



Healthy Families Arizona Longitudinal Evaluation

3rd Annual Report November 2007



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Executive Summary

Introduction to the Longitudinal Evaluation

The longitudinal evaluation will provide highly significant information to inform current state efforts to prevent child abuse and neglect. In the longitudinal evaluation, 98 families were randomly assigned to the Healthy Families Arizona program and 97 families were randomly assigned to a control group that does not receive Healthy Families Arizona services. These 195 families voluntarily agreed to participate in the evaluation for a period of five years. Participation in the longitudinal evaluation for the group receiving Healthy Families Arizona will continue, regardless of whether or not they remain enrolled in Healthy Families Arizona. The longitudinal evaluation differs from the ongoing annual evaluation of Healthy Families Arizona in three significant ways:

1. The ongoing evaluation does not follow families once they leave the program and therefore cannot assess long-term change. The longitudinal evaluation focuses on children ages 0 to 5 years. This is the time that children are the most vulnerable to child abuse and neglect.
2. The ongoing evaluation does not make comparisons to a formal control group, and therefore does not allow for an assessment of what the outcome would have been in the absence of Healthy Families Arizona. The outcome study component of the longitudinal evaluation will assess changes within the families over time, and will compare across the two groups in terms of outcomes and services received.
3. The longitudinal evaluation uses a variety of measures to examine processes and outcomes that are not in the scope of the ongoing evaluation: e.g., mental health, domestic violence, discipline, parent-child attachment, and child behavior and cognitive development. The longitudinal evaluation will assess school readiness as the children approach age five. The purpose of these additional measures is to assess a full-range of risk and protective factors and potential program outcomes that are not considered in the ongoing evaluation.



Arizona has long been recognized as a leader in the Healthy Families model of home visitation; therefore, the outcome of this evaluation has national as well as state and local significance.

Update on the Status of the Longitudinal Evaluation

Efforts for the longitudinal evaluation in the past calendar year have focused on participant retention and data collection. As of December 2006, a final sample of 97 families was recruited to the control group and 98 families recruited to the Healthy Families Arizona group. At the conclusion of the six-month interviews in June 2007, the retention rate was 94% in the Healthy Families group and 91% in the control group. Data collection continues with the 12-month interviews scheduled to conclude in November 2007. The 24-month interviews began in September 2007 and are scheduled to conclude in November 2008. The data collection timeline, e.g., 6-month, one-year, two-years, three-years, four-years, and five-years, follows the age of the child and not the point of recruitment.

The purpose of this report is to describe the sample of participants for the longitudinal evaluation. The sample is described through an examination of data collected at baseline, or enrollment to the study. In theory, random assignment to two or more groups creates groups that are equivalent in important ways that might impact the outcomes of interest. This allows for an assessment of the effects of the intervention, i.e., Healthy Families Arizona. This report aims to examine the statistical equivalence of two groups, the 98 Healthy Families Arizona participants and the 97 control group participants who are not receiving Healthy Families Arizona services.

Analysis of the baseline data collected at enrollment to the evaluation suggest some important similarities and differences between the two groups. The 98 mothers in the Healthy Families group are on average about two years younger than the 97 mothers in the control group. Significantly fewer of the Healthy Families Arizona mothers reported receiving prenatal care compared to the control group, and more were covered by AHCCCS, the Arizona Medicaid program, than were covered by other types of health insurance.



Overall, the control group participants appear financially better off than the Healthy Families Arizona participants, and to have greater financial potential. This is evidenced by indicators such as rates of employment, vehicle ownership, driver licenses, and monthly income. Interestingly, however, there were no significant differences in parenting attitudes at baseline. It is important to be aware of baseline differences, and to monitor changes in the equivalence between the groups that may occur through attrition. If these baseline differences between the groups remain at 6-months, 1-year, etc., despite attrition from the evaluation, then statistical methods will be used to control for them.

Ongoing Efforts

The baseline data are rich in terms of the information they provide on the participants, and this will be the focus of reporting in the next year. For instance, 35% of the Healthy Families group and 30% of the control group scored in the clinically depressed range on the Center for Epidemiologic Studies Depression Scale (CES-D), a popular instrument for depression screening. Next year's longitudinal evaluation report will examine questions including: (1) Did the participants who were screened in the clinically depressed range at baseline receive services for depression in the first year? (2) Did the depression scores change overtime, and in what direction? and (3) For those in the Healthy Families Arizona program, were those identified with depression in the longitudinal evaluation also identified with depression in the Healthy Families program and were they referred for services to address depression? The same examination will occur for domestic violence and substance abuse. The first outcome study report, scheduled for 2008, will examine the two groups through 6 and 12-month data. The six-month data is currently being analyzed. There are some outstanding interviews to complete before the 12-month data will be finalized.

In addition to examining the practice of Healthy Families Arizona, the longitudinal evaluation will also contribute to the understanding of the population served. For instance, analysis of the baseline data show that maternal depression was not related to the mother's age or household size, as suggested in the current literature on child maltreatment. Depression score was, however, significantly related to the number of prior births. The greater



the number of prior births, the more likely the mother was to score in the clinically depressed range. This pattern of relationships will be further examined. In addition, approximately 33% of mothers in the Healthy Families group reported a history of childhood abuse and neglect, and about 25% reported involvement with CPS as a parent, although they were not referred to Healthy Families by CPS. What this indicates is that among those enrolling in Healthy Families Arizona, a substantial proportion, one-third, have had CPS involvement. The relationship between history of childhood abuse and CPS involvement, engagement in the program, and parenting attitudes and practices will also be examined. This type of analysis has the potential to contribute to a better understanding of the issues facing these families and possibly to a refinement of the Healthy Families Arizona practice approach.



Introduction

The Healthy Families Arizona longitudinal evaluation is designed to:

1. Provide evidence of the program's effectiveness
2. Examine program impacts on parents and children over a five-year period to determine if any early differences between those receiving the Healthy Families Arizona program and those not receiving the program are maintained
3. Examine the elements related to success, e.g., study the variation in outcomes based on mother and child characteristics, client/worker relationship, and site characteristics
4. Examine the cost of offering the program to families over a 5-year period.

Update on Retention

The success of any longitudinal study is reliant upon successful recruitment and retention. Evaluations with high dropout rates can yield biased findings regarding the impact of program services. Retention efforts are critical to the success of this study and will continue to be important in maintaining contact with the study participants for the remainder of the study. The goal of the Healthy Families Arizona longitudinal evaluation is to retain at least 80% of participating families over the life of the study. The recruitment efforts are particularly crucial here for several reasons: the long-term commitment (e.g., seven 60-to-90 minute interviews over a period of 5 years), the sensitive nature of the questions, and the location of the interview process in the participants' homes. This population tends to have characteristics that make retention difficult. For instance, they often move, change phone numbers and jobs (see more on retention in Appendix A).

