# Psychological Characteristics of Children with Cleft Lip and Palate: Intellectual, Achievement, Behavioral and Personality Variables

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This review examines research on intelligence, achievement, behavior, and personality of children with cleft lip and palate. Studies of intellectual functioning indicate that the general intelligence of cleft samples is relatively normally distributed with group mean IQ scores within the Average range. There is some suggestion of a higher frequency of depressed verbal intellectual functioning relative to visual-motor intelligence. Factors that appear to affect IQ levels are presence of other congenital anomalies, speech and hearing deficiency, and low incidence cleft-type by sex occurrences. There is evidence that a high percentage of cleft children are underachievers. Personality and behavioral studies do not suggest significant psychopathology, although there is evidence of behavioral inhibition, concern regarding appearance, and decreased expectations by teachers and parents.

Early concerns in the care of children born with a cleft of the lip and palate include survival, feeding, and structural deformity. Later considerations regarding orthodontics, speech, hearing, and cosmetic appearance are usually an integral part of multidisciplinary team care. However, the ultimate goal of most cleft lip and palate care is the hope that the additive effect of the individual interventions will culminate to allow a "normally functioning" adult, or at least ensure maximum potential development (Morris and Jakobi, 1977). Although psychological adjustment variables may be more difficult to recognize than facial disfigurement or speech defectiveness, it is important for all professionals working with cleft children to have an awareness of the psychological variables which might contribute to their long-term adjustment. The purpose of this paper is to review the literature on intellectual abilities, achievement, personality, and behavior of cleft children in an attempt to clarify some clinical assumptions, provide support for some consistent conclusions, and suggest areas where further research is needed.

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This study was supported in part by NIDR Grant #DE05837.

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## Intellectual and Cognitive Abilities

Early studies found that the average IQ of cleft samples was below that of the general population (Billig, 1951; Means and Irwin, 1954; Munson and May, 1955; Lewis, 1961; and Estes and Morris, 1970), however, these studies did not include noncleft control groups and often used several different measures of intelligence within one study. Results were generally reported as a single IQ score with no indication of strengths and weaknesses or differential patterns of responding. Other studies which used control groups and one standard intellectual assessment supported

the finding of lower IQ's in cleft populations (Goodstein, 1961; Ruess, 1965; Smith and McWilliams, 1969). However, it is important to note that the cleft children in these later studies had mean IQ's within the average range (90–100), even though they were statistically lower than the noncleft control groups. Goodstein (1961) attributes the lower overall mean IQ of cleft samples to specific deficits in verbal ability in cleft children. He found that a group of 105 cleft children exhibited a significantly lower Verbal Scale IQ than Performance Scale IQ on the Wechsler Intelligence Scale for Children (WISC). Ruess (1965) also found a significantly lower Verbal Scale IQ for 49 cleft children than their sibling controls, however, there was not a significant difference on the Performance Scale. Estes and Morris (1970) examined 466 cleft children and also found a significantly lower Verbal IQ than Performance IQ on the WISC. There have been several hypotheses which attempt to explain this verbal deficit including developmental delay and lack of language stimulation in the home (Estes and Morris, 1970), as well as hearing loss or speech problems. Means and Irwin (1954) found a greater number of cleft children without hearing loss to have IQ's over 100 than cleft children with hearing loss. McWilliams and Musgrave (1972) suggest that the quality of speech is related to IQ, based on the finding that cleft children with hypernasal speech had significantly lower mean IQ's than those with normal speech (IQ's of 97 and 109, respectively).

The type of cleft, cleft lip and palate (CLP), cleft palate only (CPO), and cleft lip only (CLO), has been suggested to be a factor contributing to the level of intellectual functioning. Goodstein (1961) reported lower mean IQ's in CPO groups, citing the high incidence of other congenital anomalies in CPO groups as a possible contributing factor. Lewis (1961) found no difference in IQ by type of cleft alone in 548 cleft children, but found lower IQ's in those with other physical anomalies. McWilliams and Matthews (1979) also found that cleft children with multiple anomalies tend to have lower IQ's. Estes and Morris (1970) examined a sample of 466 cleft children and failed to find significant IQ differences among cleft types. While these studies suggest that the type of cleft per se may not be a significant factor related to IQ level, the presence of other congenital anomalies may be a factor and a higher frequency of such anomalies is found in children with cleft palate only.

