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Predicting child maltreatment among Puerto Rican children from migrant and non-migrant families

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Abstract

Objective—The objectives of the present study were to 1) describe the prevalence of child maltreatment among migrant and non-migrant Puerto Rican families and 2) identify socio-demographic and cultural (i.e. acculturation pattern, familismo) predictors of maltreatment within these two samples.

Method—Representative community samples of Puerto Rican children (ages 5-13 at baseline) and their adult caretakers were interviewed at two sites: the South Bronx in New York City (n=631 families) and the Standard Metropolitan Areas of San Juan and Caguas in Puerto Rico (n=859 families). Participants were re-interviewed one and two years following the baseline assessment.

Results—While prevalence rates of maltreatment (physical abuse, 10%; sexual abuse 1 %; neglect, 10%; and multi-type, 6%) did not differ between the two sites at baseline assessment, site differences emerged over time. Rates of physical abuse at follow-up were significantly higher in the Bronx compared to Puerto Rico. Further, for families living in the Bronx, living in poverty predicted *chronic* maltreatment, whereas living above the poverty line predicted *new cases* of maltreatment at follow-up. For families living in Puerto Rico, those who experienced physical abuse or multi-type maltreatment at baseline were more likely to report chronic maltreatment at follow-up regardless of poverty level. Cultural factors were not related to baseline or follow-up maltreatment at either site.

Conclusion—Findings suggest that while rates of child maltreatment may be similar in migrant and non-migrant Puerto Rican families and when compared to prevalence rates in the US, predictors of maltreatment may differ.

Practice Implications—Since predictors of maltreatment may vary across population subgroups, studying homogenous samples will lead to more effective and targeted interventions.

Keywords

child maltreatment; Puerto Rico; migrant; culture; poverty

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Most research assessing the prevalence of child maltreatment has relied on data collected from Child Protective Services (CPS) or hospital admissions. Given that a small percentage of abuse and/or neglect incidents are reported, rates generated by this type of research are believed to represent conservative estimates of the problem (Ammerman, 1990; Everson et al., 2008). Furthermore, incidents that are investigated and substantiated by CPS typically reflect more extreme cases of abuse and may not be the first incident of abuse or neglect that the child has experienced (Sedlak & Broadhurst, 1996; Wolock, Sherman, Feldman, & Metzger, 2001). Although recent nationally representative studies have begun to document the prevalence of child maltreatment within community samples, most have relied on retrospective reports from adults (Boney-McCoy & Finkelhor, 1995; Crouch, Hanson, Saunders, Kilpatrick, & Resnick, 2000; Hussey, Chang, & Kotch, 2006).

To date, there has been only one study (i.e. Developmental Victimization Survey [DVS]) that measured the occurrence of physical abuse, sexual abuse, and neglect among a representative sample of children and adolescents (2-17 years of age) living in the US (Finkelhor, Ormrod, Turner, & Hamby, 2005) with one-year incidence estimates of 3.7% for physical abuse, 1.4% for neglect, and .06% for sexual assault by a known adult. Although some progress has been made in documenting rates of child maltreatment within the community, the samples have been predominantly Caucasian. Preliminary analyses examining possible ethnic disparities in childhood maltreatment have suggested that Hispanics may experience higher lifetime rates of sexual victimization and physical abuse compared to non-Hispanics (Finkelhor, Ormrod et al., 2005; Turner, Finkelhor, & Ormrod, 2006).

Given the dramatic changes to the Hispanic family environment created by migration to the US (e.g. diminished social supports, acculturation, and lower socio-economic status), it is possible that migration may place families at increased risk for maltreatment (Zayas, 1992). For example, numerous studies have shown that higher levels of acculturation to the US lifestyle result in adverse mental and physical health consequences for Hispanics (Escobar, 1998; Scribner, 1996) including higher rates of psychiatric disorders (Alegria, Mulvaney-Day, Torres, Polo, Cao, & Canino, 2007; Bird, Canino, Davies, Zhang, Ramirez, & Lahey, 2001; Grant, Stinson, Hasin, Dawson, Chou, & Anderson, 2004; Turner, Lloyd, & Taylor, 2006), suicidal behavior (Sorenson & Golding, 1988), and intimate partner violence (Jasinski, 1998). It has been argued that the relationship between migration/acculturation and poor outcomes is due to the protective features of the Hispanic culture being diminished (Sabogal, Marin, Otero-Sabogal, Marin & Perez-Stable, 1987). For instance, a common characteristic of Hispanic families, familismo, is reduced during the process of acculturation (Halgunseth, Ispa, & Rudy, 2006; Sabogal et al., 1987). Familismo is a compound of values and expectations that emphasizes the importance of the family over the importance of the individual and "instills a sense of family obligations among members, reverence for the elderly, and responsibility for the care of all members, especially children" (Zayas, 1992, pg. 302). Due to the high value placed on all members of the family, it is thought that reduced levels of familismo may be related to higher levels of child maltreatment (Ferrari, 2002). In fact, lower levels of familismo were found to be related to higher rates of physical punishment by fathers regardless of ethnicity (Ferrari, 2002).