Table 1 shows the number of baseline, 6-month, and 12-month interviews completed as of October 2007.



Table 1. Data Collection Completion Summary as of October 2007

	Control Group	Experimental
Total # of families	97	98
6-month interviews complete	88	92
12-month interviews complete	86*	83*

* 12-month interviews are due to be completed in November 2007

Of the nine 6-month control group interviews not completed as of October 2007, four participants had moved with no forwarding address, four participants did not respond to multiple attempts to contact, and one participant refused further participation. The 6-month control group retention rate was 91%. Of the six 6-month interviews not completed for the Healthy Families group, one participant moved out of state due to domestic violence issues and contact was lost, four participants moved and have not responded although collateral contacts have been made, and one participant ended her involvement after severance of parental rights was granted by the court. The six-month retention rate in the Healthy Families group was 94%. The one-year attrition rate has yet to be determined, although eight of the Healthy Families group families have now moved out of state. As of August 16, 2007, 50 participants had ended their involvement with the Healthy Families program. Of those who had terminated their involvement in the program, the average time to termination was 234 days (just under 8 months), and ranged from a minimum of 74 days and a maximum of 533 days (1.5 years). Individual interviews have been conducted with those families who were considered preventable terminations (i.e., they did not terminate because they moved out of the area) and this information is being compared to that collected by Healthy Families Arizona and will be analyzed and reported in the next report.

Additional information regarding recruitment, data collection, and retention can be found in Appendix A.



Equivalence of the Two Groups

The purpose of random assignment to a control group (no services) and experimental group (Healthy Families) is to create a state of pretreatment equivalence. When participants are assigned randomly to groups, it is assumed that the two groups share similar characteristics, and that any differences between the groups that arise in the outcome study can then be attributed to the intervention (Healthy Families), and not to some pre-existing difference. Pretreatment equivalence does not mean that the families are exactly alike, but rather that they are statistically equivalent on important characteristics that may influence the outcomes of the study. Pretreatment equivalence is an assumption associated with random assignment, and once data on the two groups are collected, that assumption can be tested. Interpretation of the findings reported in Tables 2 and 3 put the assumption of pretreatment equivalence to the test and demonstrate where statistically significant differences between the two groups exist. An asterisk in the table represents a statistically significant between-group difference. Pretreatment equivalence will be tested again in the outcome study portion of the evaluation (e.g., at 6 and 12-months, etc.), as participant attrition may lead to an improvement or a decrease in equivalence between the two groups.

As can be seen by the data in Table 2, the two groups appear very similar on basic demographic characteristics related to the mother and on birth characteristics. There are two statistically significant differences reported in Table 2, mother's age; women in the Healthy Families group are on average almost two-years younger than women in the control group. Also, significantly fewer women in the Healthy Families group received prenatal care prior to the birth of the child who made them eligible for the study, whereas all of the women in the control group reportedly received prenatal care. Data on specialized hospital care at birth show high rates of such care in both groups. These data can be used outside of this evaluation effort to compare rates of specialized care from the prenatal component of Healthy Families Arizona.



Table 2. Demographic Comparison of the Two Groups at Enrollment to the Study

Enrollment Characteristics	Healthy Families (n = 98)	Control (n = 97)
Average age of mother at enrollment*	23.5 years	25.4 years
Race/ethnicity of mother		
White	18.6%	23.7%
Hispanic	64.9%	54.6%
Black	6.2%	6.2%
Other	10.3%	15.4%
Language spoken most frequently at home		
English	63.9%	74.2%
Spanish	27.8%	18.6%
Other	8.2%	7.2%
Average number of children prior to this birth	2.0	1.9
Receipt of prenatal care*		
Yes	89.7%	100%
No	10.3%	-
Average # of prenatal visits	11.5	12.8
Gender of child		
Female	40.8%	42.9%
Male	59.2%	57.1%
Specialized hospital care at birth	18.6%	17.5%
Average birth weight	7 pounds	7 pounds
Birth defect detected by physician	6.3%	2.1%
Plans to move in next 6 months	33.7%	26.9%

Note. * denotes a statistically significant group difference at the $p < .05$ level



Table 3 presents information on four characteristics related to financial well-being and financial potential. The information in Table 4 reveals four statistically significant differences between the two groups. Overall, the control group appears financially better off and to have better financial potential than the Healthy Families group as fewer participants are recipients of the state-funded Medicaid program, and more have private insurance, are employed, own a vehicle, and have a driver's license.

Table 3. Income-Related Comparison of the Two Groups at Enrollment to the Study

Enrollment Characteristics	Healthy Families (n = 98)	Control (n = 97)
Type of Health Insurance Coverage Infant*		
AHCCCS	95.7% %	84.4%
Private	2.2%	12.2%
Other	2.2%	3.2%
Mother employed*		
Yes	17.7%	40.2%
No	82.5%	59.8%
Own a vehicle*		
Yes	26.8%	53.6%
No	73.2%	46.4%
Mother has a valid driver license*		
Yes	27.8%	60.8%
No	72.2%	39.2%

Note. * denotes a statistically significant group difference at the $p < .05$ level

Although child abuse and neglect is not restricted to any particular socio-economic status, income and wealth are significantly related to factors known to affect child abuse and neglect and child well being. These factors include, for instance, parental stress, stability of the living environment, and cognitive development of the child. Attrition over the life of the study may render greater equivalence between the two groups. If attrition does not correct for