Lamb, Wilson, and Leeper (1973) found sex by cleft type to be an important variable related to cognitive impairment. Among 73 cleft children (ages 5–16), they found that females with cleft lip and palate and males with cleft palate only (which comprise the lowest frequency of cleft type by sex) were considered more "language deficient" than other groups on the basis of the WISC and Peabody Picture Vocabulary Test (PPVT). The authors contend that their findings support Fraser's (1970) hypothesis that individuals with the lowest occurring incidence of cleft type by sex are more likely to have other physical anomalies. The findings of Lamb et al. (1973) suggest that low incidence cleft type by sex, along with other physical anomalies may be related to deficiency in language functions. Problems with this study include the small number of subjects once the group is divided by sex and cleft type, the use of the PPVT as a language measure (McWilliams, 1974; Richman, 1979) and the lack of a clear definition of "language deficient."

Musgrave, McWilliams, and Matthews (1975) suggested an age factor in the intelligence of the cleft child. They studied 19 CPO children who were divided into two groups according to surgical procedure (simple closure vs retroposition). The mean Stanford-Binet IQ's of these groups during their preschool years were 96 and 97, and ten years later, these means were 107 and 111, respectively. This study, although based on a small sample, suggests that some cleft children may have early intellectual delay, but improve over time. However, the results could also be attributed to the greater amount of error likely when testing preschool children, especially when using a highly verbal test, such as the Stanford-Binet, with children who are likely to have speech and language delays.

Few studies have looked beyond general intelligence to more specific cognitive abilities. Brantley and Clifford (1979) examined 51 cleft, 22 obese, and 100 normal adolescents on cognitive, body-image, and self-concept measures. None of the cognitive measures (Category Width Test, Kagan's Matching Fa-

miliar Figures, the Tilting Chair experiment, PPVT, the Space Test from the Primary Mental Abilities Test and Digit Span from the WISC) or body-image measures differentiated the cleft group. No attempt was made to control for IQ in this study, and the cognitive measures are primarily sensory-perceptual tasks.

Several authors have suggested that cleft children have a deficit in visual-perceptual-motor functioning. Smith and McWilliams (1968) studied 135 cleft children (ages 3–9) and found that, as a group, they were deficient on the visual-memory and other visual subtests of the Illinois Test of Psycholinguistic Abilities (ITPA). This deficit was found for both sexes, all ages, and all cleft types and is attributed to early motor deprivation in the cleft child (difficulty sucking, feeding, physical restraints when hospitalized, and overprotectiveness of parents). There was no attempt to control for IQ or SES and no normal control group utilized. In addition, the validity of comparing an individual's subtest scores on the ITPA is questionable (Salvia and Yssseldyke, 1978).

Brennan and Cullinan (1974) tested 14 cleft children and 14 matched controls on objects presented tachistoscopically to measure recognition and naming ability. The cleft children were significantly slower on both measures. These authors interpreted their findings as a reflection of deficits in visual analysis and perceptual identification of objects, in addition to a processing deficit (the search for an object's name) and delayed time to initiate speech. These children were matched on the PPVT, a questionable instrument to establish IQ and not particularly useful for cleft children (McWilliams, 1974; Richman, 1979). Furthermore, it is difficult to separate visual-perceptual versus language deficits in interpreting performance on these tasks.

Lamb, Wilson, and Leeper (1972), on the other hand, studied 26 cleft and 26 sibling controls (ages 5–15) with average IQ's and found no consistent pattern of visual-perceptual-motor problems associated with the cleft condition alone. They used the WISC Block Design and Object Assembly tests as their measures. They suggest that the visual-perceptual-motor problems may have an intrafamilial relationship and are associated with hearing loss. When the cleft children were divided on the basis of hearing level, those with hearing loss were more likely to show visual-perceptual-motor problems. This was also true for noncleft siblings with hearing loss.

