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DEVELOPMENTAL DIFFERENCES IN HISPANIC  
AMERICAN INFANTS; ALIEN COMPARED TO CITIZEN  
PARENTS.

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DEVELOPMENTAL DIFFERENCES IN HISPANIC AMERICAN  
INFANTS: ALIEN COMPARED TO CITIZEN PARENTS

by

George Andrew Holmes Benjamin

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## ABSTRACT

The development of United States citizen infants with undocumented alien parents (UDOC, N=24) was compared with the development of infants with Hispanic American parents (DOC, N=47). To assess the developmental differences, a closed-end demographic and environmental variable questionnaire and the Bayley Scales of Infant Development (BSID) were used. Most of the demographic and environmental variables which could have influenced development remained essentially equivalent for both groups of infants. Yet, UDOC infants scored significantly lower than DOC infants on the BSID mental and psychomotor scales, and behavior record items highly correlated with cognitive development. These results lend support to the Select Commission on Immigration and Refugee Policy conclusions that the illegal status of undocumented aliens can have far reaching negative consequences.

## INTRODUCTION

Testimony before the Select Commission on Immigration and Refugee Policy (1981) emphasized the pervasive stress experienced by undocumented aliens, and their families. Evidence suggests psychological, emotional, economic, and physical hardships occur regularly for many who have entered the United States illegally (Fimbres, 1981). These hardships are not just confined to those who have breached the law, but in fact affect the children of undocumented aliens, many of whom are U.S. citizens. Certainly these children cannot be held culpable for their parents' legal infractions.

The 14th Amendment, section one of the United States Constitution provides:

All persons born or naturalized in the United States and subject to the jurisdiction thereof, are citizens of the United States...

The right of citizenship and the benefits of United States citizenship may only exist in theory if an infant's parents are undocumented aliens. Aliens are denied benefits from all major federal assistance programs either through legislation or a series of regulations adopted following the 1971 Supreme Court decision of Graham v. Richardson, 403 U.S. 365. The bar includes Supplemental Security Income (SSI), Aid to Dependent Children (AFDC), Medicaid, and the Food Stamp Program. If aliens come forth to apply for

assistance for their children, they may not only jeopardize their effort to immigrate, but at the very least risk facing a deportation hearing. The Commission acquired sufficient evidence to conclude that

...the fear of detection... can have far reaching consequences... it is the illegal status of the aliens that causes harm to themselves, to their families, and ultimately to the United States society (p.530).

As a result, many U.S. citizen infants with alien parents probably have forfeited their right to receive federal and state public assistance. In fact, a very small percentage of aliens make use of social services despite a great majority of aliens paying sales taxes, and having social security, federal and state income taxes withheld (Select Commission's Report, 1981; Arnold, 1979; Fogel, 1977; North and Houston, 1976).

Furthermore, the current arbitrary enforcement of immigration laws may also have created an impact of some type. Undocumented aliens live in constant fear of being discovered and deported (Fimbres, 1981). This must cause psychosocial stress or some other effect which would influence the daily existence of a household, and probably the prenatal and postnatal development of U.S. citizen infants.

Maternal stress as a prenatal factor affecting infant development was critically reviewed by Joffe (1969). He

questioned the methodological adequacy of not only the previous experimental research with animals, but also the studies involving humans. Nevertheless well-designed studies do link maternal stress with developmental impairment (Illingsworth, 1980). For example, in a study published after Joffe's review, Sontag (1970) found that emotional trauma during the pregnancy was linked to acceleration of fetal activity levels extending several days to weeks. This behavioral stress was connected to postnatal infant hyperactivity, low weight, and digestive or feeding problems.

A wealth of research has documented that the most important family factor affecting child development is the quality of the primary caretaker's infant care during the first years of life (Ainsworth, 1967; Neligan and Prudham, 1976; White and Watts, 1973). In fact, it appears that the critical period of development occurs from 10 to 18 months:

Most of the basic foundations of education and general development will receive their shape and quality during this short interval (White and Watts, 1973, p.238).

Since both the opportunity and quality of parent-infant interactions fundamentally influence infant cognitive growth (White and Watts, 1973), it is not difficult to assume:

A woman who is seriously depressed or very angry or unhappy about life probably cannot do a good job of getting her young child off to a good start (p.240).