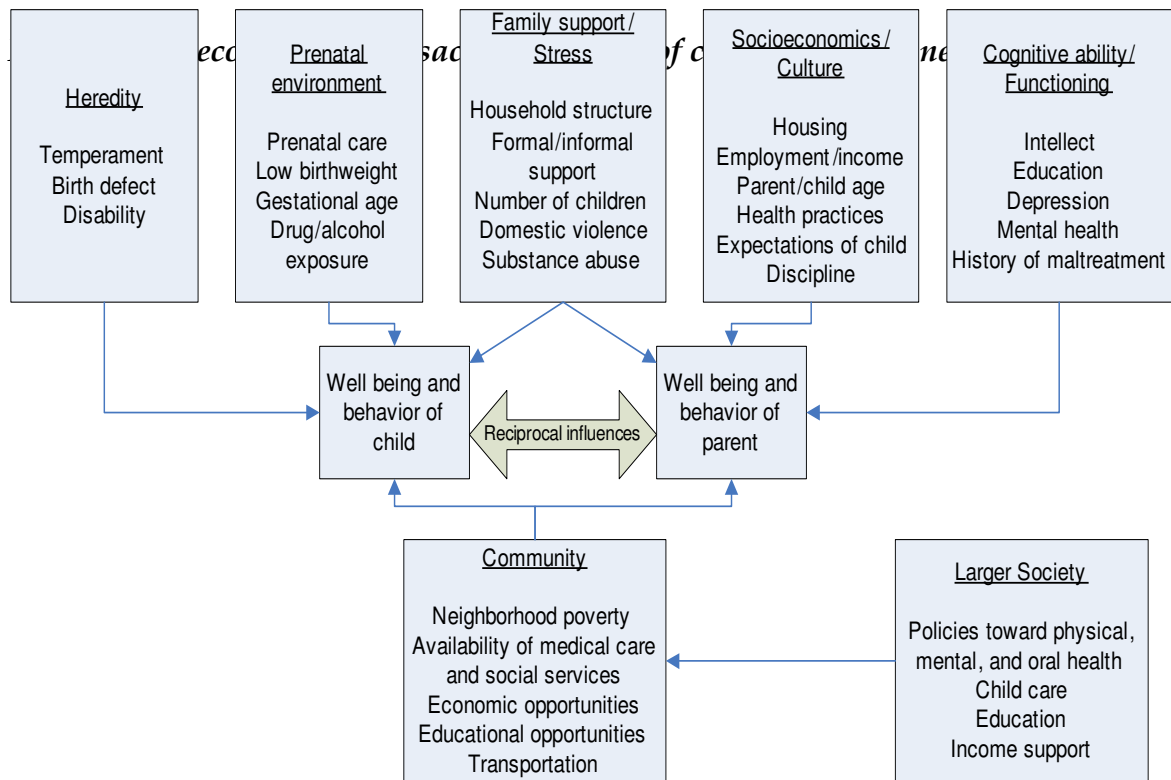


the lack of between-group equivalence, statistical procedures will be used to control for the differences. The remainder of this report describes the two groups in terms of risk and resilience factors that are related to child abuse and neglect.

Risk and Resilience Factors Related to Child Abuse and Neglect

The causes of child abuse and neglect are many and are often linked in ways that are extraordinarily complex. Most theories of child maltreatment recognize that the root causes can be organized into a framework of four principal systems: (1) the individual parent and child, (2) the family, (3) the community, and (4) the larger societal system. Within each of these systems, numerous factors can increase a child's risk for maltreatment and poor developmental outcomes, while other factors serve to protect children. Researchers studying the etiology and effects of child maltreatment have argued for a simultaneous examination of multiple individual, family and community risk and protective factors (Belsky, 1993; Brown, Cohen, Johnson, & Salzinger, 1998; Cicchetti & Lynch, 1993). Studies noting the resilience of some children who come into contact with multiple risk factors have increasingly focused on the multitude of protective factors that can reduce risks, build family capacity, and foster resilience. For instance, the presence of a supportive family environment, including those with a two-parent household, extended family support, stable and healthy relationships among family members, financial support and economic opportunities, and family expectations of pro-social behavior are protective factors and have been linked to improved child development. Figure 1 graphically illustrates factors that have been identified as important in preventing child abuse and neglect and enhancing child development.





The Prenatal Environment

The prenatal environment and the child’s genetic endowment are associated with risk and resilience for child abuse and neglect, developmental delay, behavior problems, and the need for special education in kindergarten. Research indicates that mothers who are highly stressed during pregnancy, including those who are exposed to violence, tend to have active fetuses and irritable babies. Exposure to prenatal stress and other risk factors can alter or slow a baby’s brain development, and can have long-lasting implications for later development (Better Brains for Babies, 2002). The most common prenatal risks in addition to maternal stress are infectious diseases, neurotoxins, nutrient deficiencies, and premature birth.

Although the prenatal environment is not a factor in the longitudinal evaluation, it may influence outcomes such as child maltreatment and child development. The Healthy Families Program seeks to influence the prenatal environment for subsequent pregnancies, and this is addressed in the maternal outcomes of the longitudinal evaluation. As can be seen from the



information reported in Table 4, for the majority of mothers in each group, the birth that made them eligible for the longitudinal study was not their first. Of those who had children prior to the current birth, the number of prior children ranged from 1 to 5.

Early prenatal care is considered important to a healthy pregnancy. Although the majority of mothers learned of their pregnancy in the first trimester, around 8% to 12% were not aware of the pregnancy until the second trimester or later. Prenatal alcohol and drug use were reportedly higher among the mothers in the Healthy Families group compared to the control group.

Low birth weight is often associated with premature birth which can interrupt the final stages of prenatal brain development, as well as the development of vital organ functioning such as the lungs. Low birth weight has also been shown to influence children’s educational outcomes in kindergarten (Resnick et al., 1999; Avchen, 2001). The incidence of low birth weight was low in each group. More babies in the Healthy Families group were diagnosed with a disability or birth defect at birth than in the control group.

Table 4. Prenatal and Birth Characteristics at Enrollment

Birth-related Characteristics	Healthy Families (n = 98)	Control (n = 97)
Had any child(ren) prior to current birth	56.7%	54.6%
# of prior children - mothers with children		
1	50.9%	39.6%
2	14.5%	34.0%
3	18.2%	18.9%
4	12.7%	7.5%
5	3.6%	-
Trimester 1 st learned about pregnancy		
1st - 0 to 11 weeks gestation	87.6%	91.8%
2nd - 12 to 24 weeks gestation	9.3%	8.2%
3rd - 25 to 40 weeks gestation	1.0%	-



At birth*	2.1%	-
Mother smoked during pregnancy	21.6%	20.6%
Mother used alcohol during pregnancy	13.4%	6.2%
Mother used drugs during pregnancy (excluding prescription drugs and over the counter drugs)	10.3%	3.1%
Low birth weight (less than 3 lbs 4 oz.)	3.0%	1.0%
Baby diagnosed with disability/ defect at birth	6.3%	2.1%

*These mothers did not realize they were pregnant until they went into labor.

History of Child Maltreatment

The majority of research related to risk and protective factors for child maltreatment has tended to focus on individual-level characteristics, particularly the parent, and primarily the mother. A history of childhood maltreatment is a risk factor for abusive and neglectful behaviors toward children (Belsky, 1993; Renner & Slack-Shook, 2004). One study found that the most common factor present in mothers who abuse or neglect their children was that they themselves were beaten or deprived as children (Murphy, Orkow, & Nicola, 1985).

As shown in Table 5, mothers in the Healthy Families group reported more abuse in childhood than did mothers in the control group, especially related to emotional and physical types of abuse. Additionally, more Healthy Families mothers reported involvement with Child Protective Services (CPS) as a parent, an important predictor of subsequent CPS reports of child abuse and neglect.