Migration has also been associated with a decrease in socio-economic status (SES) which may contribute to the previously reported relationship between Hispanic ethnicity and elevated risk for child maltreatment (Garbarino & Ebata, 1983; Zayas, 1992). Measures of SES tend to be one of the strongest predictors of child maltreatment within community and clinical samples (Crouch et al., 2000; Finkelhor, Ormrod et al., 2005; Hussey et al., 2006; Turner, Finkelhor et al., 2006). More specifically, higher rates of child maltreatment have been consistently linked to single parent households (Finkelhor & Asdigian, 1996; Turner, Finkelhor et al., 2006), low parental educational attainment (Hussey et al., 2006), and poverty at the family and

neighborhood level (Coulton, Korbin, Su, & Chow, 1995; Freisthler, Merritt, & LaScala, 2006; Hussey et al., 2006; Turner, Finkelhor et al., 2006). When SES is controlled for in statistical analyses, prevalence rates of maltreatment have often been shown to be similar between Hispanic and Euro-American parents residing in the US (for a review see Finkelhor & Asdigian, 1996; Halgunseth et al., 2006; Hussey et al., 2006).

To date, research examining ethnic/cultural differences in child maltreatment has typically compared Hispanics to non-Hispanic Caucasians living in the U.S. These studies typically use broad ethnic categorizations (e.g. Hispanic) that include diverse cultures (e.g. Mexicans, Puerto Rican, Cuban) making it difficult to generalize ethnic findings to all Hispanic subgroups (Elliott & Urquiza, 2006; Korbin, 2002). Currently, there is no research documenting community rates of child maltreatment within a specific Hispanic subgroup. Further, ethnicity is often used as a proxy for cultural factors, such as migration, acculturation and familismo, which may be more directly related to maltreatment (Coohey, 2001; Elliott & Urquiza, 2006). In fact, Korbin (2002) argues that in order to better understand the relationship between ethnicity and child maltreatment, culture needs to be “unpacked” by examining these specific practices/values that may influence rates of child maltreatment. To best understand how ethnicity and culture could be related to child maltreatment research must compare the experiences of migrant and non-migrant Hispanic subgroups.

The present study draws on prospective longitudinal data from two representative community samples of Puerto Rican youth residing in the South Bronx, New York and San Juan and Caguas, Puerto Rico (Bird et al., 2006). Families of Puerto Rican heritage represent the second largest Hispanic subgroup in the U.S. (U.S. Bureau of the Census, 2004). Due to Puerto Rico’s U.S. Commonwealth status and the common cross-migration between the island and the U.S. mainland, this sample and migrant study design allows for the comparison of prevalence rates and the identification of sociodemographic and cultural predictors of child maltreatment within two community samples of migrant (South Bronx) and non-migrant (Puerto Rico) Puerto Rican families. The purpose of the present study was to 1) describe the prevalence of child maltreatment among migrant and non-migrant Puerto Rican families and 2) identify sociodemographic and cultural (i.e. acculturation pattern, familismo) factors that prospectively predict maltreatment within these two samples.

Method

Sampling design and procedures

The study background, design, and methodology have been previously reported (Bird, Canino et al., 2006; Bird, Davies, Duarte, Shen, Loeber, & Canino, 2006). Briefly, probability samples of Puerto Rican youth and their adult caretakers were recruited from two sites: the South Bronx in New York City and the Standard Metropolitan Areas [SMAs] in San Juan and Caguas, Puerto Rico. Samples were multistage probability samples of the target populations, each weighted to represent the populations of Puerto Rican children in the South Bronx and Puerto Rico. In the South Bronx, the primary sampling units (PSUs) were 150 household clusters randomly selected from those defined in the 1990 U.S. Bureau of Population (U.S. Bureau of the Census, 1990). The household clusters were subsequently adjusted to the 2000 U.S. Census (U.S. Bureau of the Census, 2000). Within each selected PSU, a complete listing of all households was carried out by project staff. Secondary sampling units were randomly selected households within the selected PSU and 15,313 housing units were selected for enumeration. In Puerto Rico, the 163 PSUs were household clusters defined in the 1990 U.S. Census from a previous island-wide study (Canino et al., 2004). A total of 5,872 housing units were selected for enumeration from these PSUs.

Out of the 21,185 households selected for enumeration, 1,853 were deemed eligible for participation. Households were deemed eligible if (1) there was at least one child 5 through 13 years of age of Puerto Rican background residing within the home for at least the previous 9 months and (2) at least one of the child's primary caretakers was identified as Puerto Rican and currently residing in the home. All eligible children within the home were selected to participate, up to a maximum of three children. In households with more than three eligible children, three were selected at random using Kish tables (Kish, 1965). Children with known mental retardation or a developmental disability were excluded. The adult to be interviewed was determined following a hierarchy of desirability. The biological mother was the preferred adult informant (89% of adult informants were biological mothers). If there was no biological mother or if the biological mother had not lived with the child for the previous nine months, then the next preferred adult informant was the biological father, followed by adoptive mother/stepmother, adoptive father/stepfather, grandmother, adult sibling, etc. Out of the 1,414 eligible participants in the South Bronx, 1,138 parent-child dyads participated (80.5% recruitment rate). Out of the 1,526 eligible participants in Puerto Rico, 1,353 parent-child dyads participated (88.7% recruitment rate).

This study was approved by the institutional review boards at the New York State Psychiatric Institute and the University of Puerto Rico Medical School. Laypersons with a minimum of a high school education were trained to conduct the interviews at the participants' homes. Eligible families were initially contacted in person at their homes by a trained interviewer. Parent-child dyads were either interviewed immediately or appointments were made for an interview at a later date. Following parental consent and child assent, parents and children were interviewed simultaneously but separately and in private by different interviewers. The interviews were administered through laptop computers in both English and Spanish. Disclosures of maltreatment by the parent or child were reported to the appropriate social service agency.