Richman (1980) studied language disabilities in 57 cleft children who demonstrated significantly lower Verbal than Performance scores on the WISC, but whose Full Scale IQ's were within the average range. Two subgroups were identified on the basis of the Hiskey-Nebraska Test of Learning Aptitude, a nonverbal test that includes two major components of language—associative reasoning (or verbal mediation) and short-term memory. One group displayed only a verbal expressive deficit (VED) with average performance on the Hiskey. Richman attributes this verbal deficit without other disabilities to an early history of speech difficulties and a lack of early language stimulation. These children may display a simple underachievement. The other group showed a general language deficit (GLD) with poor performance on associative language tasks. This group included a higher number of palate only male children (although it is not known whether they had a higher frequency of associated anomalies) and showed a greater degree of reading and arithmetic disabilities. Richman stated that this GLD group exhibits a language-based learning disability. It was suggested that there is a need to compare these cleft children with language deficit to groups of noncleft developmentally language disabled children as well as to examine specific neuropsychological functions related to language related central nervous system involvement.

### Summary—Intellectual and Cognitive Abilities

The research on intellectual functioning of cleft children suggests that there may be a slight decrease in verbal intelligence related to the cleft condition while nonverbal intelligence appears to be normally distributed. There is also evidence to indicate that cleft type, sex, hearing level, speech and language difficulties, and presence of other congenital anomalies may be related to intellectual ability. Further studies are needed which control for these variables. Evidence of different patterns of cognitive abilities, even within groups of verbally deficient cleft children, suggests

the need for studies examining specific neuropsychological aspects of language functions.

A summary of the research findings on intellectual and cognitive abilities of cleft children supports the following tentative conclusions:

1. The distribution of general intelligence within the cleft population is not markedly depressed. While many studies report a slightly lower mean IQ than normative data or control samples, this difference is not clinically significant.
2. There is consistent data to support the contention that there is a depressed Verbal IQ and language disability for many cleft lip-palate children.
3. There is suggestive evidence that low frequency cleft type by sex (CPO males and CL & P females) occurrence may be related to decreased intelligence, especially deficient language functions.
4. Hearing loss and/or speech defectiveness may be related to decreased intellectual functions.
5. Presence of other congenital anomalies increases the chances of lower intellectual skills.
6. Early (preschool) intellectual assessment results of cleft children should be interpreted with caution especially when highly verbal measures are used. There is evidence that early IQ level (e.g. Stanford-Binet) may not be a good predictor of later intellectual functioning.

## School Achievement

Although the potential for school achievement difficulty in cleft children is high due to the high incidence of middle ear pathology with accompanying hearing loss, speech and language difficulties, and facial disfigurement, there is little objective research data on the subject. Research data which is available does suggest that these variables may contribute to less than optimal school performance.

Facial disfigurement does seem to influence a teacher's perception of the cleft child. Richman (1978a) examined teachers' estimates of intelligence for 44 cleft children with moderate to severe facial disfigurement, and 43 cleft children with relatively normal facial appearance. Teachers consistently underestimated the intelligence of the more disfigured children, especially those with average or above average intelligence measured by an individual intelligence test (WISC). It was suggested that teachers may have a stereotyped view that physical unattractiveness is related to lower intellectual ability. Teachers were quite accurate in estimating the intelligence of cleft children with relatively normal facial appearance. An unexpected finding was that teachers tended to overestimate the intellectual ability of some severely disfigured children who had below average IQ's. The author suggests this may have been a "sympathetic" response, since school grades and other objective data did not support this rating. Another study by Richman (1978b), examined teachers' perceptions of behavior of 136 cleft children based on ratings using the Behavior Problem Checklist (Quay and Peterson, 1967). Teachers rated cleft children as more withdrawn and inhibited in the classroom than other children, and as more inhibited than their parents rated them at home. This difference was interpreted as reflecting the greater degree of stress, social interactions, and competitiveness in the classroom compared to the safer home environment. It was suggested that in the classroom, where some degree of competitiveness and independence is necessary for success, inhibition may result in underachievement.

In spite of average intelligence, cleft children may perform below expectations on group achievement tests. Richman (1976) examined Iowa Tests of Basic Skills (ITBS) scores for 44 cleft and 44 noncleft children matched for IQ, sex, age, and socioeconomic status, and found cleft males to score greater than one year below the mean of noncleft males, and cleft females to be approximately one-half year below their peers. Richman and Harper (1978) also found 39 cleft children to score significantly below a matched control group on the ITBS. These two studies did not indicate whether the ITBS scores of cleft children were lower across all subtests, or in specific academic skill areas.