Table 5. Self-Reported History of Childhood Maltreatment in Mothers

Characteristics of Abuse	Healthy Families (n = 98)	Control (n = 97)
Neglected by parents or caretakers	24.7%	21.6%
Emotional abuse	33.0%	19.6%
Physical abuse	30.9%	18.6%
Sexual abuse	24.7%	21.6%
Received therapy to deal with history of abuse	25.8%	19.8%
Any involvement with CPS as a parent	24.7%	11.3%

Mothers' Mental Health

One risk factor commonly cited in the literature on child maltreatment is the mental health status of the mother, including low self-esteem, depression, social isolation, and loneliness. The physical and social isolation that sometimes follows birth, combined with hormonal changes during pregnancy and after birth, can place new mothers at increased risk for depression, anxiety, and parental stress. Approximately 13% of women experience postpartum depression, with higher rates among women of low socioeconomic status and younger age (O'Hara & Swain, 1996). Maternal depression places infants at risk for early developmental deficits because of compromised parenting. Kaplan, Bachorowski, and Zarlengo-Strouse (1999) suggests that depressed mothers offer their infants relatively poor stimulation, which leads to delays in acquiring language and other cognitive milestones. Furthermore, when depressed mothers talk to their babies, their speech lacks the pitch changes and other elements of baby-talk that serve to increase the infant's state of arousal, and the efficient and complete processing of information. Maternal depression can also have small but significant long-term effects on the child's emotional development (Beck, 1998).



Two scales from the baseline data were analyzed to describe maternal mental health: these are depression as measured by the Center for Epidemiologic Studies Depression Scale (CES-D), and perceptions of emotional support and social isolation as measured by the Emotional Social Loneliness Scale (ESLI). The CES-D is a commonly used measure of depression, with scores ranging from 0 through 60 for the 20-item version. Higher scores represent greater levels of depression, and scores greater than or equal to 16, suggest clinically-significant levels of psychological distress. The average CES-D score for the Healthy Families group was 14.6, compared to a slightly lower average score of 12.5 for the control group. The between-group differences were not statistically significant. It is important to note, however, that 35% of the Healthy Families group and 30% of the control group scored above the clinical cutoff, suggesting a clinically significant problem with maternal depression.

Scores on the Emotional Social Loneliness Scale (ESLI) range from 0 through 60, with higher scores representing greater problem levels. The average score for the Healthy Families group was 26.3, compared to an average score of 23.1 for the control group. This small but statistically significant between-group difference points to greater problem levels in the Healthy Families group compared to the control group. Overall, the baseline scores on the two scales (CES-D and ESLI) were highly correlated ($r = .54, p < .001$), suggesting that maternal depression and feelings of social isolation and loneliness go hand-in-hand. In contrast to the literature, neither the depression scores, nor the emotional social loneliness scores were correlated with maternal age. The depression score, however, was significantly correlated with number of prior births ($r = .26$), with greater numbers of prior births significantly related to greater levels of depression. However, it was not correlated with the number of children living in the home ($r = .09$). This relationship merits further exploration as the 6-month and 12-month data are analyzed.



Substance Use

Research suggests that parents who abuse drugs and alcohol are also more likely to abuse their children (National Clearinghouse on Child Abuse and Neglect, 2004; Windham et al., 2004). There are many ways in which parental substance abuse may impact the safety and health of children (Chaffin, Kelleher, & Hollenberg, 1996; Dubowitz & Black, 2002; Tanner & Turney, 2003). According to Donohue (2004), mothers who abuse substances spend less time with their children, are inconsistent with discipline, are more likely to be socially isolated, and fail to supervise their children. Substance abusing parents may be emotionally or physically unavailable to their children, increasing the risk for accidental injuries and abuse by others. Heavy drug use can interfere with the parent's ability to provide consistent and nurturing care, and can interfere with limit setting that promotes children's development and protects against behavior problems. Substance-abusing parents may also divert money for basic needs such as housing, food, and utilities away from the family to support their substance use (Munkel, 1996). Parental substance abuse may also interfere with the parent's ability to maintain employment and may increase the parent's involvement with the criminal justice system, further limiting parental ability to provide support for the family (Magura & Laudet, 1996). Finally, children living with substance abusing parents are more likely to become intoxicated or ingest harmful chemicals either deliberately or by passive inhalation or accidental ingestion, and are more likely to be exposed to criminal behavior and weapons (Munkel, 1996).

Table 6 displays information on self-reported substance use characteristics at enrollment to the study. About five percent of the Healthy Families group was involved in drug or alcohol treatment at the time of enrollment and similar proportions in each group had received drug or alcohol treatment in the past.



Table 6. Substance Use among Mothers

Substance use characteristics	Healthy Families (n = 98)	Control (n = 97)
Drink beer or alcohol	14.4%	19.6%
Smoke marijuana	2.1%	1.0%
Use tobacco	22.7%	15.5%
Currently receiving drug/alcohol treatment	5.2%	-
Ever received drug/alcohol treatment	9.4%	10.3%
Perceived need for drug/alcohol treatment	3.2%	1.0%

Note. No mothers in either group reported current drug use other than marijuana.

Parenting

The Adult-Adolescent Parenting Inventory-2 (AAPI-2) is an inventory designed to assess the parenting and child rearing attitudes of adult and adolescent parents. Based on the known parenting and child rearing behaviors of abusive parents, responses to the inventory provide an index of risk for practicing behaviors known to be attributable to child abuse and neglect. Responses to the AAPI-2 provide an index of risk in five specific parenting and child rearing behaviors:

- Inappropriate Expectations of Children (scores range from 7-35)
- Parental Lack of Empathy towards Children’s Needs (scores range from 10 to 50)
- Strong Parental Belief in Corporal Punishment (scores range from 11 to 55)
- Reversing Parent-Child Family Roles (scores range from 7 to 35)
- Oppressing Children’s Power and Independence (scores range from 5 to 25)



Higher scores on each problem area represent greater problem levels. There were no statistically significant differences between the two groups on any of the five AAPI-2 average subscale scores at baseline as shown below in Table 7. Note, however, the substantial within-group variation, as evidenced by the relatively large standard deviations (the numbers in parentheses) on the empathy, corporal punishment, and role reversal subscales.

Table 7. Average Parenting Attitude Scores at Baseline

Subscale	Healthy Families (n = 98)	Control (n = 97)
Expectations of child	23.6 (3.6)	23.5 (4.0)
Lack of empathy to child's needs	24.5 (5.6)	23.7 (5.8)
Belief in corporal punishment	27.4 (5.7)	26.0 (6.1)
Role reversal	20.9 (5.6)	19.6 (4.9)
Power and independence of child	10.0 (2.6)	9.5 (2.2)

Note. Scores are based on the AAPI-2, standard deviations are presented in parentheses. Higher scores reveal greater problem levels.