Infant attachment with the primary caretaker remains the factor which seems best to determine the quality of interactions during the initial years. Both cultural, and cross-cultural studies have documented the importance of infant attachment with the primary caretaker (Ainsworth, 1967; Bowlby, 1969, 1973; Harlow, 1971; Provence and Lipton, 1963). In short, the most responsive and sensitive mothers create the greatest opportunity for the highest quality attachment, and the most developmentally advanced infants (Ainsworth and Bell, 1969; Matas, Arend, and Sroufe, 1978; Schaffer and Emerson, 1964; Waters, Wippman, and Sroufe, 1979).

Researching stable, middle-class families, Waters (1978) reconfirmed that attachment arises from and is maintained by the quality of mother-infant interaction. Not surprisingly, if the environment remains stable without any unexpected changes, an attachment relationship tends to be more stable. Vaughn, Egeland, Sroufe, and Waters, (1979) found with lower-class families that reports of stressful events during the 12-18 month infant age period significantly distinguished securely attached from anxiously attached infants. The greater the number of stressful reports, the greater the likelihood that the

quality of attachment and interaction had deteriorated:

High levels of stress and instability in the living situation can easily interfere with maternal behavior and compete with the infant for her attention... (they) would often have a negative effect on interaction and eventually the quality of attachment (Vaughn, et al., 1979, p.974).

Finally, Vaughn, et al., (1979) also disclosed evidence that if the situation became more stable with fewer stressful events, a deteriorated mother-infant attachment would not necessarily improve. Harm to the quality of attachment was sustained, and once altered, quite difficult to reverse.

The purpose of this study was to investigate what impact immigration policy has had on the development of U.S. citizen infants with undocumented alien parents. This research examined a number of demographic, environmental, and social variables potentially associated with impaired development, and tested the ability of a linear combination of these variables to predict whether an infant was born to undocumented alien parents, and whether impaired development has occurred.

#### METHOD

##### Setting

Most of the study was conducted during clinic hours at the Walter C. Rodgers county "well-baby clinic," in Pima County, Arizona. Pima County includes the rapidly

growing Tucson metropolitan area. The Walter C. Rodgers clinic attends to 70 percent of the Hispanic American population using the county well-baby services. Approximately 14,000 children are treated annually through the clinic. Usually infants are seen on eight separate occasions during the first two years. Most of the service time is spent medically screening the infants, and counseling on infant care.

### Subjects

During August, 1980 through May, 1981, the researcher tested a number of six month infants (DOC6, N=21), and 18 month infants (DOC8, N=26) of documented parents as well as six month infants (UDOC6, N=11), and 18 month infants (UDOC8, N=13) of undocumented alien parents. The number of six and 18 month subjects was proportionately equivalent between the DOC and UDOC groups. Most of the 71 subjects came from the Walter C. Rodgers clinic; four subjects were referred by the Teresa Lee-El Rio well-baby clinic. The selection process involved screening all records for regular clinic appointments. Primiparous mothers of Hispanic-American citizen infants, either six or 18 months of age were contacted. Few parents decided not to accept the offer of free developmental testing. The people making the initial contact with the parents believe that less than 10 percent of the parents did not

participate.

Only first born infants were tested to avoid the influences that birth order and other siblings seem to have on infant development. A consensus of prior research believes that this type of effect occurs (Sutton-Smith and Rosenberg, 1970).

### Instruments

The Bayley Scales of Infant Development, BSID (Bayley, 1969), and a closed-end demographic and environmental variable questionnaire were employed. Collard (1972) recommended using the BSID rather than any other test measuring infant development:

...because of the range of items, the reliability of the scales, and their careful construction and standardization, the BSID is by far the best measure of infant development available today (p.729).

For any particular infant age, the BSID provides about 30 items which form a mental scale (MDI), approximately 20 items which form a psychomotor scale (PDI), and 27 behavior ratings which form a behavior record (IBR).

As Bayley admitted, the BSID scores have little predictive validity (Bayley, 1979, p.1174). Crano (1977) believed that these types of tests can only be used as "...global indicators of the infant's general psychobiological integrity" (p.149). In light of the BSID predictive limitations, the focus of this research remained on

how the development of UDOC infants compared with the development of DOC infants through the age of six or 18 months.

The 39 variables included in the questionnaire were selected to measure other aspects potentially associated with impaired infant development. Many were added to meet prior developmental research concerns.

When necessary, for the few BSID items which were introduced with one or two word expressions, the researcher translated the standardized English administration words into Spanish. Also, the questionnaire was mostly given in English though an equivalent Spanish translation was used occasionally. The whole process generally took less than an hour to complete.

#### Procedure

All of the parents were asked to bring the infants in for testing prior to a feeding and after a nap. Appointments were scheduled to test the infants during their usually most active stage of the day. No subjects were lost because of untestability.