Three waves of assessments were conducted. The two follow-up assessments (Wave 2 and Wave 3) were completed approximately one year following the previous wave. For the present study, maltreatment data from the two follow-up waves were aggregated and families with at least one child meeting maltreatment criteria for either follow-up wave were considered positive for follow-up abuse and/or neglect. Retention in the three wave panel design was excellent, and has been documented elsewhere (Bird et al., 2007).

The original sample included 1138 children from the Bronx (721 families) and 1353 children from Puerto Rico (922 families). In order to address issues of interdependence due to multiple children being nested within families resulting in duplicate entries for parent level data (i.e. maternal education, household constellation, poverty level, familism, and acculturation), the unit of analysis for the present study was the family. The majority of the families ($n=1618$, 98%) had at least one child complete the maltreatment assessment at baseline. Of those families, 91% ($n=1490$) completed the maltreatment assessment for at least one follow-up wave. Retention rates were not related to site, youngest child's age, maternal education, household constellation, poverty level, or baseline maltreatment. The final sample included 631 families in the South Bronx and 859 families in Puerto Rico that completed the baseline assessment and at least one follow-up wave. On average, children were 9.4 years ($SD=3.3$) of age at baseline. Similar to the original sample (Bird, Davies et al., 2006), families in Puerto Rico were more likely to have a two-parent household ($\chi^2=43.5$, $p<.0001$) and higher maternal education ($\chi^2=123.1$, $p<.0001$). Further, based on 2001 Federal Poverty Guidelines, families in Puerto Rico were more likely to be living in poverty compared to families in the Bronx ($\chi^2=10.4$, $p=.001$).

Measures

Sociodemographic variables—Several sociodemographic variables were assessed at baseline including the youngest child's age, maternal education level (less than high school, high school diploma, more than high school), household constellation (two-parent family, single-parent family), and poverty level (above or below the poverty line). The 2001 US Federal Poverty Guidelines were used to categorize families as living above or below the poverty line (Federal Register, 2001). These guidelines are based on annual household income and the number of individuals living in the household (e.g. \$17,000 annual income for family of four). Prior research has suggested that the cost-of-living is comparable between the Bronx and San Juan, PR (Oropesa & Landale, 2000); thus, the same income cut points were used for each sample site.

Child Maltreatment—Child maltreatment was measured using the 11-item Traumatic Experiences Questionnaire (TEQ; see Appendix). Similar to prior research assessing childhood victimization (Finkelhor, Hamby, Ormrod, & Turner, 2005), children aged 10-13 self-reported child maltreatment while the primary caretaker reported maltreatment for children aged 5-9. Lifetime experiences of maltreatment were measured at baseline and maltreatment since the last assessment was measured at follow-up. Physical abuse and neglect items were derived from the child version of the Parent-Child Conflict Tactics Scale (Straus, Hamby, Finkelhor, Moore, & Runyan, 1998) and were tested among both English speaking and Spanish speaking Puerto Rican children (Goodman et al., 1998). Physical abuse was defined as having ever been hit by a caregiver with an object sometimes or many times, or ever being hit by a caregiver with a fist, kicked hard, beaten up very hard, or purposely injured at least once. Neglect was defined as having ever been left alone two or more times, or left without food, lack of necessary medical care, or caretaker could not care of the child due to substance abuse one or more times. Sexual abuse was assessed through two items derived from a sexual victimization scale for children developed by Finkelhor and Dziuba-Leatherman (1994). Sexual abuse was defined as being forced to look at or touch an adult's or older child's private parts or having them ever try to touch, grab, or kiss the child in a sexual way one or more times.

The TEQ was originally tested in a population based sample of children 9 to 17 as part of the Methods for the Epidemiology of Child and Adolescent Mental Disorders (MECA) study which included four sites, one of them being Puerto Rico (Goodman et al., 1998; Lahey, Flagg, Bird, & Schwab-Stone, 1996). In the present study the internal consistency (α -coefficient) was 0.75 for the physical abuse subscale and 0.61 for the neglect subscale. Internal consistency for the sexual abuse items were not reported due to the low prevalence of positive responses and since conceptually these items would not be expected to cluster together. More recently, the TEQ has demonstrated good validity in two samples of Puerto Rican youth. In a representative community sample of Puerto Rican youth all three subscales were associated with significantly higher prevalence rates of major depression, minor depression, and other psychiatric diagnoses compared to adolescents without any victimization (Gonzalez-Tejera et al., 2005). Further, in a clinical sample of Puerto Rican youth all three subscales were associated with higher levels of pathological dissociation (Martinez-Taboas, Canino, Wang, Garcia, & Bravo, 2006; Martinez-Taboas et al., 2004).

Due to the co-occurrence of different types of abuse and neglect (Higgins & McCabe, 2000) within children and families, a maltreatment subtype variable was created by categorizing families based on the type of abuse and/or neglect that the child/children experienced: no maltreatment, physical abuse only, sexual abuse only, neglect only, and multi-type maltreatment.