Family Factors

Several family factors are associated with an increased risk for child maltreatment. These include household size, marital factors (e.g., single parenting), family functioning (i.e., paternal involvement, disorganization, family conflict), and low income. One commonly cited family-related risk factor for child abuse and neglect is household size. Researchers have found that household size is positively associated with parents who become neglectful, and that risk for neglectful behavior increases as household size increases (Chaffin et al., 1996). In other words, as the number of people in a home increases, particularly when there are several children within the home, a child's risk for becoming a victim of abuse or neglect also increases (Chaffin et al., 1996; Jones & McCurdy, 1992; Polansky et al., 1985; Sun-Pyng et al., 2001). For instance, Sedlak and Broadhurst (1996) found that the number of persons in the home increased the rate of neglect by 2.25 times with four or



more children in the home, and children with families with four or more children also experienced physical neglect at three times the rate of single-child families. Table 8 presents the distribution of the number of children living in the household for each group in the longitudinal study. Although the average number of children living in the home are two in each group, the Healthy Families group has seven families with five or more children, whereas the control group has only one such family.

Table 8. Distribution of Children Living in the Household

Number of Children	Healthy Families (n = 98)	Control (n = 97)
1	45.4%	45.4%
2	26.8%	22.7%
3	10.3%	17.5%
4	10.3%	13.4%
5	6.2%	1.0%
6	1.0%	-

Another common risk factor reported in the literature on child maltreatment is the impact of single parenthood (Chaffin et al., 1996; Cicchetti, 2004). Researchers suggest that maltreated children often reside in homes characterized by single parenting, oftentimes a single mother, where stress may overwhelm the parent. Windham, Rosenberg, Fuddy, McFarlane, Sia, and Duggan (2004) found that mothers with no partners were nearly five times more likely to report child abuse, and almost twice as likely to report emotional abuse, compared to mothers in non-violent partner relationships. Some recent studies have found that families with two-married parents encounter more stable home environments, fewer years in poverty, and diminished material hardship (Lerman, 2002) than other family structures.



Twelve of the Healthy Families mothers reported living with a spouse at baseline, compared to 17 of the control group mothers. Additionally, 31 Healthy Families mothers reported the presence of an unmarried partner in the home, compared to 34 of the control group mothers. Overall, 43 of the Healthy families mothers had a spouse or partner living in the household at baseline, compared to 51 of the control group mothers.

Father Involvement

Research has also identified the impact that parental absence, primarily the absence of a biological father, has on a child's risk for maltreatment (Dubowitz et al., 2001). The challenges of father involvement are further increased when the parents are not living together. Table 9 reports aspects of father involvement in each group. As can be seen from the table, father involvement was greater in the control group than in the Healthy Families group on all three indicators, presence at birth, living arrangements, and contact.

Table 9. Father Involvement at Enrollment to the Study

Characteristics of Father Involvement	Healthy Families (n = 98)	Control (n = 97)
Father was present at baby's birth		
Yes	56.7%	68.0%
No	43.3%	32.0%
Father lives with mother		
Yes	44.3%	50.5%
No	55.7%	49.5%
Nonresident father has contact with baby		
Yes	53.6%	66.0%
No	46.4%	34.0%



Family Violence

Conflict between parents is also associated with risk for child maltreatment (Brown et al., 1998). Over the past few decades there has been a growing awareness of the co-occurrence of domestic violence and child maltreatment (Appel & Holden, 1998). Research suggests that in 30% to 60% of families where either domestic violence or child maltreatment is identified, it is likely that both forms of abuse exist (Appel & Holden, 1998). In a national survey of over 6,000 American families, 50% of men who frequently assaulted their wives also abused their children (Edelson, 1999). An estimated 3.3 to 10 million children a year are at risk for witnessing or being exposed to domestic violence. The impact of domestic violence exposure can produce a range of emotional, psychological, and behavioral problems, not to mention the risk of direct harm (Carlson, 2000).

Table 10 presents 15 indicators of violence, arranged from least to most severe. Each indicator is examined in terms of who perpetrated the event, the mother or the partner. The frequency of the event was surveyed in the baseline interview schedule, but those data are not presented. As seen by the information in Table 10, verbal acts of violence were common among the partners in each group, with about three-quarters of mothers and their partners engaging in such acts. More severe forms of violence were less common; however, both mothers and fathers report engaging in these acts including destroying property, threatening behavior, pushing and shoving, and slapping. Very few participants or their partners engaged in violence involving weapons.



Table 10. Indicators of Mother and Partner Violence at Baseline

Indicators of family violence present in past 12 months	Healthy Families (n = 95)	Control (n = 95)
Cursing or swearing at other		
Partner to mother	69.5%	65.3%
Mother to partner	73.4%	68.4%
Yelling or shouting at other		
Partner to mother	77.9%	75.8%
Mother to partner	84.0%	76.8%
Stomping off during a disagreement		
Partner to mother	64.2%	61.1%
Mother to partner	50.0%	53.7%
Said something to hurt other		
Partner to mother	68.1%	61.1%
Mother to partner	59.1%	61.1%
Called other fat, ugly, or unattractive		
Partner to mother	24.2%	23.2%
Mother to partner	20.2%	15.8%
Deliberately destroyed belonging of other		
Partner to mother	26.3%	24.2%
Mother to partner	13.8%	11.6%
Threatened to hit or throw something at		
Partner to mother	20.0%	17.9%
Mother to partner	19.1%	18.9%
Pushed or shoved other		
Partner to mother	28.4%	20.0%
Mother to partner	24.5%	13.7%



Indicators of family violence present in past 12 months	Healthy Families (n = 95)	Control (n = 95)
Slapped other		
Partner to mother	12.6%	9.5%
Mother to partner	25.5%	9.5%
Forced sex on other		
Partner to mother	7.4%	4.2%
Mother to partner	-	-
Threw or tried to throw other		
Partner to mother	11.6%	8.4%
Mother to partner	4.3%	1.1%
Threw an object at other		
Partner to mother	8.4%	12.6%
Mother to partner	18.1%	15.8%
Chocked, kicked or punched other		
Partner to mother	11.6%	7.4%
Mother to partner	10.6%	4.2%
Threatened other with a knife or gun		
Partner to mother	3.2%	3.2%
Mother to partner	3.2%	-
Used a knife or gun on other		
Partner to mother	-	-
Mother to partner	2.1%	-

Note. The truthfulness of the responses may be dependent on whether or not the partner was in the room during the interview, so these rates could actually be higher.



