

Creative Thinking Abilities of Cleft Palate Children

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A great amount of research activity is being devoted to studying creative thought from various dimensions. Generally, experimenters have limited their work to studying the creative process, person, product, or environmental factors related to, and perhaps influencing, creativity. The impetus for this line of investigation has come from Guilford's report on the *Structure of Intellect* (4) wherein he identified, theoretically, 120 possible factors of intellect. Immediately, psychologists began developing tests to assess ability in each of these areas. Additionally, attention has been directed toward relating constellations of these factors to more global concepts.

The contemporary research in creative thought has evolved from and is primarily based on certain dimensions of the *Structure of Intellect* model, notably the factors related to divergent thinking. These factors are evaluated by tests which allow an individual to respond to a stimulus in as many ways as he can. Basically, the instruments evaluate verbal and nonverbal fluency, flexibility, originality, and the elaboration of ideas (3). Interestingly enough, scores from the creativity tests evaluating these factors of intellect do not correlate significantly with scores from standardized intelligence tests such as the Stanford-Binet Intelligence Test or the Wechsler Intelligence Scale for Children (14). This indicates that the tests are measuring dimensions of intelligence other than those evaluated by standard intelligence tests.

Consideration has also been given to describing characteristics of the creative person, as well as those aspects of the environment which facilitate or inhibit creativity. In summary, the research indicates that the creative person tends to be unusually perceptive, able to evaluate himself from an internal frame of reference, skilled in relieving anxieties in ways other than through repression or suppression, exhibit humor frequently, and show a tendency towards self-autonomy, which seems to be associ-

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ated with a generally positive self-concept (6, 7, 9, 11). Similar groups of noncreative persons exhibit characteristics opposite to those describing creative individuals.

The social environment seems to influence the degree to which creative thought is fostered in individuals. With respect to the family, evidence suggests that creative individuals are given more latitude to pursue personal interests, do not develop typically intimate relationships with either or both parents, exhibit minimal dependence on authority figures, and are usually neutral in their emotional ties with the family (2, 10, 11).

The psychosocial literature describing children with clefts of the lip and palate parallels strikingly the reported characteristics of noncreative individuals. Children with clefts have been characterized often as having a poor self-image (13), being less verbal in various situations (12), exhibiting unusual dependence on parents and other authority figures (8), showing less facility for handling anxieties and tensions in a healthy way (1), and as being more unhappy, with patterns of shyness and withdrawn behavior frequently seen (5).

Although much of the psychological and sociological literature describing children with clefts has not been validated empirically and is basically clinical, it seemed reasonable to expect that these children would perform less adequately than noncleft children on tests evaluating various factors of creative thought. This study was designed to investigate the differences between these two groups of children on factors of creative thought.

Procedure

Briefly, the design of the study was as follows. Each of 22 children with clefts of the lip and palate, between 10 and 11 years of age, was individually matched with a noncleft child on the basis of sex, race, socioeconomic status, and Kuhlmann-Anderson Intelligence scores. Articulation, nasality, and general intelligibility of speech were evaluated for each cleft child. Both groups of subjects responded to six Guilford-type tests designed to measure various factors of creative thought. Since many of the tests can be scored in several ways, 13 separate creativity factors were identified in addition to a total creativity score, which was a summation of all individual creativity scores.

Results

BETWEEN GROUPS. The data were analyzed in several ways. Scores on the articulation, nasality, and speech intelligibility tests were correlated with all 14 creativity scores for the cleft children. This procedure was done to ascertain the strength of relationship between certain speech characteristics and productions on the creativity test. A high positive relationship between these variables would indicate that speech difficulties may influence the child's ability to score well on the creativity

TABLE 1. Means and standard deviations for the cleft and noncleft subjects on 16 variables. Differences between the cleft and noncleft groups for age were significant.