First, the infant was tested with the Bayley. Second, the closed-end questionnaire was administered to the parents. Finally, the purpose of the project was explained, and then the parents were questioned about how long they had lived in the U.S., and whether they were U.S.

citizens. For instance, most DOC parents were born U.S. citizens though six mothers reported marrying U.S. citizens and becoming U.S. citizens. It is believed that the good will fostered between the child and the researcher during the Bayley test, encouraged most parents to believe the statements about confidentiality, and to provide honest responses to the self-report questionnaire. Of course the better the rapport with the subjects, the more accurate are the responses (Naroll, Naroll and Howard, 1961; Naroll, 1962). Among primiparous mothers, Moss and Jones (1977) also found an ingenuousness which they described "as a remarkably nondefensive and candid manner (p.441)."

#### Design and Statistical Methods

The few discrete variables which could not be treated as continuous were tested with the chi-square statistic to determine whether any significant differences between UDOC and DOC responses existed. Pearson correlations of the continuous variables, helped direct the combining of many variables to form a more manageable number for discriminate function analysis. All IBR items were combined to form composite variables especially because apparent conceptual coherence points to natural grouping. However, most variables with significant univariate F-ratios were entered separately during the series of discriminant

function analyses. Since no significant differences between six and 18 month data were uncovered, all data were grouped together to increase the power of the discriminant function analyses.

#### Limitations of the Design

Tester reliability was increased by pretest training. An experienced Bayley tester trained the researcher. After practicing with five infants either six or 18 months old, a 90 percent level of concurrent agreement was reached. In addition, a different research subject was simultaneously tested by another skilled Bayley tester at the beginning, middle, and end of the project. A 90 percent level of concurrent agreement was reached in each case. When disagreement occurred, usually the testers had scored an IBR variable differently by one rating point on a nine point rating scale.

To prevent researcher bias, subjects were tested as blindly as possible. However, the researcher observed that often the subject's parents naturally provided cues as to whether they were UDOC or DOC parents during the testing of the infant. Before questioning the parents as to their nationality and immigration status, the researcher would note his guess as to what group the infant belonged. Approximately 60 percent of the predictions were correct ( $\chi^2 = 2.65$ ; d.f. = 1;  $p = .1036$ ).

R E S U L T S

TABLE 1  
MEANS, F-RATIOS, DISCRIMINANT FUNCTION COEFFICIENTS

VARIABLES	GROUP MEANS		UNIVARIATE F-RATIOS <sup>b</sup>	DISCRIMINANT COEFFICIENTS <sup>a</sup>	
	UNDOCUMENTED PARENTS (UDOC)	DOCUMENTED PARENTS (DOC)		UDOC vs. DOC (all variables)	UDOC vs. DOC (w/t MDI & PDI)
<b>DEMOGRAPHIC AND ENVIRONMENTAL VARIABLES</b>					
AGE OF MOTHER	23.08	22.28	.52	.20	.41
NUMBER OF YEARS RESIDED IN U.S.	5.37	19.79	94.66***	-.77	-1.00
NUMBER OF ADULTS LIVING IN HOUSE- HOLD	3.00	2.85	.16	.30	.29
SES <sup>c</sup>	4.92	4.83	.98		
NUMBER OF PRE- NATAL MEDICAL VISITS <sup>d</sup>	2.71	2.82	.75		
NUTRITION OF MOTHER PRE- NATALLY <sup>e</sup>	1.27	1.35	.94		
MOTHER'S SUBSTANCE ABUSE <sup>f</sup>	1.10	1.23	2.61		
WEIGHT OF CHILD AT BIRTH <sup>g</sup>	3.50	3.23	.17		
SEX OF CHILD <sup>h</sup>	.58	.64	.20	-.19	-.24

TABLE 1  
(continued)