Poverty and Human Capital

Low socioeconomic status has been identified as a major contributing factor for child maltreatment, particularly neglect (Baumrind, 1994; Brown et al., 1998; Chaffin et al., 1996; Cicchetti, 2004; Dubowitz & Black, 2002; Erickson & Egeland, 2002; Garbarino & Collins, 1999; Garbarino & Kostelny, 1992; Gaudin, 1999; Korbin et al., 1998; Sedlak & Broadhurst, 1996). Low socioeconomic status is related to a wide range of factors including unemployment, limited education, social isolation, large number of children, and childbirth to unmarried adolescents (Crittenden, 1999). It is important to note, however, that child maltreatment also occurs in affluent families and that only some families living in poverty neglect and abuse their children. Nevertheless, a wealth of research has found that poverty is a strong predictor of substantiated maltreatment, and thus the socioeconomic status of families cannot be overlooked. Regalado, Harvinder, Inkelas, Wissow, and Halfon (2004) found that low-income parents tended to endorse harsher discipline, held stronger beliefs about the value of spanking, and experienced higher levels of stress.

Poverty may also impact a family's ability to receive consistent and preventive medical care. Regular medical visits are not only important to preventing major childhood diseases, but problems like ear infections and hearing and vision problems can create irreversible effects if not treated early. Furthermore, unhealthy children have a greater risk for child maltreatment as their temperament is often affected by how well they feel. A sick infant may be more likely to cry, creating a situation whereby a parent resorts to abusive behavior out of frustration at not being able to quiet the child.

Table 11 shows that more mothers in the Healthy Families group than the control group reported difficulty buying food in a typical month, as well as paying for the cost of shelter. For those reporting any income, 60 in the Healthy Families group and 75 in the control group, the typical monthly amount received was, on average, about \$500 lower in the Healthy Families group compared to the control group.



Table 11. Financial Hardship at Baseline

Characteristics of financial hardship in a typical month	Healthy Families (n = 98)	Control (n = 97)
Difficulty buying food		
Yes	52.6%	40.2%
No	47.4%	59.8%
Difficulty paying for utilities		
Yes	45.4%	45.4%
No	54.6%	54.6%
Difficulty paying rent/ mortgage		
Yes	44.3%	30.9%
No	55.7%	69.1%
Evicted in past 12 months		
Yes	5.2%	6.2%
No	94.8%	93.8%
Average typical monthly income from all sources (for only those reporting some income)*	\$969 (SD = \$667)	\$1,443 (SD = \$1,044)

Note. Yes indicates the mothers responded that they have a little, some, or a lot of difficulty.

Human capital, e.g., good health, higher levels of education and work experience, comprises factors that contribute toward financial stability. The benefits of maternal employment extend the financial domain and are associated with less parental frustration. Parents with low intellect and low education have also been found to pose a greater risk for child maltreatment than parents with higher intellect and education levels (Dubowitz & Black, 2002). Although this study has no direct measure of maternal intellect, diagnosed disability and participation in special education are presented as proxies. Table 12 reports information on factors related to human capital, i.e., health, employment, and education.



Table 12. Human Capital Comparison at Baseline

Human capital factors	Healthy Families (n = 98)	Control (n = 97)
Mother has health insurance		
Yes	80.4%	86.6%
No	19.6%	13.4%
Mother is employed	17.5%	40.2%
Education of mother		
Junior high or lower	11.3%	4.1%
Some high school	32.0%	32.0%
High School Diploma or GED	33.0%	30.9%
Some college	21.6%	19.6%
Associates degree or higher	2.1%	9.2%
Other	-	4.1%
Mother has diagnosed disability	14.4%	7.2%
Mother has attended special education	11.7%	8.5%
Perception of own health - mother		
Excellent or very good	41.2%	53.6%
Good	43.3%	39.2%
Fair	13.4%	7.2%
Poor	2.1%	-



Community Factors

Community and environmental factors play an important role in creating conditions that can contribute to childhood abuse and neglect. The literature on child maltreatment suggests that environmental stressors including neighborhood poverty and reduced social support negatively affect families (Gillham et al., 1998). Drake and Pandey (1996) found that concentrated neighborhood poverty, often coupled with unemployment and limited economic opportunity, is a risk factor for children and that it is associated with all types of child maltreatment. Specifically, Drake and Pandey (1996) found that higher poverty areas are associated with higher incidence of substantiated cases of neglect as compared to low poverty areas. Drake and Pandey (1996) also revealed that children born to mothers living in high poverty areas who were seventeen or younger were 17 times more likely to have a substantiated case of neglect than children born to mothers living in low poverty areas who were 22 years or older. This research suggests that poverty creates excessive stress on families and develops a climate conducive for child abuse and neglect. Furthermore, impoverished families often become involved with social service agencies for financial support and, therefore, are at a greater risk to be reported to child welfare authorities if abuse or neglect is suspected. Interestingly, Korbin et al. (1998) found that impoverishment and child care burden have less of an impact on child maltreatment rates in predominantly African-American neighborhoods than in predominantly European-American neighborhoods; rather, the perceived quality and social connectedness found in neighborhoods (e.g., how similar or dissimilar the social fabric of the community is) plays a more important role in whether families maltreat their children.

The environmental-level factors that increase a child's risk of maltreatment also create risk for poor developmental outcomes in children. Many maltreated children live in poverty and in environments where their families are socially isolated from others. The neighborhoods these children live in are often disorganized, sometimes violent, and oftentimes lack social and economic opportunities including lack of access to medical care and child care (National Clearinghouse on Child Abuse and Neglect, 2004). As a result, children living in poverty have greater vulnerability to conditions associated with disability including low birth weight and chronic illness. These



conditions can increase family stress, thus increasing risk for child maltreatment. Accordingly, social and environmental factors that may help protect children from maltreatment and developmental delays include middle-to-high socioeconomic status, access to adequate health care and social services, adequate housing, family participation in a religious faith, good schools in “healthy” communities, and supportive adults outside of the family who serve as good role models or mentors for the family (National Clearinghouse on Child Abuse and Neglect Information, 2004). Table 13 reports on participants’ perceptions of their residential communities at enrollment. There were some notable differences in perceptions between the two groups. More families in the Healthy Families group perceived their community as having fighting or gang violence, high poverty, homelessness, and fewer felt safe in their neighborhoods, compared to the control group participants.

Table 13. Perceptions of the Community at Baseline

Perceived community characteristics	Healthy Families (n = 98)	Control (n = 97)
High rates of crime	27.8%	23.7%
Drug selling	27.8%	27.8%
Graffiti	36.1%	40.2%
Fighting or gang violence	25.8%	17.5%
High poverty	24.7%	19.6%
Homelessness	36.1%	29.9%
Racially segregated	15.5%	16.5%
Feel very or somewhat safe in neighborhood	82.5%	91.8%
Member of a church	29.9%	24.7%
Attends religious services regularly	38.2%	39.3%



Conclusion

Recruitment to the longitudinal evaluation of Healthy Families Arizona began in November 2005. As of December 2007, 97 families had been recruited to the control group and 98 families to the experimental group. This report describes the sample in terms of the statistical equivalence between the control group and Healthy Families group participants on data collected at enrollment to the study (baseline data). Data collection for the outcome study continues with a few outstanding 12-month interviews to be scheduled in December 2007, and administration of the 24-month interviews which began September 2007. Over the next year, the 24-month interviews are scheduled to conclude in November 2008, and the 36-month interviews are scheduled to begin September 2008.