In the study of cleft children with verbal deficits discussed earlier (Richman, 1980), over 50% of the 57 children studied had below average reading and math scores on the Wide Range Achievement Test. These low achievement cleft children were primarily from the GLD (general language deficit) group. The author assumed that associative language ability was necessary for adequate reading and conceptual mathematical computation and the achievement deficits of this GLD group were attributed to a basic cognitive

disability. However, this study did not control for intelligence, since it included only a group with low Verbal IQ.

Kommers and Sullivan (1979) evaluated the written expression of 17 cleft children with average to very superior scores on the Performance Scale of the WISC. Written language skills were measured by the Myklebust Picture Story Language Test, with the results showing below average performance on total words, number of words per sentence, and syntax scores. In all measures, the older group of children (11–13 years) obtained lower percentile scores than the younger group (8–10). The authors suggest that language skills of cleft children become more deficient with age, and that the lower number of words per sentence and total words may reflect the cleft child's attempt to be more intelligible by reducing sentence length and complexity—this oral trait may carry over to written language. The sample size of this study was small, no normal control group was utilized, and verbal scores on the WISC were not reported.

Spriestersbach (1973) reported data gathered by structured interview questionnaires with parents of 175 cleft and 175 control children. Some trends relating to school achievement can be discerned. Compared to the controls, twice as many cleft children were delayed in starting school, twice as many cleft children were considered (by their parents) to be nine or more months delayed in school achievement, twice as many cleft children repeated one or more grades in school, and mothers of cleft children were less likely to expect their children to attend college. These results suggest that parents, as well as teachers, may have lower expectations for the cleft child. However, these results do not differentiate between cleft types or exclude those with associated anomalies, and it relies on subjective parental report.

Although school achievement was not the primary consideration in a study by Kapp (1979), there was a suggestion of concern regarding school functioning. While measuring the self-concept of 34 cleft and 34 matched control children, Kapp found that females with clefts felt they were less successful in school than cleft males or controls. The findings are attributed to low self-esteem of the cleft females.

Peter and Chinsky (1974) compared the educational attainment of 195 cleft adults (ages 24–54) with groups of siblings and random controls. A slightly higher frequency of both noncleft groups attended college than cleft individuals. The cleft group also had lower aspirations for themselves than did random controls, but the cleft group and their siblings were not significantly different in academic aspiration level, leading the authors to suggest familial factors rather than the presence of a cleft. These authors did not find a difference in school drop-out rate between groups.

### Summary—School Achievement

In spite of average Full Scale IQ's, cleft children, as a group, tend to achieve at lower levels than expected. These studies suggest contributing factors such as expectation (on the part of teachers, parents, and the children themselves); the effect of facial disfigurement; verbal deficits, particularly a general language deficiency; and a behavioral style of inhibition in the classroom. Further research is needed to examine the relative impact of these variables, and to control for the type of cleft and presence of associated anomalies, to identify types of cognitive deficits in cleft children as compared to other language-learning disabled children, and to determine the effect of behavioral inhibition on achievement.

A summary of the research findings on educational achievement of cleft children suggests the following tentative conclusions:

1. Cleft children as a group tend to achieve below expectations based on intellectual ability.
2. Teachers tend to underestimate the intellectual ability of average and above average cleft children with more severe facial disfigurement.
3. Cleft children are frequently perceived by teachers to be inhibited in the classroom which may lead to underachievement.
4. A general verbal or language deficiency in some cleft children may result in significant academic failure.
5. Parents may have lower expectations for their cleft child, resulting in lower academic aspirations.

## Personality and Behavioral Characteristics

Studies that attempted to discern psychopathology or find specific personality charac-

teristics in cleft children have been generally unsuccessful. Tisza, Silvertone, Rosenblum, and Hanlon (1958) conducted one of the earliest studies of personality of cleft children. They made intensive observations of 11 children age 5–8, and noted a high degree of muscle tension and rigidity, but no signs of psychopathology. No structured observation system was reported, and no control group utilized. Whether the observed muscle tension and rigidity were related to personality or reaction to the hospital or clinic setting remains open to question.