Acculturation—At baseline the caretaker completed a shortened version of the Cultural Life Style Inventory-Bidimensional Scale to assess patterns of acculturation based on three acculturation types: culturally resistant, bicultural, and culturally assimilated (Magaña, de la Rocha, Amsel, Magaña, & et al., 1996; Mendoza, 1989). Culturally resistant individuals are those that resist the acquisition of the U.S. culture and maintain Latino cultural norms, bicultural individuals integrate both U.S. and Latino cultures, and assimilated individuals adopt the U.S. culture. The inventory includes 12 items with the following rating scale: 1 (Exclusively Latino/Spanish), 2 (Mostly Latino/Spanish), 3 (Equally U.S./English and Latino/Spanish), 4 (mostly U.S./English) to 5 (Exclusively U.S./English). Bidimensional scoring based on Mendoza (1989) was used to categorize parents as resistant, bicultural, or assimilated. Scores of 1 and 2 were defined as resistant, a score of 3 was defined as bicultural, and scores of 4 and 5 were defined as assimilated. First, three mean scores were computed for each respondent based on the number of items that the respondent answered with either a resistant, bicultural, or assimilated rating. For example, the bicultural mean score was computed by counting the number of items that a respondent rated as 3 (Equally U.S./English and Latino/Spanish) and dividing that by the total number of valid responses. Second, individuals were categorized as resistant, bicultural, or assimilated based on their highest mean score among the three acculturation types. For the present analyses only differences between resistant and bicultural types were examined due to the low rates of families being classified as assimilated in both samples.

As opposed to unidimensional scoring that conceptualizes acculturation as movement from the native culture to adoption of the host culture, bidimensional scoring allows for the retention of the native culture while incorporating aspects of the new culture (e.g. biculturalism) (Magaña et al., 1996; Mendoza, 1989). Bidimensional scoring has demonstrated good reliability and validity in prior research among Hispanics. One study with Mexican-Americans showed the Cultural Lifestyle Inventory-Bidimensional scoring to have acceptable internal consistency ($\alpha=.84-.91$) and strong test-retest reliability ($r=.88-.91$) (Mendoza, 1989). Further, acculturation patterns obtained from the bidimensional scoring were correlated in the expected direction to generation level, exposure to mainstream culture, and temporary vs. permanent residence demonstrating good construct validity (Mendoza, 1989). Another study comparing the unidimensional and bidimensional scoring of the Cultural Lifestyle Inventory demonstrated that the bidimensional scoring more accurately described the acculturation pattern of Mexican-Americans when compared to the unidimensional scoring (Magaña et al., 1996). For the present study, the internal consistency of the entire scale was good ($\alpha=.88$).

Familismo—At baseline the caretaker completed a 10-item shortened version of the Familismo Scale (Sabogal et al., 1987) which was originally based on Familismo scales by Bardis (1959) and Triandis et al. (1982). The shortened version measures the extent to which parents feel obligated to provide material and emotional support to their immediate and extended family and the extent to which parents perceive that their actions/behaviors reflect positively or negatively on the entire family (Sabogal et al., 1987). All items were rated from 0 “Strongly Disagree” to 3 “Strongly Agree”. A total scale score was computed by averaging the item ratings. The Familismo Scale has demonstrated good internal consistency ($\alpha=.70$) and good convergent validity with measures of acculturation level, nativity, and generation of migration in a sample of Mexican-, Cuban-, and Central-American adults (Sabogal et al., 1987). In the present study the internal consistency of the scale was also good ($\alpha=.76$).

Statistical Analyses

SAS 9.1 (SAS Institute, Cary, N.C.) survey procedures were used to adjust for the complex design due to the multistage sampling with households nested within PSUs. All analyses were

weighted to represent the populations of Puerto Rican children in the South Bronx and the SMAs in Puerto Rico based on the age/gender distribution of the 2000 census.

First, two bivariate chi-square analyses were conducted to examine site differences (South Bronx vs. Puerto Rico) in prevalence rates of child maltreatment at baseline and follow-up. Second, to identify baseline associations between maltreatment subtype and sociodemographic/cultural variables among the two samples, separate simultaneous regression analyses (i.e. logistic regression for categorical variables, linear regression for continuous variables) were conducted for each sociodemographic/cultural variable. Further, in order to test whether relationships between sociodemographic/cultural variables differed by site, a site by maltreatment subtype interaction was included in all models. Each sociodemographic/cultural factor served as the outcome variable. The Bonferroni correction was used to adjust significance levels ($p=.05/7=.007$) due to conducting seven separate regression analyses. Third, to prospectively examine sociodemographic and cultural predictors of follow-up maltreatment, a simultaneous multiple logistic regression analysis was conducted. Any follow-up maltreatment (yes/no) served as the outcome variable while baseline maltreatment subtype, site, and all sociodemographic/cultural variables were included as predictors. Further, a control variable was included in the model to adjust for the time lag between the baseline assessment and the last assessment completed since 8% of families did not complete the third follow-up. Interactions between significant main effects and site were examined.

Due to the different reporting sources of child maltreatment based on the child's age, all analyses were run combined and separately for parent report and child report of maltreatment. Overall, parents reported higher prevalence rates of all subtypes of maltreatment compared to children aged 10+ that self-reported maltreatment ($\chi^2=27.7$, $p<.0001$). Similar to prior research comparing parent proxy report and child self-report of maltreatment (Finkelhor, Hamby et al., 2005), few differences emerged when examining the relationship between sociodemographic/cultural factors and maltreatment based on report source. Thus, analyses for the present study reflect relationships between relevant predictors and child maltreatment regardless of report source.