Reporting efforts in the next year will focus on comparing outcomes across the two-groups and over time at 6 and 12-months. Examples of outcomes reported on will include parenting knowledge and attitudes, parent/child attachment, relinquishment of parental care, discipline of the child, child health and medical care, and forms of child maltreatment. Specific parent outcomes will include, for example, education, employment, subsequent pregnancies and births, financial well-being, mental health, substance use, domestic violence, and living environment. The report will examine variations in outcomes according to the group (Healthy Families and control), and according to participant characteristics. For example, the analysis aims to answer whether or not participants with certain characteristics such as substance abuse and depression, have different outcomes than participants without these characteristics. Another focus of the report includes the identification of needs and resources used to match identified need within the Healthy Families Arizona program.



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Appendix A. Healthy Families Arizona Longitudinal Evaluation Recruitment, Retention, & Data Collection

Recruitment

Participating Healthy Families Arizona Sites

The evaluation team established a set of criteria to target site selection. In 2004 the Healthy Families Arizona Quality Assurance provided data on the 24 established Healthy Families Arizona sites. Based on stability of staff and number of participant openings it was decided that the best location for the study in a metro area would be Pima County. Oversight for all nine Pima County sites occurs through Child and Family Resources, Inc.

Target Participants

Five exclusion criteria related to recruitment were specified in collaboration with the administrative staff of Healthy Families Arizona in Pima County and in consultation with the Family Assessment Workers. The five exclusion criteria included:

1. Families referred to Healthy Families Arizona by CPS
2. Families who self-referred
3. Families for which the hospital social worker made a referral to Healthy Families Arizona
4. Families that were particularly crisis ridden as determined by the FAW staff in consultation with their supervisor
5. Families who enrolled in Healthy Families Arizona prenatally, except for those who enrolled in the 8th month of pregnancy or later, in which case they were not enrolled in the study until after they had the baby.

These five exclusion criteria were specified to ensure a sample representative of the most typical Healthy Families Arizona participants in Pima County. In addition, the family had to meet two standard criteria for inclusion in Healthy Families Arizona. First, the score on the Parent Survey had to be equal to or greater than 25 for either parent, and second, the child had to be no more than



3 months of age at the time of enrollment to the study. This is important with regard to the information that is collected at baseline.

Recruitment into the Study

Recruitment for the longitudinal study followed the standard Healthy Families Arizona recruitment process. Following the birth of a child at one of the referral hospitals, the Family Assessment Worker (FAW) conducted the Healthy Families Arizona 15-item screen. The FAWs work in local hospitals to screen and recruit new mothers for participation in Healthy Families Arizona. Over the course of recruitment for the longitudinal study and in addition to the standard recruitment process, the FAWs gave mothers a brochure about the longitudinal study and asked if they would be interested in participating in a randomized study referred to as the Arizona Child Development Project. If the parent was not interested they were provided with information on Healthy Families Arizona without the longitudinal study. If the family was interested in participating in the longitudinal study they were randomly assigned to one of two groups. To simplify the process of random assignment, group assignment followed days of the week. For instance, if the family was screened on Monday, Tuesday, Friday or Saturday, they were assigned to the Healthy Families group. If the family was screened on Wednesday or Thursday and agreed to participate in the study, they were assigned to the control group. The control group participants have no involvement with Healthy Families. They did, however, complete the Parent Survey to establish if they met the eligibility requirements of Healthy Families Arizona. In total, three of the mothers interviewed for the control group did not score 25-points or greater on the Parent Survey, nor did the fathers, so these families were not included in the group of 97 control families because they would not have been otherwise eligible for Healthy Families. To increase the pool of families eligible for recruitment, an extra FAW was hired by LeCroy & Milligan Associates, Inc., to screen families on Sundays at two local hospitals. The extra FAW alternated recruitment for each group, control and Healthy Families, each Sunday.

Two research assistants employed by LeCroy & Milligan Associates, Inc. received the referrals for the longitudinal study from the Family Assessment Workers (FAWs) in the Pima County Healthy Families Arizona program.



Families assigned to the experimental group were first enrolled into Healthy Families by the FAWs before the research assistants received the referral. Those families who did not enroll were not contacted by the research assistants. Families assigned to the control group were referred directly to the research assistants and they were not contacted any further by Healthy Families.

Once the research assistants received a referral for either group, they initiated contact with the mother by telephone to give her additional information about the longitudinal study (called the Arizona Child Development Project), to share the benefits of participating in the study, and to set up the first interview. At the baseline interview, a detailed consent form outlining the study was reviewed, contact information was collected, and the baseline interview schedule administered. Participants who agreed to participate in the Arizona Child Development Project were asked to sign an informed consent form outlining a description of the longitudinal study and any potential benefits and risks. The consent form also outlined the incentives for participation and the responsibility of the participant and research assistants. One copy of the signed consent was left with the participant and a second copy is kept on file at LeCroy & Milligan Associates, Inc.

Families were informed that participation in the study included free developmental screenings of their children at regularly scheduled intervals. Healthy Families parents receive developmental screening as a part of regular service. This was not duplicated by the research assistants, however, once the family terminates involvement with Healthy Families Arizona, the research assistants provide developmental screenings. Families are also provided with information on community resources if requested, and monetary incentives that increase in value on an annual basis. Participants were also advised of the time commitment of the study - a maximum of 90-minutes per interview, and a total of seven interviews over a five-year period. Parents were told that if they moved or decided not to continue with Healthy Families Arizona they could still participate in the study and receive monetary incentives as promised (i.e., if the family moves out of state their participation can continue by telephone or mail).



Recruitment for the longitudinal study began November 1, 2005. Recruitment was originally scheduled to be completed in the summer of 2006, but was delayed due to the low number of openings in the participating Healthy Families Arizona sites. Recruitment for the study was completed in December 2006, seven months longer than originally anticipated. There were several reasons for the delay, which include:

- the program began enrolling a greater number of families involved at the prenatal phase who were not eligible for participation in the study unless they were in their eighth month of pregnancy or beyond
- incomplete information on the referral that led to failure to contact
- receiving fewer referrals than anticipated from the FAWs
- periods of time when many of the Healthy Families sites were at capacity, so new families could not be enrolled
- several of the families enrolled in Healthy Families were not eligible due to the exclusion criteria.