VARIABLES	GROUP MEANS		UNIVARIATE F-RATIOS <sup>b</sup>	DISCRIMINANT COEFFICIENTS <sup>a</sup>	
	UNDOCUMENTED PARENTS (UDOC)	DOCUMENTED PARENTS (DOC)		UDOC vs. DOC (all variables)	UDOC vs. DOC (w/t MDI & PDI)
BREAST FED <sup>l</sup>	.75	.47	5.38**	.31	
IN WICK PROGRAM <sup>j</sup>	.58	.57	.005		
ATTITUDES OF PARENT ABOUT CHILD <sup>k</sup>	1.21	1.22	.015		
<u>IBR VARIABLES</u>					
SOCIAL ORIENTA- TION <sup>l</sup>	.86	.91	.50		
FEAR, TENSION GEN- ERAL EMOTIONAL TONE LEVELS <sup>m</sup>	1.44	1.16	3.01		
COOPERATIVENESS, ENDURANCE AND ACTIVITY LEVELS <sup>n</sup>	3.76	4.06	4.26*		
PRIMARY COGNI- TION CLUSTER <sup>o</sup>	1.90	2.13	5.66**	.23	
SENSORY AREAS OF INTEREST DIS- PLAYED <sup>p</sup>	2.90	3.04	3.55	-.24	-.18
<u>BAYLEY MENTAL AND PSYCHOMOTOR SCALES</u>					
MDI	104.80	119.23	43.85***	-.44	
PDI	102.04	112.70	31.17***	-.31	

Table 1 Footnotes

- a Coefficients in standardized (Z-score) form.  
b Univariate F-Ratio with 1 and 69 degrees of freedom.  
c Based on Hollingshead's education and occupation index.  
d 1 = 1-5 visits, 2 = 5-10 visits, 3 = 10-15 visits.  
e 1 = daily, 2 = sometimes, 3 = not at all.  
f 1 = never, 2 = moderately, 3 = frequently; more specific categories were collapsed into these general categories.  
g 1 = less than 5.5 lbs., 2 = 5.6 to 6.5 lbs., 3 = 6.6 to 7.5 lbs., 4 = more than 7.5 lbs.  
h 0 = female, 1 = male.  
i 0 = no, 1 = yes.  
j 0 = no, 1 = yes.  
k 1 = better than average, 2 = average, 3 = less than average; more specific categories were collapsed into these general categories.  
l Combined into one variable with lower number meaning less social orientation, responsiveness to persons, responsiveness to examiner, responsiveness to mother; and a higher number meaning more social orientation, responsiveness to persons, responsiveness to examiner, responsiveness to mother.  
m Combined into one variable with lower number meaning less fear, tension, and a more positive general emotional tone; a higher number meaning more fear, tension, and a less positive general emotional tone.  
n Combined into one variable with lower number meaning less cooperativeness, endurance, and activity, and a higher number meaning more cooperativeness, endurance, and activity.  
o Composed of behaviors that Matheny, Dolan, and Wilson (1974) noted as being a prognostic value approaching that of the MDI itself for predicting mental development in infancy. The combination includes the following IBR items: object orientation; goal directness; attention span; reactivity; gross motor coordination, and fine motor coordination. A lower number means less of the above, a higher number means more of the above.  
p A combination of the following variables: sights- looking; listening to sounds; producing sounds-vocal; banging toys with hands; body motion; mouthing toys. A lower number means using sensory faculties less and a higher number means using sensory faculties more.
- \* p less than .05.  
\*\* p less than .025.  
\*\*\* p less than .001.

## Demographic and Environmental Variables

As indicated in Table 1, UDOC infants significantly differed from DOC infants only in having parents who lived in the U.S. for shorter periods of time, and in being breast fed rather than being bottle fed. The following variables were not significant: age of the mother; number of adults living in the household; socioeconomic status; number of prenatal medical visits; prenatal nutrition; prenatal substance abuse; birth weight of infant; sex of child; WICK program participation for federally financed milk; attitudes of parent about the child; and a number of other variables not mentioned in Table 1 because they were either discrete variables or nearly constant for both groups.

Mothers ranged in age from 16 to 36 with a mean of 22.55 and a standard deviation of 4.37. The number of years that the mother resided in the U.S. was the variable which revealed the greatest difference between the groups. UDOC mothers lived in the U.S. for a mean of 5.37 years, with a standard deviation of 3.98. In contrast, most DOC mothers lived in the U.S. all of their lives, although a few DOC mothers successfully immigrated as younger women (mean = 19.79 with a standard deviation of 6.67). However, UDOC and DOC families changed residences with almost the same frequency during the two years prior to

the testing.

Two adults, a husband and wife with infant composed 44 percent of the households, while 45 percent of the households contained more than two adults generally the parents, brothers and sisters of the husband or wife. The remaining households were single parent (3 percent) or single parent with another adult family member (8 percent). No significant association existed for the type of dwelling (discrete variable) in which the household lived. Compared to DOC families, UDOC families lived less frequently in houses and more frequently in trailers and apartments ( $\chi^2 = 3.11$ ;  $df = 3$ ;  $p = .37$ ). Only three families lived in farmworker camps; two families were UDOC, and the other one was DCC.