Results

Prevalence of child maltreatment

The association between site (South Bronx, Puerto Rico) and baseline maltreatment (no maltreatment, physical abuse only, sexual abuse only, neglect only, multi-type) was examined via chi-square analysis. Twenty-seven percent ($n=383$) of the two samples reported some form of maltreatment during their lifetime. Lifetime prevalence rates of physical abuse only (10.1% vs. 9.0%), sexual abuse only (1.0% vs. 0.5%), neglect only (10.7% vs. 9.3%), and multi-type maltreatment (6.3% vs. 6.4%) did not differ between the South Bronx and Puerto Rico sites, respectively, χ^2 ($df=4$, $N=1490$)=2.9, $p=0.57$. When data from both sites were combined, the majority of families reporting maltreatment ($n=289$, 77.2%) experienced only one type of maltreatment. The majority of families reporting multi-type maltreatment reported a combination of physical abuse and neglect ($n=81$, 86.8%). Although reports of any sexual abuse were rare ($n=26$, 6.9% of families with maltreatment), half of those who reported sexual abuse also experienced an additional subtype of maltreatment ($n=14$, 44%). Only 3% ($n=6$) of families with maltreatment reported all three subtypes of maltreatment (sexual abuse, physical abuse and neglect).

Table 1 displays the frequencies (weighted %) of follow-up maltreatment type stratified by baseline maltreatment subtype and sample site. In total, 283 (21% of the two samples) families reported maltreatment at follow-up with 60% ($n=164$) representing new cases. The majority of families with maltreated children at baseline reported no maltreatment at follow-up ($n=264$,

69%). Prevalence of physical abuse at follow-up was significantly higher in the Bronx (n=60, 9.8%) than in Puerto Rico (n=43, 5.4%); $\chi^2(4, N=1490)=14.8, p=.005$. Prevalence of sexual abuse only (1.1% vs. 0.5%), neglect only (6.1% vs. 9.4%), and multi-type (4.9% vs. 3.4%) did not differ between the South Bronx and Puerto Rico sites.

Sociodemographic/cultural predictors of child maltreatment

Table 2 presents the sociodemographic/cultural characteristics by maltreatment type and site as well as the overall model statistic for each regression model. Statistics for specific main effects and interaction effects are presented below. Overall, families reporting multi-type maltreatment and neglect only had children who were significantly younger compared to families who had experienced no maltreatment, physical abuse, and sexual abuse ($F(4, 1485)=18.1, p<.0001$). There was no significant relationship between baseline maltreatment subtype and poverty ($\chi^2(4, n=1490)=5.8, p=0.21$), maternal education ($\chi^2(4, n=1490)=5.1, p=0.28$), and household constellation ($\chi^2(4, n=1490)=8.1, p=0.09$). Further, these results were not moderated by site.

Among families residing in the Bronx, 81% scored as bicultural on the acculturation scale compared to 41% of families residing in Puerto Rico ($\chi^2(1, n=1490)=146.8, p<.0001$). Further, there was a significant relationship between parent acculturation pattern and maltreatment subtype that varied by sample site ($\chi^2(4, n=1490)=183.3, p<.0001$). Decomposition of the interaction revealed that in the Bronx sample, all of the families reporting sexual abuse only had parents that considered themselves bicultural ($\chi^2(4, n=1490)=958.2, p<.0001$). This relationship was not found in the Puerto Rico sample ($\chi^2(4, n=1490)=1.8, p=0.77$). Levels of familism did not differ between sample site ($\chi^2(1, n=1490)=1.3, p=0.24$) or among baseline maltreatment subtypes ($\chi^2(4, n=1490)=1.4, p=0.23$).

A logistic regression analysis was conducted to examine whether baseline factors predicted reports of follow-up maltreatment. The overall model was significant ($\chi^2(13, N=1490)=1062.0, p<.0001$). In both samples, families with younger children were more likely to have follow-up maltreatment compared to families with older children ($OR=0.86, 95\% CI=0.8-0.9; \chi^2(1)=13.3, p=.0003$). There was a significant sample site by poverty level by baseline maltreatment subtype interaction ($\chi^2(4)=650.6, p<.0001$) where poverty level predicted follow-up maltreatment for the Bronx sample ($\chi^2(1)=4.5, p=0.03$), but not for the Puerto Rico sample ($\chi^2(1)=0.04, p=.82$). More specifically, living above the poverty line in the Bronx predicted new cases (i.e. no maltreatment at baseline and any maltreatment at follow-up) of maltreatment compared to living below the poverty line ($OR=2.1, 95\% CI=1.3-3.3$). In contrast, living below the poverty line in the Bronx predicted chronic maltreatment for families that reported multi-type maltreatment at baseline compared to living above the poverty line ($OR=2.4, 95\% CI=1.1-5.8$).

Although there was no significant interaction between poverty and baseline maltreatment subtype for families living in Puerto Rico, there was a main effect for baseline maltreatment subtype predicting follow-up maltreatment, $\chi^2(4, N=1490)=21.5, p=.0002$. For families living in Puerto Rico, those experiencing physical abuse or multi-type maltreatment at baseline were more likely to experience maltreatment at follow-up when compared to families reporting no maltreatment ($OR=3.0, 95\% CI=1.6-5.7; OR=3.4, 95\% CI=1.7-6.8$, respectively) or neglect at baseline ($OR=2.7, 95\% CI=1.1-6.2; OR=3.0, 95\% CI=1.3-7.1$, respectively). Household constellation, mother's education, acculturation pattern, and levels of familism were not related to follow-up maltreatment in either sample.