Retention

Two efforts specific to this study are important for retention. The first is removing all possible barriers to keep in contact with participants. The second is establishing a positive relationship between the research assistants and the participants. Maintaining contact with the participants and not losing them before their next scheduled interview poses a significant challenge for the research assistants. However, the following information collected at baseline and updated at each contact has been extremely helpful in retaining participants over time. The information collected has been successfully used to reach participants when their primary information has changed and initial attempts to contact has failed:

- current contact information (address, phone, cell phone, alternative phone, email)
- partner's contact information (boyfriend, father of baby, or husband)
- any plans to move in the next 6 months and any information they have about their new address
- employment and/or school information
- contact information for two other people in case the participant cannot be reached.

To offset the long-term commitment, the project reciprocates by providing incentives for participation. The participants have been very pleased with the incentives and most comment that the time they spend with the research assistants is well worth it. These incentives include:

- Information about local resources for basic needs, child care, domestic violence, Arizona Early Intervention Program, etc. as requested
- Administration of a developmental screening tool (ASQ) at 6 months, and at each birthday until the child reaches five years of age. This tool is used to identify any potential developmental delays. A referral to a local service provider is given if a delay is found and if requested by the parent
- Monetary incentives are given at each interview¹

¹ Participants receive \$60 for Year 1 (\$20 for each interview including baseline, 6 and 12 months), \$30 for Year 2 (24 months), \$40 for Year 3 (36 months), \$50 for Year 4 (48 months),



- Monetary incentives are given if the parent provides any change of contact information between interviews¹
- Four cash drawings will be held throughout the 5 years for current participants.

Most important to establishing a positive relationship with the participants is making sure they have ongoing and frequent contact with the *same* research assistant throughout the study. To date, the two research assistants that started with the study have been able to continue interviews with the participants they recruited. Additional retention efforts that help with establishing a positive relationship include:

- Providing a self-addressed, stamped postcard for the mothers to submit if their contact information changes
- Providing a magnet and business card with contact information for the research assistants, including a 1-800 number, work phone number, cell phone number, email address, and mailing address
- Sending thank you cards following each interview
- Sending birthday cards each year for the mother and the child
- Sending reminder letters to participants about the next interview and the importance of their continued participation
- A project identity (the Arizona Child Development Project) was created for the study and promoted through the use of a project logo that can reduce concerns about the credibility of the project and help facilitate recognition of correspondence related to the project.
- Reminder phone calls before each interview
- Research assistants are available to the participants throughout the study if assistance is needed.



and \$60 for Year 5 (60 months). A \$10 incentive is provided to anyone who informs the research assistants of changes in contact information between interviews (i.e., relocation or change in telephone number).



Data Collection

The outcome portion of the longitudinal evaluation involves the collection of data separate from the ongoing data collection that occurs for Healthy Families Arizona. Maternal demographic data and risk factor data are collected on an interview schedule administered by the research assistants. The interview schedule was designed specifically for the longitudinal evaluation and asks about the mother's living arrangements, employment, education, perception of the child, relationship with the father, etc.

Data collection occurs in the home or at a place convenient to the mother and the baseline interviews averaged 71 minutes in each group. The questions vary somewhat at each data collection period, although some questions remain the same to measure change over time. The first 12-month interview occurred in September 2006. Although the original plan was for the research assistants to not know the participants' treatment assignments, this has not been possible as there are only two research assistants. The research assistants have been responsible for recruitment as well as data collection, and this has necessitated that the research assistants know the participant's group assignment so they can determine which form to use for data collection. For instance, the family support specialist administers the Ages and Stages Questionnaire (ASQ) to the Healthy Families Arizona participants, whereas the research assistants administer the ASQ to the control group participants. If and when experimental families leave the Healthy Families Arizona program, the research assistants administer the ASQ.

To ensure that the participants properly understand each item on the interview schedule, the research assistants read all items out loud and record the participants' responses on the interview schedule. Visual charts that depict the response categories for questions with ordinal level responses (e.g., strongly disagree, disagree, neutral, agree, strongly agree) are used as visual aids to assist the participant in answering the questions. Furthermore, the research assistants have never been involved in delivering or managing the Healthy Families Arizona program or any other type of home visitation program. The research assistants are young females who each have a young child, one is Hispanic and Spanish speaking, and the other Caucasian, and thus they mirror some important characteristics of the participants.



Schedule of Standardized Measures

The following table presents the standardized measures that are implemented at the different observation points in the longitudinal evaluation. The standardized measures are integrated into the overall interview schedules that have been developed for each data collection point. Note that this table is subject to revision as new measures are added. For instance, three measures that were not originally planned were included in the 24-month interview schedule in 2007.

Schedule of Standardized Measures by Child's Age in Months

Measure	Baseline	6	12	24	36	48	60
Mental Health Inventory	x	x	x	x			
Center for Epidemiologic Studies Depression Scale (CES-D)	x				x		
Parent Survey	Control only						
Being a Parent	x	x	x		x		x
Adult-Adolescent Parenting Inventory 2 (AAPI-2)	x	x	x		x		
Eyberg (child's behavior)					x	x	x
Bracken (school readiness)							x
Goals Scale	x	x	x	x			
Emotional Social Loneliness Scale (ESLI)	x	x		x			
Mobilizing Resources	x	x				x	
Safety checklist		x	x		x	x	x
HOME		x		x			
ASQ Ages and Stages developmental screen		x	x	x	x	x	x
TAS-45 Toddler Attachment Sort-45				x			
(BITSEA)-parent version Brief Infant Toddler Social and Emotional Assessment				x	x		
Revised Dyadic Adjustment Scale				x		x	



In addition to these standardized measures, the interview schedules include questions related to a number of domains such as child abuse and neglect history of the parent, prenatal care, father involvement, child's health, parent's health, medical care, housing stability, education, employment, family violence, parenting practices, finances and financial hardships, criminal involvement, transportation, subsequent births, substance use, child care arrangements, and service use. The entire longitudinal study interview schedule, consent forms, etc., are available in Spanish and English and have been approved by an Internal Review Board (IRB).

Protection - Data Security, Storage, and Confidentiality

A separate database from the ongoing Healthy Families Arizona evaluation was developed for the longitudinal evaluation. In order to preserve confidentiality, each family was assigned a unique identification number. Each interview schedule is coded with the family's ID number rather than their name to protect confidentiality. The research assistants and data entry staff enter the data and file the hard copy records. The hard copy data are stored in a locked file cabinet used exclusively for the Healthy Families Arizona longitudinal evaluation. Only the staff members involved with the longitudinal evaluation have access to the data and the list of names associated with the unique identifiers. As an additional precaution, the research assistants do not store data in their cars or briefcases. The protocol for the study was reviewed by an independent ethics review committee, ARGUS IRB, and a renewal for one-year was applied for and granted in 2007.