Based on the classifications and weightings of the Hollingshead (1957) formula, socioeconomic status (SES) was determined by the education and occupation levels of the parents or parent, if a single parent household. Nearly a third of each group's households were single parent, while often other adults and usually family shared the dwelling. Most (86 percent) of the sample belonged within Hollingsheads lowest SES designation with the remaining household's falling within the next lowest category. The education and type of occupation levels for fathers were equivalent, few having finished high school,

and most working as unskilled laborers. UDOC mothers finished high school or started college less frequently than did DOC mothers. UDOC mothers did not take the opportunity to attend more school since they all grew up in MEXICO where much less importance is attached to formal education. (North and Houston, 1976). Two thirds of the mothers in each group remain dependents while most of the other mothers worked as unskilled laborers. The groups did not differ much on type of employment for mothers.

The well-baby clinic offered 10 or more prenatal check-ups to 79 percent of the UDOC mothers and 89 percent of the DOC mothers. All of the babies were delivered in hospitals. A third of both groups mothers experienced difficulties during delivery, though none thought the difficulties affected the development of their child.

During the pregnancy, two-thirds of the mothers reported eating at least once a day dairy products, fresh fruit and vegetables, and meat products. More UDOC mothers indicated that they had followed this type of balanced diet. Eighty-one percent of mothers claimed to have completely given up consuming cigarettes, alcohol, and drugs (excepting those prescribed by physicians). UDOC mothers reported abstaining from use of alcohol and drugs more often than DOC mothers though the few mothers

who kept smoking, more of the mothers were UDOC.

A half of the infants were born with a birth weight greater than 7.5 pounds: 54 percent of UDOC infants compared to 47 percent of the DOC infants. The mothers' prenatal health care, good diets, and little substance abuse probably all contributed to this finding.

Male infants amassed to 62 percent of the sample. Nearly the same percentage of females and males were tested in both the UDOC (42 and 58 percent) and DOC (36 and 64 percent) groups of infants.

Greater than half of the infants were breast fed as opposed to formula fed; a significantly greater number of UDOC infants were breast fed compared to DOC infants (see Table 1). Following breast feeding, and sometimes in lieu of breast feeding, mothers would apply to the federally financed WICK program to receive milk formula for their infants. Almost three-fifths of the infants received assistance from WICK at some point. Only a slight difference existed in the percentage of those receiving assistance for both groups.

Finally, the following series of measurements concerning the attitudes of the mother about the child were combined into one variable for which the groups similarly responded (see Table 1); most mothers felt that their child when compared to other infants the same age was

very attractive, easy to raise, large for the age, very smart, and quite easy to hold and hug. Additionally, three discrete measurements of the mothers' attitudes about punishment and why the child cried revealed uniformity between the groups.

#### Bayley Infant Behavior Record

Measurements concerning the social orientation of the child to the examiner, the mother, and other persons showed few differences between UDOC and DOC infants. As a combined variable no significant association existed.

Although the fear, tension, and general emotional tone levels were more negative for UDOC infants, they were not significantly so. A combined reaction to these variables did not significantly distinguish the two groups either.

UDOC infants significantly performed with lower levels of cooperation, endurance, and activity when these variables were combined (see Table 1). Separately though, none of the above variables resulted in a significant univariate F-ratio.

A significant association existed between the primary cognition cluster, and the two groups of the sample (see Table 1). The primary cognition cluster combined the following IBR variables: object orientation; goal directedness; attention span; reactivity; gross motor coordination;

and fine motor coordination. Alone, only goal directedness and attention span significantly differed for each group. UDOC infants exhibited less goal directedness, and a shorter attention span.

Many variables were combined to form the variable sensory areas of interest displayed: sights-looking; listening to sounds; producing sounds- vocal; banging toys with hands; body motion; mouthing toys. Although not a significant result, UDOC infants tended to employ their sensory faculties less noticeably or in the case of mouthing toys, more noticeably. As univariate F-ratios, listening to sounds, producing sounds- vocal, and exploring with hands occurred significantly less often with UDOC infants.

#### Bayley Mental and Psychomotor Scales

UDOC infants significantly performed less well on the mental testing (mean = 104.8; standard deviation = 6.68) than did DOC infants (mean = 119.23; standard deviation = 9.54); see Table 1.. Also during psychomotor testing UDOC infants scored significantly lower (mean = 102.04; standard deviation = 5.23) when compared to DOC infants (mean = 112.70; standard deviation = 8.56). However, all infants scored within the normal range, and DOC infants scored significantly higher MDI and PDI scores when compared to a normal population.