Discussion

Using both cross-sectional and prospective data, the present study examined the prevalence of child maltreatment and its relationship to sociodemographic/cultural factors in two samples of Puerto Rican families. Lifetime prevalence of child maltreatment at baseline was similar among families in Puerto Rico and the US. While little is known about the prevalence of child maltreatment among Puerto Rican families, our rates of physical (10% vs. 14%) and sexual abuse (1% vs. 1%) were comparable to prior research using a nationally representative sample of US adolescents (Hussey et al., 2006). In contrast, the prevalence of neglect in the present study was double those rates (10% vs. 5%) found by Hussey and colleagues (2006). This difference could be due to a combination of factors including both the retrospective reporting bias and the higher threshold of frequency for meeting criteria for neglect (i.e. three episodes) in the Hussey et al. (2006) study as well as the lower SES of families in the present study. Although there is a preponderance of neglect cases within the child welfare system (U.S. Department of Health and Human Services, 2005), prevalence rates of neglect were similar to rates of physical abuse in the present study. Prior research suggests that rates of self-reported neglect tend to be low (Finkelhor, Ormrod et al., 2005; Hardt & Rutter, 2004; Hussey et al., 2006; McGee, Wolfe, Yuen, Wilson & Carnochan, 1995). To date, little research has been devoted to understanding neglect ("neglect of neglect": McSherry, 2007) and future research is warranted.

While no site differences in maltreatment prevalence existed at baseline, site differences did emerge over time. At follow-up, families in the Bronx had higher rates of physical abuse compared to families in Puerto Rico. This finding was primarily due to new reports of physical abuse at follow-up among families reporting no maltreatment at baseline. A similar pattern emerged for antisocial behavior using the same data set (Bird et al., 2007). Although rates of antisocial behavior were similar at baseline, risk of antisocial behavior decreased over time for children in Puerto Rico whereas risk did not change for children in the Bronx (Bird et al., 2007). The emergence of site differences over time could be due to the aging of the sample since rates of physical abuse tend to peak during mid-adolescence (Finkelhor, 1993; U.S. Department of Health and Human Services, 2005) and neglect tends to decrease with age (U.S. Department of Health and Human Services, 2005). Results from the present study partially support these findings where families with younger children were more likely to report neglect and multi-type maltreatment and families with older children were more likely to report physical abuse.

Similar to prior research (Hindley, Ramchandani, & Jones, 2006; Sledjeski, Dierker, Brigham, & Breslin, 2008), experiences of baseline maltreatment prospectively predicted follow-up maltreatment in both the Bronx and Puerto Rico samples. More specifically, for families residing in Puerto Rico, experiences of physical abuse only and multi-type maltreatment at baseline were associated with a greater risk of maltreatment at follow-up; however, sexual abuse only and neglect only did not predict follow-up maltreatment. Further, for families residing in the Bronx and living in poverty, multi-type maltreatment was associated with a greater risk of follow-up maltreatment. These findings suggest that some subtypes of maltreatment are more chronic and to our knowledge, this is the first study to prospectively examine maltreatment chronicity within a representative community sample. Similar to our findings, English and colleagues (2005) showed that children with CPS cases involving multiple forms of maltreatment tend to be more chronic when compared to reports of a single type of maltreatment. Notably, in the present study the majority of families (76%) did not report any follow-up maltreatment suggesting that reports at baseline were often acute incidents.

Based on prior research it was expected that children in the Bronx would be at greater risk for maltreatment due to issues surrounding migration and acculturation (Escobar, 1998; Scribner,

1996); however, beyond a general site difference in physical abuse at follow-up, cultural factors (i.e. acculturation pattern, familismo) were not directly related to rates of maltreatment. Using the same data set as the present study, Bird et al. (Bird, Davies et al., 2006) also found that acculturation level was not related to diagnoses of disruptive behavioral disorders. The lack of a relationship with cultural factors could be due to the strong identification with the Puerto Rican culture in both migrant and non-migrant populations. Although the Bronx sample was more acculturated, due to the common cross-migration between the island and the continental US (Duany, 2003) there was considerable acculturation occurring among families living in Puerto Rico where 41% of the non-migrant sample considered themselves to be bicultural. Further, very few parents considered themselves to have fully adopted the US lifestyle (i.e. assimilated) and levels of familismo were similar at both sites. Due to the high retention of Puerto Rican values in both samples, any impact of cultural factors may have been masked due to low construct variability (i.e. ceiling effect).

One risk factor for maltreatment that differed between the sample sites was poverty. Similar to prior research suggesting that migration may decrease SES (Garbarino & Ebata, 1983; Zayas, 1992), families residing in the Bronx were more likely to be living in poverty, have lower maternal education, and be less likely to have a two-parent household compared to families in Puerto Rico. Based on prior research (Crouch et al., 2000; Finkelhor, Ormrod et al., 2005; Hussey et al., 2006; Turner, Finkelhor et al., 2006), we expected poverty to be related to higher rates of child maltreatment; however, this relationship in the present study was complex. Poverty was related to maltreatment in the Bronx sample; however, this relationship varied based on the subtype of maltreatment experienced at baseline. As expected, living in poverty predicted cases of maltreatment in the Bronx, but only among families that reported maltreatment at baseline. In contrast, living above the poverty line in the Bronx predicted new cases of maltreatment. To our knowledge, only one study of US mothers found that higher SES Hispanic mothers were more likely to use verbal and/or physical punishment compared to lower SES Hispanic mothers and Anglo-American mothers (Cardona, Nicholson, & Fox, 2000). The authors speculate that this relationship could be due to high SES mothers' greater expectations for their children to succeed in the US society. While our findings suggest a similar relationship between SES and new cases of maltreatment, overall, the Bronx sample in the present study was relatively poor. Future research is needed to replicate these findings in Puerto Rican samples with more variability in income/SES.