<i>Variable</i>	<i>Cleft Subjects</i>		<i>Noncleft Subjects</i>	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
I.Q.....	105.96	15.84	105.55	13.87
C.A. (Months).....	129.36	14.59	138.59	7.71
Word fluency.....	25.36	11.12	28.14	8.87
Associational fluency.....	6.41	3.96	9.96	3.30
Ideational fluency.....	36.56	19.65	42.82	12.30
Making objects.....	47.50	9.39	49.46	9.39
Unusual uses fluency.....	27.86	11.83	33.73	13.20
Unusual uses flexibility.....	16.23	8.43	19.64	7.13
Unusual uses breadth.....	13.64	4.73	15.32	3.51
Unusual uses total.....	59.14	26.37	68.68	22.49
Circles fluency.....	8.23	3.07	11.32	4.80
Circles flexibility.....	4.86	3.04	8.09	3.50
Circles breadth.....	4.73	3.05	7.46	2.95
Circles originality.....	8.00	4.40	8.50	5.32
Circles total.....	25.86	11.84	35.41	15.42
Creativity total.....	200.32	63.21	234.46	54.07

tests. This analysis showed correlations ranging between $-.33$ to $.26$. A total of 84 individual correlations were done with none being significantly different from zero at less than the 10% level, using a two-tailed test. These results ruled out any influence on creativity scores being exerted by characteristics of speech.

Standard descriptive data were calculated on both groups of subjects for all variables (Table 1). Since a significant difference was observed between the two groups on CA, it was decided to use an analysis of covariance procedure controlling for this potentially important variable. Thus, independent analyses of covariance were done between the cleft and the noncleft children on the 14 creativity variables. Basic assumptions underlying the use of this statistical procedure, namely, rectilinearity and parallel regression lines, were met. The findings are reported in Table 2.

Inspection of the mean scores for both groups on the dependent variables, after having been adjusted for the influence of CA, indicated that the noncleft children were significantly superior to the cleft subjects on seven of the 14 dependent variables, an occurrence which would happen by chance less than four times in 10,000.

Of the 14 variables, seven assessed verbal factors of creative thought. Two of these differences were significant, one at the 2% level and the other at the 5% level. These two variables were Associational Fluency, wherein the child is asked to list synonyms of words such as calm, positive, and fair; and Ideational Fluency, where the subject is asked to

TABLE 2. Adjusted means and F values for the cleft and noncleft subjects on the 14 creativity variables. Values with one asterisk are significant at the 5% level; values with two asterisks are significant at the 1% level.

<i>Verbal Factors</i>	<i>Adjusted Mean</i>	<i>F</i>
Word fluency		
Cleft.....	26.50	.030
Noncleft.....	27.00	
Associational fluency		
Cleft.....	7.10	5.50*
Noncleft.....	9.26	
Ideational fluency		
Cleft.....	37.18	4.52*
Noncleft.....	42.50	
Unusual uses fluency		
Cleft.....	29.92	.206
Noncleft.....	31.67	
Unusual use flexibility		
Cleft.....	17.73	.033
Noncleft.....	18.14	
Unusual uses breadth		
Cleft.....	14.43	.006
Noncleft.....	14.52	
Unusual uses total		
Cleft.....	64.08	.002
Noncleft.....	63.74	
<i>Nonverbal Factors</i>	<i>Adjusted Mean</i>	<i>F</i>
Making objects		
Cleft.....	48.81	.050
Noncleft.....	48.15	
Circles fluency.....		
Cleft.....	8.32	4.50*
Noncleft.....	11.22	
Circles flexibility		
Cleft.....	4.90	6.28*
Noncleft.....	8.01	
Circles breadth		
Cleft.....	5.07	4.50
Noncleft.....	7.11	
Circles originality		
Cleft.....	8.24	.001
Noncleft.....	8.26	
Circles total		
Cleft.....	26.77	2.85**
Noncleft.....	34.50	
Creativity total		
Cleft.....	180.43	8.55*
Noncleft.....	225.16	

list words that fit into categories, such as fluids that are suitable for drinking. No differences were seen between the groups on the other five verbal factors.