### Discriminant Function Analysis

A discriminant function analysis was performed to determine the patterning and weighing of variables which discriminate between the two groups. Both with and without MDI and PDI variables included. When included, the discriminant analysis yielded a significant discriminant function ( $\chi^2 = 81.26$ ; d.f. = 9;  $p$  less than .001) and correctly classified 90.14% of the cases. When the MDI and PDI variables were removed, a significant discriminant function also resulted ( $\chi^2 = 69.75$ ; d.f. = 7;  $p$  less than .001) correctly classifying 88.73% of the cases.

The standardized canonical discriminant function coefficients (weights) for both these analyses are presented in Table 1 (columns 5 and 6). Variables with large significant  $F$ -ratios and small Wilk's lambdas most greatly influenced the discriminant function equations. As shown, both of the two groups are strongly differentiated with UDOC infants most clearly differing from DOC infants on how many years their mothers have resided in the U.S., on breast feeding, and on MDI and PDI scores.

### DISCUSSION

All infants tested within the normal ranges of the BSID, yet UDOC infants compared with DOC infants significantly tested lower on the cooperativeness, endurance,

and activity variable combination, the primary cognition cluster, the MDI, and the PDI. Many demographic and environmental variables which could have influenced an infant's development remained essentially equivalent for both groups of infants. The only significant differences occurred as UDOC mothers lived in the U.S. for a shorter period of time, and breast fed their infants more frequently, neither behavior is known for impairing infant development. Since the only other major environmental distinction between the groups was whether the parents were UDOC or DOC, the data are consistent with a proposition that the effects of this status have influenced the development of the UDOC infants.

A number of the results corroborated past research findings. Bayley (1965), and Wachs, Uzgirus, and Hunt (1971) showed that early cognitive growth was not influenced by racial and ethnic backgrounds. UDOC and DOC infants scored well within the normal ranges for the BSID. In fact, a significant number of subjects performed in a superior manner when compared to the norm.

A polymatric form of infant caretaking was very much in evidence among UDOC and DOC households. These findings reinforced Ehling's belief that Mexican-Americans are strongly motivated by "familism" with unusual attention focused on newborns. Leiderman and Leiderman (1974) when

testing East African infants with the BSID found that lower SES infants raised by multiple caretakers scored significantly higher than infants raised in monomatric households. Possibly this finding helps to explain the superior BSID performance of a significant number of the subjects. Yet an equivalent number of UDOC and DOC infants experienced the polymatric form of caretaking.

Lower SES parental backgrounds had not impaired the development of the subjects per se. Lewis and Wilson (1972) discovered few differences in MDI results across groups separated by Hollingshead's indices. At 12 months, even the lowest SES sample, scored significantly superior scores when compared to the BSID norms. Other researchers however, have suggested that "deficiencies in... development of children from the disadvantaged backgrounds or poverty are manifested earlier (Wachs, et al., 1971, p.305). This certainly is not the case for lower SES subjects who benefited from participating in the well-baby program provided by Pima County. Parenthetically, the Leiderman's (1974), Lewis and Wilson (1972), and the current research all found that their infants significantly differed from BSID norms. Further research could possibly establish whether BSID norms are outdated and then improve any discrepancies.

The inferential validity of a similar research project could be increased if the following methodological improvements were incorporated: First, test subjects longitudinally rather than cross-sectionally. Although originally it was believed UDOC subjects would reluctantly participate in a long term project, given protection and establishment of good rapport, UDOC subjects probably would join a longitudinal study. Second, employ home environment measurements to reduce even further the many confounding factors influencing infant development. The current project did not observe whether the stimulus bombardment of the home possibly distinguished UDOC and DOC households. Only general demographic and test measures touched on this possibility. UDOC parents probably would permit the researcher to intrude. Third, test mothers with a stressful life-events inventory to gain further information about the stability of the caretaking environment. Only general environmental and test measures were used in the current project to include this dimension. Fourth, design any self-report instrument to protect against socially desirable responses. Ehling (1981) noted the strongly romantic view of children held by Hispanic Americans. Although social desirability is a possible confounding source of variance, the effect seem to influence both groups equally. If it had been a

greater influence, undoubtedly more variance among the environmental variables would have occurred. Finally, test parents with personality measures to determine whether differences in the psychological profiles exist. Prior research has suggested that UDOCs are a self-selected group who are distinguishable from other individuals who remain in Mexican communities. Cornelius (1977) found that UDOCs differed from the Mexican who had never migrated to the U.S. by exhibiting a greater propensity to take risks, and by being much more sensitive to the inequalities of wealth distribution within their original communities. The overwhelmingly greatest motivation for migrating is economic reasons (Cornelius, 1977; North and Houston, 1976). The current research confirmed this finding for young, UDOC families (91 percent were economically motivated in coming to the U.S.). It is possible that economic striving distinguishes UDOC families from DOC parents and could influence infant development.