Poverty was not associated with child maltreatment in the Puerto Rico sample. The lack of a relationship could be due to the differences in the impact of poverty between South Bronx and island Puerto Ricans. One study examining prevalence rates of psychiatric diagnoses among youth living in Puerto Rico found that while diagnoses were not associated with socioeconomic factors such as income and education, *perceptions* of poverty (e.g. feeling like you live poorly or very poorly) were related to externalizing disorders and only 22% of families with an income of \$12,000 or less felt that they lived poorly or very poorly (Canino et al., 2004). The impact of poverty may be greater in the US due to the lack of a strong extended family network that is often present in Puerto Rico. For example, despite similarities in SES of island and mainland Puerto Ricans, one study found that lower rates of externalizing disorders among island Puerto Ricans compared to mainland Puerto Ricans were largely due to stronger familial social support (Bird et al., 2001). While families residing in Puerto Rico were more likely to be living in poverty they were also more likely to have a two-parent household and higher maternal education compared to families residing in the Bronx suggesting that other factors, including greater social support, may buffer the impact of poverty on family relations.

Strengths and Limitations

The present results should be interpreted within the context of study limitations. First, our measurement of maltreatment was brief in order to reduce participant burden in this large-scale study, thus we can not rule out that measurement error contributed to our findings. A more detailed assessment of abuse and neglect may better determine the severity and chronicity of exposure (e.g. Modified Maltreatment Classification System: English & the LONGSCAN Investigators, 1997). Second, measures of child maltreatment among young children likely offer conservative estimates of prevalence. The study includes Puerto Rican families with children who were 5 through 13 years at baseline and 7 through 15 years at the third wave of follow-up. Thus, only a small fraction of the sample had reached mid-adolescence where rates of physical and sexual abuse may be highest (Finkelhor, 1993; U.S. Department of Health and Human Services, 2005). Later examination of the sample during the period of risk for abuse may provide both greater power and sensitivity to clarify the most clinically meaningful relationships of child maltreatment. Further, since parents reported child maltreatment for children aged 5-9 and parents are often the perpetrators of abuse, it could be assumed that parents would either underreport or refuse participation in the study. However, in the present study, parents tended to report more child maltreatment compared to the child self-reports and prior research has suggested that parents provide adequate and comparable information to the child self-reports (Finkelhor, Hamby et al., 2005). Third, although the sample in the South Bronx is probably typical of other urban aggregations of Puerto Rican immigrants, the findings from this study may not generalize to all children of Puerto Rican background in the United States. Similarly, we limited cultural factors to quantitative measures of migrant status, acculturation, and levels of familismo. The construct of 'culture' is quite complex and not well defined or understood (Korbin, 2002; Landale & Oropesa, 2007). Future quantitative and qualitative research is needed in order to better capture this construct. Despite these limitations, the present study is the first to describe the prevalence and predictors of child maltreatment among representative samples of migrant and non-migrant Puerto Rican families. Further, the migrant research design allowed for the evaluation of culture specific risk for maltreatment by comparing relatively homogenous Hispanic subgroups in native and adopted environments.

Clinical Implications

Our findings suggest that while rates of child maltreatment are similar in both migrant and non-migrant Puerto Rican families and when compared to general prevalence rates in the US; predictors of maltreatment may differ (e.g. poverty). Since predictors of maltreatment may vary across population subgroups, examining maltreatment among homogenous samples may lead to more targeted interventions that are more effective in reducing child maltreatment at both the family and community levels. Further, given the strong identification with Puerto Rican culture in the Bronx sample, it is imperative that prevention/intervention efforts concerning child maltreatment be culturally competent (e.g. collaboration with extended family, overcoming language barriers) in the targeting and delivery of services (Cunningham, Foster, & Henggeler, 2002; Fontes, 2005; Whitaker, Lutzker, & Shelley, 2005; Zayas, 1992).

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Table 1

Frequencies (weighted %) of follow-up maltreatment stratified by baseline maltreatment type and site