Six of the 14 variables evaluated nonverbal factors of creative thought. Analysis of the means between the groups indicated that the noncleft subjects were significantly superior on four of these variables. It should be pointed out, however, that these differences were noted on the same test which had been scored in several different ways. On this instrument, the Circles Test, subjects are given 25 circles, one inch in diameter, and are asked to draw as many different objects as they can within five minutes. Standard scoring procedures are available to evaluate fluency, flexibility, originality, and elaboration.

When all the scores for each group were summed into a total creativity score, the noncleft subjects exceeded the cleft children at the 1% level of significance.

INTERRELATIONSHIPS. An intercorrelational matrix between IQ, CA, and each creativity variable was calculated for the cleft subjects and another for the noncleft children. These data are presented in Table 3. A total of 90 correlations were significantly different from zero at or beyond the 5% level, 46 for the cleft, and 44 for the noncleft subjects. On 35 of these correlations, significance was achieved for one of the groups and not for the other. On the remaining 55 correlations, significance was achieved for both groups on the variables which had been correlated. Whenever a negative correlation between two variables was seen in one group, a positive relationship existed between the same two variables for the other group. These data lend support to the notion that we were, in fact, dealing with two different populations of subjects, assuming that each group was representative of its respective population.

Discussion

The results of this study suggest that cleft palate children are less creative than noncleft children in certain verbal and nonverbal areas. It is unreasonable to explain these differences as being caused by the congenital defect, *per se*. Rather, it would seem more satisfactory to view these discrepancies as the result of certain psychosocial variables which mediate between the physical disability and the child's behavior. This position parallels and is consistent with the description of the environmental correlates related to noncreative individuals. Therefore, it seems legitimate to suggest that a primary reason for cleft palate children being less creative than noncleft children involves somatopsychological considerations.

There is general agreement that the nature of one's physique arouses certain expectations and is often a primary criterion for assigning a person to a social role. Further, one's physical appearance influences to some degree his perception of himself through a direct comparison with others

TABLE 3. Correlation matrix for cleft (right, above) and noncleft (left, below) children on creativity factors, IQ, and CA. Total creativity scores were omitted, since spuriously high relationships would have resulted due to the high degree of shared variance with creativity factors associated with total scores. Values with an asterisk were significant at the 5% level.

	Word Flu.	Assoc. Flu.	Idea. Flu.	Making Obj.	U.U. Flu.	U.U. Flex.	U.U. Brd.	Cir. Flu.	Cir. Flex.	Cir. Brd.	Cir. Orig.	Creat. Total	IQ	CA
Word fluency														
Associational fluency	23	54*	50*	49*	81*	73*	73*	28	48*	45*	35	89*	32	49*
Ideational fluency	59*	35	93*	02	63*	67*	69*	-15	07	13	06	66*	45*	63*
Making objects	36	42*	45*	-09	68*	71*	66*	-22	-05	02	00	60*	21	61*
Unusual uses fluency	40	10	45*	36	33	26	26	60*	59*	60*	64*	55*	19	34
Unusual uses flexibility	30	30	45*	40	86*	89*	80*	08	22	20	30	88*	14	66*
Unusual uses breadth	42*	51*	40	46*	69*	85*	96*	11	25	26	40	89*	18	63*
Circles fluency	22	08	44*	61*	83*	76*	56*	05	30	32	34	88*	29	60*
Circles flexibility	09	03	41	59*	59*	63*	36	89*	63*	61*	87*	35	22	-09
Circles breadth	16	07	32	65*	44*	54*	33	74*	92*	95*	48*	49*	32	09
Circles originality	14	04	32	49*	64*	62*	39	83*	81*	76*	51*	50*	38	15
Creativity total	59*	37	73*	71*	84*	83*	75*	85*	73*	67*	71*	53*	27	07
IQ	59*	45*	27	17	-02	12	23	-12	-20	-12	-01	21	36	62*
CA	-27	09	-16	39	05	17	13	26	38	55*	22	13	-32	00

as well as by his perception of the expectations other persons have of him. If an individual has not developed the necessary tools for social behavior and realizes that he is viewed by others in his environment as lacking, he will accept their judgment and assume an attitude of personal devaluation.

