the congenitally blind from the adventitiously blind, then, are differences in frame of reference, cognitive organization, or perception. Indeed, educators and counselors may have a preoccupation with concern for receptor and effector substitution devices and techniques

with little concern for the meaning such have for the congenitally blind. Lowenfeld[10] asserts that special provisions must go well beyond the adaptation of tool subjects (e.g. use of braille) etc., and must consider the implications of perceptual restriction and distortion.

Relation of Sensory Deprivation Studies to Attributes of the Congenitally Blind

The reader may have already begun deriving hypotheses concerning relationships between some of the preceding propositions and certain "traits" of the congenitally blind. Although a long list of such notions could be formulated, only several such possible relationships are suggested below.

1. Blindness and Auto Eroticism -- Perhaps such self-initiated activities such as rocking, shuffling, twirling, head-tilting, and other such peculiar "meaningless" behaviors of the blind represent an attempt to generate stimulation of any sort when extra-personal stimulation is diminished. Studies concerning the brain-stem reticular formation are relevant and possibly explanatory in this connection. For consciousness and reality contact, the cortex requires a certain level of stimulation; whenever the environment does not provide the necessary level of stimulation (or sensory apparatus is defective in detecting such), the person may be "obliged" to generate his own stimulation.

2. Lowered Object Relations and Narcissism -- Cutsforth[13] attributes the egocentric characteristics of some congenitally blind as a result of limited contact with the broader social environment; introversion and social maladjustment are said to result from the restricted world

of objective reality. Neo-freudian speculations concerning the collapse of ego-autonomy in the face of drastically reduced exteroceptive stimulation may be useful in understanding the egocentricity of the blind. An expansion of this idea along with several others will be presented below.

3. Fantasy -- Cutsforth[13] describes excessive use of fantasy as a symptom of discomfort with reality; he states that indulgence in fantasy arises not from the primary physical disability, but from the social relations that the disability involves. Cutsforth continues by listing the reactions that may derive from such "reality discomfort." He suggests the person may attempt to eradicate the source of social annoyance, develop marked superiority feelings, or withdraw in a regressive preoccupation, emotional in nature. Such phenomena are suggestive that sensory deprivation or perceptual isolation are situations conductive to the facilitation of fantasy, reverie or regression to more fluent, flexible non-reality bound cognition. Indeed, there may be a similarity or identity between "creative thinking" and cognition induced by sensory deprivation. Consider the artist, musician, writer, scientist, and philosopher who cloisters himself away from the world (perceptual isolation?); consider the moments of insight or illumination that occur during unconscious, preconscious, and states of conscious (ego) inactivity.

Sensory Deprivation as Related to Traits of Creative Thought

Considerations based on a theoretical position postulated by Freud[14,15] psychoanalysts have attributed creativity to the constructive use of primary process or id-like material. Kris[16] in furnishing the concept "regression in the service of the ego," summarizes a neo-Freudian position of creativity: the ego regresses to permit id-like or primitive drive-dominated modes of thinking to emerge. Such primary process material, however, is in constructive support of

the ego. Thus the creative individual permits, or at least does not obstruct, regression to his unconscious or preconscious in order to "conjureup" material that may be of service to his ego or secondary process thinking. Hartman's "self-exclusion of the ego"[17] is another psychoanalytic position of creativity that overlaps considerably with the Kris concept. Kubie[8] also offers a similar although more elaborate position.

The notions of "adaptive regression" or "regression in the service of the ego" point to a parallel between experiences induced by sensory deprivation and certain attributes of creative thinking. The creative person can reduce his reality contact, indulge in preconscious cognition with satisfaction, and return to a conscious level where the products of his "imagination" are then subjected to reality testing. A mature ego is one that permits such alternative shifting from conscious to preconscious levels without fear of reality withdrawal.

Sensory deprivation can be seen, then, as a device to reduce reality contact (secondary process thinking) and facilitate fluent, flexible, and non-stimulus bound preconscious (creative) thinking.

Bellak[18] discusses the creative product, process, and personality. In recapitulating various contemporary psychoanalytic views on creativity and adding his own qualifications, he presents several positions that may be summarized as follows:

1. The operation of unconscious agents in creativity may require a conscious factor, a mental set, which may be stimulus bound.

2. The creative person must be motivated from within, not commanded to create.

3. The final creative product is a composit of many factors.

4. The vascillating nature of ego functions may mean that while creativity may be relatively constant in some, it may fluctuate in others to the extent that diagnosis is difficult.

5. "Regression in the service of the ego" may be reformulated as "a brief, oscillating, relative reduction of certain adaptive functions of the ego in the service of (i.e., for the facilitation of) other, specifically the 'synthetic' ego functions" (p. 367).

6. New states of insight occur under conditions of weakened ego function.

7. The occurrance of creative thought involves variations in the rate of external stimuli via adaptive ego functions.

Bellak suggests the following characteristics of the creative personality:

1. A generally more hysterical personality as opposed to obsessive;

2. Ability to bear ambiguity;

3. Ability to oscillate between unconscious and conscious to optimize reality testing and acuity;

4. Greater than average degree of narcissism;

5. Lower object relations;

6. An unusual indulgence in "quiet fermentation."

Certainly, at least several of the above listed characteristics remind one of certain traits attributed to the blind (esp. congenitally blind) person (e.g. narcissism, lower object relations, "excessive" use of fantasy, etc.).

Implications for Rehabilitation of the Blind

Counselors must be cognizant of the idiosyncratic perceptual world of the congenitally blind. The counselor may interview, test, train, educate, and emphasize recept of substitution (long cane, hearing efficiency, braille, etc.) without being aware of the meaning such activities have for the client. Although the "perceptual world" or cognitive structure may be idiosyncratic, there exists a modicum of commonality; thus, we are able to cite generalizations that describe traits of the congenitally blind (e.g. distortion of objective reality, passivity, narcissism, etc.). Rather than being annoyed or oblivious to such traits, the counselor must understand their functional nature and design programs in view of such traits. For example, if the blind person's cognitive structure is sufficiently different so as to render him deficient in dealing with new psychological situations, and a desirable goal is embedded in a new situation, it is incumbent upon the counselor to reduce the newness of such situations either through including familiar elements in the new field or through successive approximations to the goal. Such

procedure will minimize regressive withdrawal behavior and physiological stress imposed upon the congenitally sensory deprived.

Use of multi-sensory training in an effort to establish relevant cognitive structures prior to the introduction of new learning propositions will facilitate meaningful cognitive incorporation of objective reality (and, e.g., reduce meaningless "verbalism"). The principles of individualization, concreteness, unified instruction, additional stimulation, and self-activity should be employed[10] (pp. 99-108).

Finally, we must not overlook the possibility that a sensory deficit may be an intellectual and vocational asset. Lindsley[19] discusses "deficiency produced specific superiority" in connection with the retarded. Likewise, especially in view of the described theoretical link between sensory deprivation and creativity, we may speculate that the congenitally blind may be more disposed toward "being creative" than the non-blind. If so, vocations such as designing, writing, music, advertising, etc., should, perhaps, receive more emphasis in training and rehabilitation.

There is little questions that the congenitally sensory-deprived person's conception of the world is "different;" perhaps exploration of this world would be illuminating, refreshing, and socially useful.

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