Gluck, Wylie, McWilliams, and Conkwright (1965) compared medical records of 50 cleft children to records of 292 children seen at a child guidance center, and found that cleft children had more physical anomalies and chronic illnesses, a greater tendency to be shy, and a higher incidence of enuresis. Since this data was based on retrospective chart review, it is difficult to assess the reliability. Barker (1951) administered a paper and pencil personality test, the California Test of Personality, to 26 cleft individuals with no significant findings of personality deviation.

Kapp (1979) administered the Piers-Harris Self-Concept Scale to 34 cleft children (age 11–13) and 34 noncleft controls (matched by sex, age, race, grade in school, SES, and parental marital status). The Piers-Harris consists of 80 self-descriptive statements and the child responds with yes or no. Although the global self-concept score did not differentiate between groups, 3 of the 6 scales did differentiate the cleft group. Anxiety, intellectual and school status, and happiness and satisfaction scores were significantly lower in the cleft group, especially among the cleft females. The scores on the physical attributes and appearance scale were not significantly different until the items relating only to physical appearance were isolated—cleft children did show lower scores on those items. Kapp concluded that, although these children had adequate overall self-concept scores, they were significantly lower than controls on certain attributes. This group did not seem to have problems with peer relations. The females' lower scores may be attributed to external social reactions based on physical appearance or a greater sensitivity in females to physical appearance. One problem with this study is the use of the Piers-Harris scale which is based on subjective self-report. However, self-perception is an important variable which may be overlooked when only objective measures of physical appearance are used. There is a need to compare self-reported physical appearance concerns, as reported in this study, to objectively rated appearance and facial measurement.

Brantley and Clifford (1979) evaluated 100 control, 51 cleft, and 22 obese adolescents (age 10–18) on cognitive (described in previous section), self-concept, and body image measures. The self-concept and body image measures consisted of numerous paper and pencil rating scales as well as experimental measures. In general, the authors found that only the self-concept measures differentiated the cleft group but not in the expected direction. The cleft adolescents had higher self-concept scores than obese or normal adolescents. The only area of significantly lower ratings by cleft children concerned parental acceptance at birth. The body-image measures suggested that cleft adolescents do not have pervasive feelings of body distortion. The authors suggest that cleft children generally have a high self-esteem, as a result of good coping skills. Again, there is the problem of using subjective self-report measures, however, the results of this study and the results of the Kapp (1979) study are consistent in finding relatively good overall self-reported self-concept of cleft children during early-to-late adolescence.

A study examining MMPI profiles of 52 cleft adolescents (Harper and Richman, 1978) found no indication of significant psychopathology. However, there was an indication of excessive inhibition of impulse, increased self-concern, and ruminative self-doubts over interpersonal relationships. Females with clefts displayed a greater dissatisfaction with their life situation than cleft males, which was interpreted as a reaction to the greater emphasis on physical appearance in females especially during adolescence. This study did not suggest significant emotional maladjustment, but rather, variations of normal behavior. There was no normal control group used in this study and the interpretation of MMPI profiles within the "normal range" is somewhat tenuous.

Richman and Harper (1979) administered

a nonverbal personality test, the Missouri Children's Picture Series (MCPS, Sines, Parker, and Sines, 1971) to 55 cleft children of elementary school age. The results also indicated an excessive inhibition of impulse compared to a contrast group of children with orthopedic handicaps, but again, this was a relative increase and did not exceed the statistical normative expectations. This study is relatively consistent with the previously mentioned studies (Brantley and Clifford, 1979; Kapp, 1979; Harper and Richman, 1978) in the finding of no significant overall psychopathology or self-concept deficiency, yet finding some indication of mild adjustment concern.

Several studies have employed measures that attempt to detect variations of normal behavior via reports of others rather than through subjective self-report. Using a parent interview format, Spriestersbach (1973) found that cleft children were perceived as less independent, less aggressive, and less confident than normal children. Richman (1976) examined teachers' ratings of 44 cleft and 44 matched controls on the Behavior Problem Checklist (BPC), and found that cleft children were rated higher on the internalizing scale, consistent with the excessive inhibition of impulse found in other studies. It was suggested that cleft children may have learned to avoid behaviors or situations that call attention to oneself or that may give rise to negative responses from others. This behavioral characteristic may be socially adaptive rather than a sign of maladjustment.