Baseline	Follow-up	South Bronx n=631	Puerto Rico n=859
No maltreatment (n=1107)	No maltreatment	376 (81.6)	567 (86.0)
	Physical abuse only	38 (8.5)	24 (3.9)
	Sexual abuse only	5 (1.1)	1(0.2)
	Neglect only	21 (4.6)	47 (8.2)
	Multi-type	19 (4.3)	9 (1.7)
	<i>Any follow-up maltreatment</i>	83 (18.4)	81 (14.0)
Physical abuse only (n=133)	No maltreatment	35 (56.4)	46 (62.6)
	Physical abuse only	14 (24.2)	11(15.9)
	Sexual abuse only	1 (1.4)	0
	Neglect only	5 (6.6)	8 (15.0)
	Multi-type	71(1.5)	6 (6.6)
	<i>Any follow-up maltreatment</i>	27 (43.6)	25 (37.4)
Sexual abuse only (n=12)	No maltreatment	5 (87.4)	4 (59.8)
	Physical abuse only	0	0
	Sexual abuse only	0	1(16.7)
	Neglect only	0	1(23.5)
	Multi-type	1(12.6)	0
	<i>Any follow-up maltreatment</i>	1 (12.6)	2 (40.2)
Neglect only (n=144)	No maltreatment	53(83.6)	64 (80.8)
	Physical abuse only	5 (6.8)	4 (4.7)
	Sexual abuse only	0	1 (3.2)
	Neglect only	6 (7.9)	7 (8.6)
	Multi-type	1 (1.6)	3 (2.8)
	<i>Any follow-up maltreatment</i>	12 (16.4)	15 (19.2)
Multi-type (n=94)	No maltreatment	25 (63.6)	32 (55.2)
	Physical abuse only	3 (7.6)	4 (9.7)
	Sexual abuse only	1 (3.1)	0
	Neglect only	8 (20.8)	8 (15.5)
	Multi-type	2 (4.9)	11 (19.6)
	<i>Any follow-up maltreatment</i>	14 (36.4)	23 (44.8)

Table 2
Relationships between baseline maltreatment, site, and sociodemographic/cultural factors.

Variable	South Bronx, n=631					Puerto Rico, n=859					Overall Model Statistic		
	None	Physical Abuse	Sexual Abuse	Neglect	Multi-type	Total	None	Physical Abuse	Sexual Abuse	Neglect		Multi-type	Total
Age	8.6 (0.1)	8.4 (0.3)	7.8 (0.8)	7.5 (0.3)	7.6 (0.3)	8.4 (0.1)	9.3 (0.1)	8.6 (0.3)	8.5 (1.0)	8.0 (0.3)	7.3 (0.3)	9.0 (0.1)	11.6*
Poverty Line													
Below	279 (61)	40 (65)	5 (87)	42 (65)	19 (48)	385 (61)	44 (68)	47 (64)	4 (60)	68 (86)	38 (70)	601 (70)	24.2*
Above	180 (39)	22 (35)	1 (13)	23 (35)	20 (52)	246 (39)	204(32)	24 (36)	2 (40)	11 (14)	17 (30)	258 (30)	
Education													
< HS	197 (45)	20 (35)	2 (40)	26 (40)	13 (33)	258 (43)	137 (22)	16 (25)	2 (35)	28 (35)	12 (19)	195 (23)	123.2*
HS diploma	199 (45)	33 (53)	4 (60)	29 (46)	19 (50)	284 (46)	279 (44)	25 (36)	0	33 (47)	20 (42)	357 (44)	
> HS	45 (10)	8 (12)	0	9 (14)	7 (17)	69 (11)	220 (34)	27 (39)	3 (65)	15 (18)	22 (38)	287 (33)	
Household													
Two Parent	235 (52)	38 (34)	3 (45)	38 (59)	26 (71)	340 (55)	471 (73)	57 (82)	4 (73)	47 (59)	40 (74)	619 (73)	57.5*
Single Parent	217 (48)	24 (36)	3 (55)	27 (41)	13 (29)	284 (44)	176 (27)	14 (18)	1 (27)	32 (41)	15 (26)	238 (27)	
Acculturation													
Resistant	93 (19)	11 (18)	0	11 (18)	10 (26)	125 (19)	382 (59)	42 (54)	3 (50)	52 (65)	32 (62)	511 (59)	1344.9*
Bicultural	360 (81)	51 (82)	6 (100)	54 (82)	28 (74)	499 (81)	266 (41)	29 (46)	3 (50)	27 (35)	23 (38)	348 (41)	
Familism	2.2 (0.1)	2.2(0.1)	2.1(0.1)	2.2 (0.1)	2.2 (0.1)	2.2 (0.1)	2.3(0.1)	2.2 (0.1)	2.4 (0.3)	2.3 (0.1)	2.1(0.1)	2.3 (0.1)	1.1

Note: Frequency (weighted %) and Wald Chi-squares for the overall model are presented for categorical variables and mean (standard error) and F values for the overall model are presented for continuous variables, Education = Mother's education

* significant at Bonferroni corrected $p<.007$

Appendix

Traumatic Experiences Questionnaire

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Maltreatment Type	Question	Rating that met criteria
Physical Abuse	1. Hit you with something like a belt, brush, a stick or some other hard object?	2 or more times
	2. Hit you with a fist or kicked you hard?	1 or more times
	3. Beat you up very hard?	1 or more times
	4. Hurt you so badly that you were cut, you had bruises on your body or you had a broken bone or something like that?	1 or more times
Sexual Abuse	1. Has an adult or another kid older than you ever tried to force you to look at or to touch their private parts?	1 or more times
	2. Has an adult or another kid older than you ever tried to touch you, grab you, or kiss you in a sexual way, or had done something sexual that made you feel afraid, bad or used?	1 or more times
Neglect	1. Left you alone, even when an adult should have been with you?	2 or more times
	2. Left you without food you needed?	1 or more times
	3. Did not take you to a doctor or hospital when you needed it?	1 or more times
	4. Been so drunk or high on drugs that they could not take care of you?	1 or more times

Note: If met criteria for one of the questions then met criteria for abuse or neglect.
Original rating scale: never (0), once (1), 2-5 times (2), more than 5 times (3)