The study's UDOC group represented a relatively sophisticated sample of undocumented alien parents with United States citizen infants. The sophistication of this particular UDOC group is indicated by their making use of health services including hospitalization during the birth of their infants. Past research has indicated that most UDOC households generally avoid such contact (Conrad,

1975; North and Houston, 1976). Yet when compared with DOC infants, development of UDOC infants is less advanced despite this sophistication. It is quite possible that infants from less sophisticated UDOC households (e.g., migrant farmworkers) would test much less well.

Furthermore impaired development of UDOC infants occurred despite their gaining access to benefits most other U.S. citizen infants of UDOC parents do not enjoy. UDOC mothers in the study reside in a county which interprets the public assistance laws broadly, at least as they apply to public health care and the WICK program. These UDOC parents gained access to two programs denied to UDOC parents in other jurisdictions. However, none of the UDOC parents in the study was provided Aid to Dependent Children, and Food Stamp benefits while more than 15 percent of the DOC households receive such benefits. Both groups were financially as eligible.

Although the study has not specifically identified how UDOC parental status leads to slower development of the U.S. citizen infants, clearly something about the UDOC parental status has negatively influenced infant growth during this critical developmental period. The stress and the fear inherent in avoiding detection has possibly created conditions which has led to slower infant development (Fimbres, 1981). If so, the research of

Vaughn, et al. (1979) would suggest that high levels of stress and instability of UDOC existence interfered with maternal behavior. This interference possibly extends to the polymatric caretakers many of whom also are illegal aliens. Perhaps the developmental differences between UDOC and DOC infants can be explained by the impaired quality of caretaker interactions and eventually attachment. Future research can more conclusively substantiate this possibility. In any event, it is hoped that the findings of The Select Commission on Immigration and Refugee Policy will be acted upon, and the immigration laws will be changed to correct current inequities.

### SELECTED BIBLIOGRAPHY

- Ainsworth, M. Infancy in Uganda. Baltimore: John Hopkins University Press, 1967.
- Ainsworth, M. and Bell, S.M. Some Contemporary patterns of mother-infant interactions in the feeding situation. In A. Ambros (Ed.) Stimulation In Early Infancy. New York: Academic Press, 1969.
- Arnold, F. Providing medical services to undocumented immigrants: costs and public policy. International Migration Review, 1979, 13, 711.
- Bayley, N. Comparisons of mental and motor test scores for ages 1-15 months by sex, birth order, race, geographical location, and education of parents. Child Development, 1965, 36, 379-412.
- Bayley, N. Bayley Scales of Infant Development. New York: Psychological Corp., 1969.
- Bayley, N. Development of Mental Abilities. In Paul H. Mussen's (Ed.) Carmichael's Manual of Child Psychology, 3rd Edition, vol. 1. New York: John Wiley and Sons, Inc., 1970.
- Bowlby, J. Separation anxiety. International Journal of Psychoanalysis, 1960, 41, 89-113.
- Bowlby, J. Maternal Care and Mental Health. New York: Schocken, 1966.
- Bowlby, J. Attachment and Loss (Vol. 1, Attachment). New York: Basic Books, 1969.
- Bowlby, J. Attachment and Loss (Vol.2, Separation: Anxiety and Anger). London: Hogarth, 1973.
- Bustamonte, J. Undocumented alien migration from Mexico: research report. International Migration Review, 1977, 11, 149-177.
- Collard, R.R. Review of Bayley Scales of Infant Development. In O.K. Buros (Ed.) The Seventh Mental Measurements Yearbook. Highland Park: Gyphon Press, 1972.