Lowered self-concept is associated often with a typical syndrome of behavior including shyness, dependence on authority figures, rigidity, unusual emotional attachment toward people and their environment, and a response pattern which is safe, predictable, and nonthreatening. Cleft palate children have been characterized frequently as exhibiting such behavior.

These behavioral characteristics often observed in cleft children are similar to those describing noncreative persons. Additionally, the literature reveals that noncreative children tend to be unwilling to engage in risk-taking types of activities, typically establish a more affective bond with their parents resulting in less self-starting type of behavior, are quite concerned that they not violate social norms, exhibit an intense desire not to be different from their peers, and exhibit in a general sense less autonomous behavior. The clinical similarity between cleft children and noncreative children is striking.

Both the literature on children who are not highly creative and that concerned with behavioral correlates of the cleft condition suggest that the environmental circumstances provided by the parents may be of primary importance in structuring of the child's mode of behaving. The noncreative child has been characterized as living in a family circumstance wherein decisions are made for him, independent behavior is not supported, highly emotional attachments are rewarded, antisocial behavior is punished, and the child generally is not given opportunities to 'self actualize'. This results in the individual not being given a chance to 'try his wings' until quite late, in many instances beyond the point where the organism is flexible enough to alter his mode of behavior and value system which have been literally programmed for him. The result of all of this is that the noncreative individual often sees himself as lacking cognitively, personally, and socially. All of this, so often, is precipitated by overzealous parents.

Contrast this situation with that in which parents of a cleft palate child often find themselves throughout the entire habilitation process. Parenthetically, keeping in mind that the cleft child, similar to the noncleft, is an extremely sensitive organism who is able to readily pick up environmental cues, particularly from his parents on whom he quickly learns to be dependent. The child in turn internalizes the behavioral patterns exhibited by the parents and begins to act and react in a similar way.

As soon as the child is born, the parents are immediately placed in a new psychological situation wherein goals and the paths by which they can be reached are unknown by them. A person in such a situation will

typically wander, vacillate, and exhibit unstable trial-and-error behavior. Behavior in this situation is not parsimonious; it is tentative, cautious, and easily influenced by peripheral stimuli. Frustration will often accompany trial-and-error behavior, although the person will typically be cautious at first followed by more extreme behavior if success is not seen. Tension, anxiety, and conflict are all intensified as the parent tries to seek answers which will assist in resolving this new perplexing situation and at the same time will have a need to seek comfort in old, previously comforting psychological situations.

Consistent with this pattern of behavior is the evidence which indicates that parents of disabled children tend to have more extreme attitudes toward their atypical child than toward their non-disabled youngsters. Patterns of oversolicitude, rejection, pressing for accomplishment beyond the child's capacities, overprotection, and inconsistent attitudes occur frequently. Whether the underlying motive involved in parental overprotection is one of genuine love, concern, guilt, or impatience, the result is typically that the child becomes extremely dependent. This dependence is generalized by the child to others in his environment including the surgeon, speech therapist, pediatrician, and others. Gradually this dependent behavior becomes generalized strategy by the child.

Summary

In summary, this study indicated that cleft palate children tend to be less creative in a verbal and nonverbal sense than noncleft children after controlling influential variables such as IQ, CA, sex, race, and socioeconomic circumstance. Characteristics of noncreative children were compared with those often used to describe cleft children, with remarkable similarity noticed. The data were interpreted not by attributing the relatively poor performance by the cleft subjects to their physical defects but instead to a complex pattern of psychosocial variables which intervene between the defect and the child's total behavior. Emphasis was placed on the manner in which parental concerns and anxieties can influence the child's mode of behaving in a global sense. The implication, almost too obvious to mention, is the need for greater attention being given to reducing the newness of the psychological situations for the parents throughout their child's habilitation and more attention being paid to the somatopsychological implications which may be specific to the cleft palate child.

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