Harper, Richman, and Snider (1980) studied 34 cleft children with mild physical impairment and 28 cleft children with severe facial disfigurement and compared them to groups of mildly and severely involved orthopedically impaired children. All had IQ's in the average range and attended regular public school classes. Children with cleft who exhibited a mild facial disfigurement showed a greater degree of inhibition of impulse as measured by the BPC than those with more severe physical handicaps. However, the cleft children in this study showed greater expression of impulse than in previous studies (Richman, 1976; Richman and Harper, 1979). This was attributed to the fact that this was an older group (mean age of 14.1) and was consistent with normal adolescent tendencies. The authors suggested a developmental trend of excessive inhibition in early childhood changing to an increase in expression of impulse in adolescence, especially for the more severely impaired.

Cleft children also have a high incidence of middle ear infections, hearing loss, and speech defectiveness. Behavioral characteristics of hearing loss, such as inattentiveness, restlessness, failure to follow directions, and also inhibition of impulse may be found in the cleft child (Phillips, 1975). Further behavioral research which controls for degree of impairment, age of child, presence of hearing loss, and sex is needed. The effects of inhibition of impulse in the classroom need to be explored. The inhibition of impulse may be an adaptive behavior to avoid negative reactions from others, however, this response style may be related to the underachievement frequently identified in cleft children. The relationship between speech defectiveness and personality characteristics has not been adequately studied. Furthermore, cleft type and behavior or personality relationships have not been examined.

### Summary—Personality and Behavioral Characteristics

Personality studies of cleft children have failed to identify psychopathology or a specific cleft personality. In general, cleft children are within normal limits on self-concept and personality tests but do tend to show an inhibition of impulse and concern regarding physical appearance. It is not clear whether this inhibition persists into adulthood as a personality characteristic or whether it is more developmental and situationally specific.

The research findings on behavior and personality of cleft children can be summarized by the following tentative conclusions:

1. Cleft children, as a group, do not display significant signs of psychopathology related to clefting conditions.
2. The self-concept of cleft children is relatively good although there is a suggestion of situational concern related to appearance.
3. The personality adaptation of many cleft children is one of excessive inhibition, although this may be a positive adaptive response rather than a sign of maladjustment.
4. Adolescent cleft females appear to have the

greatest degree of concern regarding physical appearance and dissatisfaction.

## Summary and Implications

Although cleft children typically display average intelligence and show few signs of psychopathology, research consistently demonstrates a high incidence of an inhibited, shy child who is underachieving. Teachers and parents view the child differently, suggesting that the inhibition of impulse is greatest in the more stressful, competitive environment of the classroom. Parents may not see this inhibition at home, and may perceive their cleft child as compliant rather than noncompetitive. Since parents of handicapped children may tend to be overly protective, the encouragement of earlier social interaction with noncleft peers and reinforcement of independence may aid later school adjustment and personality adjustment.

Minimal empirical data exists at this juncture to explain the presence of underachievement in cleft children, but two hypotheses are raised here. First, parents and teachers (and consequently, the child) may have lower expectations for the cleft child, therefore, the child may not be strongly encouraged to excell in academics. Another possibility is that speech and language delays or deficits preclude the acquisition of effective reading and academic skills.

The research on intellectual and cognitive capabilities, school achievement, behavior and personality of cleft children is relatively positive in supporting adequate intelligence (unless noncleft anomalies are included), relatively good personality adjustment and self-esteem, and adaptive behavioral style. The research evidence is less positive regarding school achievement, language development, and parent-teacher expectations which may affect level of aspiration.

This review of the research on psychological aspects of cleft lip and palate children provides some consistent findings which are elaborated in the tentative conclusions in each summary section. However, there are also many questions which remain unanswered, and warrant further investigation. Future research studies are needed to determine the relationships of cleft type by sex, presence or absence of other congenital anomalies, hearing loss and speech defectiveness to intellectual and specific cognitive abilities. The relationship of parental expectations, teacher perceptions, language skills, and behavioral inhibition to academic underachievement also needs to be further explored. The relative influence of subjectively reported concerns with facial appearance, objective observers' ratings of facial appearance and facial measurements should be evaluated within the context of objective measures of self-esteem and personality adjustment.

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