- Conrad, J.R. Health care for indigent illegal aliens: whose responsibility? University of California, Davis Law Review, 1975, 8, 119.
- Cornelius, W. Illegal Mexican Migration to the United States: Recent Research Findings. Congressional Record-House, July 13, 1977, H7061-7.
- Crano, W.D. What do infant mental tests test: A cross-lagged panel analysis of selected data from the Berkeley growth study. Child Development, 1977, 48, 144-51.
- Ehling, M.B. The Mexican American (El Chicano). In Ann. L. Clark (Ed.) Culture and Childrearing. Philadelphia: F.A. Davis Company, 1981.
- Fimbres, M. Mental health and undocumented persons. Testimony before the Select Commission on Immigration and Refugee Policy, 1981.
- Fogel, M. Illegal aliens: economic aspects and public policy alternatives. San Diego Law Review, 1977, 63, 67.
- Harlow, H. Learning To Love. New York: Ballentine Books, 1971.
- Hollingshead, A.B. Two Factor Index of Social Position (Author, U.S., 1957).
- Illingsworth, R.S. The Development of the Infant and Young Child, New York: Churchill Livingstone, 1980.
- Joffe, J.M. Prenatal Determinants of Behavior. Oxford: Pergamon, 1969.
- Leiderman, P.H. and Leiderman, G.F. Affective and cognitive consequences of polymatric infant care in the East African highlands. In A.D. Pick (Ed.) Minnesota Symposium on Child Psychology, vol. 8. Minneapolis: U. of Minn. Press, 1974.
- Lewis, M. and Wilson, D. Infant development in lower-class American families. Human Development, 1972, 15, 112-127.

- Matas, L., Arend, R. and Stroufe, L.A. Continuity in adaptation: quality of attachment and later competence. Child Development, 1978, 49, 547-556.
- Matheny, A.P., Dolan, A.B., and Wilson, R.S., Bayley's infant behavior record Developmental Psychology, 1974, 10, 696-702.
- Moss, H.A., and Jones, S.J. Maternal attitudes and behavior. In Leiderman, P.H., Tulkin, S.R., and Rosenfeld, S. (Eds.) Culture and Infancy: Variations in the Human Experience, New York: Academic Press, Inc., 1977.
- Naroll, F., Naroll, R., and Howard, F.H. Position of women in childbirth. American Journal of Obstetrics and Gynecology, 1961, 82, 943-54.
- Naroll, R. Data Quality Control - A New Research Technique. New York: MacMillion Press, 1962.
- Neligan, G.A. and Prudham, D. Family factors affecting child development. Archives of Disease in Childhood, 1976, 51, 853.
- North, D.S. and Houston, N.F. The characteristics and role of illegal aliens in the U.S. labor market: an exploratory study. Report prepared for the Employment and Training Administration, U.S. Dept. of Labor. Washington, D.C., 1976
- Provence, S. and Lipton, R.C. Infants in Institutions. New York: International University Press, 1963.
- Samuda, R.J. Psychological Testing of American Minorities. New York: Dodd, Mead and Co., 1975.
- Select Commission of Immigration and Refugee Policy. Report. Washington, D.C., 1981.
- Schaffer, H.R. and Emerson, P. The development of social attachments in infancy. Monographs of the Society for Research in Child Development, 1964, 29.
- Sontag, L.W. Prenatal determinants of postnatal behavior, In H.A. Waisman and G.R. Kerr (Eds.) Fetal Growth and Development. New York: McGraw-Hill, 1970.
- Sutton-Smith, B. and Rosenberg, B. The Sibling. New York: Holt, Rinehart, and Winston, 1970.

- Rosenthal, R. Experimenter Effects in Behavioral Research. New York: Irvington Press, 1976.
- U.S. Department of Health, Education and Welfare, Children at the Crossroads. Washington, D.C., 1970.
- U.S. Senate, Committee on the Judiciary. U.S. Immigration Law and Policy: 1952-1979. Washington, D.C.
- Vaughn, B., Egeland, B., Sroufe, L.A., and Waters, E. Individual difference in infant-mother attachment at 12 and 18 months: stability and change in families under stress. Child Development, 1979, 50, 971-975.
- Wachs, T.D., Uzgirus, I.C., and Hunt, J.McV. Cognitive development in infants of different age levels and from different environmental backgrounds: an explanatory investigation. Merrill-Palmer Quarterly, 1971, 17, 283-317.
- Waters, E. The reliability and stability of individual differences in infant-mother attachment. Child Development, 1978, 49, 483-494.
- Waters, E., Wippman, J., and Sroufe, L.A. Attachment, positive effect, and competence in the peer group: two studies in construct validation. Child Development, 1979, 50, 821-829.
- White, B.L. and Watts, J.C. Experience and Environment: Major Influences on the Development of the Young Child, vol. 1. Englewood Cliffs, N.J.: Prentice-Hall Inc., 1973.
- Yang, R.K. and Bell, R.Q. Assessment of Infants. In Paul McReynold's (Ed.) Advances in Psychological Assessment, vol. 3, San Francisco: Jossey-Bass, Inc., 1975.