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A Comparison Study of Psychiatric and Behavior Disorders and Cognitive Ability Among Homeless and Housed Children

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ABSTRACT: This study examined the association of homelessness and related factors with child psychiatric and behavior disorders (diagnosed with structured diagnostic interviews) and child cognitive ability (on the Kaufman Brief Intelligence Test) in a randomly selected sample of 157 homeless children and their mothers and a comparison of 61 housed children and their mothers. Homeless children had more disruptive behavior disorders and lower cognitive scores than housed children. In multivariate analyses, maternal verbal scores and child nonverbal scores were associated with child verbal ability; maternal education, homelessness, and child nonverbal scores were related to child behavior disorders.

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INTRODUCTION

Families with children are a large segment of the homeless population, accounting for nearly 40% of homeless people (The Urban Institute, 2000). Over a year, an estimated 3.5 million experience homelessness; of this number, 1.35 million are children (The National Law Center on Homeless and Poverty, 2004). Typically, families with children are comprised of "mothers with children" (Haber & Toro, 2004).

Compared to non-homeless families, homeless families have more psychiatric and behavioral problems. Homeless mothers are likely to have psychiatric disorders (mainly substance use disorders and posttraumatic stress disorders [PTSD]) (Bassuk, Buckner, Perloff, & Bassuk, 1998; Smith & North, 1994; Weinreb, Buckner, Williams, & Nicholson, 2006). Similarly, homeless children have significantly higher rates of psychiatric symptoms and disorders (predominantly anxiety and mood disorders) (Bassuk & Gallagher, 1990; Menke & Wagner, 1998), and more disruptive behavior disorders (McCaskill, Toro, & Wolfe, 1998; Schteingart, Molnar, Klein, Lowe, & Hartmann, 1995; Wolfe, Toro, & McCaskill, 1999) compared to low-income or housed children.

Few studies have compared homeless and housed children on cognitive abilities. Rescorla et al. (1991) found significantly lower vocabulary scores in homeless children (aged 6–12 years) compared to domiciled children. Two other studies identified no differences in cognitive ability between homeless and housed children (aged 6–11 years) (Rubin et al., 1996; San Agustin et al., 1999).

This study was designed to examine the relative contributions of homelessness and maternal factors to psychiatric and behavior disorders and cognitive problems among homeless children, compared to a sample of housed children. The interrelationships among these variables are complex and not fully understood. The study will provide guidance toward development of more effective specific interventions/preventions by understanding the distinct contributions of factors associated with child psychiatric and disruptive behavior disorders. Previous studies have usually not been considered behavior disorders separately from other psychiatric disorders (e.g., mood and anxiety disorders) in studies of homeless children.

METHODS

Study Participants

As part of a larger epidemiologic study sample of 202 homeless mothers with an age-matched group of housed mothers in St. Louis, Missouri (LaVesser, Smith & Bradford, 1997), a sample of 157 homeless mothers was drawn by including only those with children ages 5–16 in their custody. Only the oldest child from each family who was willing to participate was included in the analysis for the current study. An indigent, housed comparison sample of 61 age-matched (within 5 years) mothers with children was systematically selected using the homeless mother's last known home address identify the closest previously neighboring housed mother. No match could be identified from the former residential areas of 96 of the homeless mothers. Because the 61 homeless women who were matched to a housed mother did not differ in age, race, education, cognitive ability, income, or psychiatric diagnosis from the 96 homeless mothers who were not, all 157 homeless families were compared with the 61 matched housed families to provide the largest sample possible. Mothers of both groups were predominantly African–American (91%) and currently unmarried (87%). The housed women (mean age 31.2 years [SD = 5.1]) were more than two years older than the homeless women (mean age 28.9 years [SD = 5.7] (t = 2.69, df = 213, p = .008). The two groups of mothers both averaged three children each and they did not differ on years of education (approximately 11 years of education on average). The two groups of children did not differ in terms of gender, race and age.

More details of the original study's sampling methods and definition of homelessness are provided in a previous publication by this group (LaVesser et al., 1997).

Procedures

Prior to the inception of this project, the Washington University School of Medicine Internal Review Board (IRB) approved the protocol. Participating mothers and children ages 10 and older provided informed written consent. Professional interviewers, specifically trained on the instruments used in this study, first interviewed each mother and then assessed the child independently. Interviewing was conducted in the last half of 1991 for homeless mothers and children, and in the first half of 1992 for housed mothers and children. Although the interviewers were not blind to the relationship between child and mother, they were blind to diagnostic scoring of the mother and child assessments. Participating families were paid in monetary equivalents of coupons and vouchers valuing $25 in appreciation of their time and effort.

Instruments

The parent-administered version of the Diagnostic Interview Schedule for Children (DISC; Fisher et al., 1993) was utilized to establish psychiatric diagnoses in the children, including mood disorders (major depression and dysthymic disorders), anxiety disorders (simple and social phobias, and overanxious, separation anxiety, avoidant and generalized anxiety disorders), and disruptive behavior disorders (oppositional defiant, attention deficit/hyperactivity and conduct disorders). Psychiatric diagnoses of mothers were assessed with the Diagnostic Interview Schedule (DIS; Robins, Helzer, Croughan, Williams, & Spitzer, 1981).

The cognitive abilities of both mothers and children were evaluated with the Kaufman Brief Intelligence Test (K-BIT; Kaufman & Kaufman, 1990) containing two

distinct cognitive functions: verbal vocabulary such as expressive vocabulary (45 items) and definitions (37 items), and nonverbal matrices (48 items). A composite score was calculated from the verbal and nonverbal scores. Further details of items, reliability, and validity are provided elsewhere (Kaufman & Kaufman, 2001; Kaufman & Kaufman, 1990)

Statistical Analysis

Dichotomous variables were compared using chi-squared tests of significance, and Fisher's Exact tests were substituted when expected cell sizes were 5 or less. Continuous and dichotomous variables were compared using student's *t*-tests. To determine which variables were independently related to children's psychiatric disorders, disruptive behavior disorders, and cognitive abilities, respectively, all significant predictors at the bivariate level of analysis were entered into stepwise regression to construct multivariate models. Estimated regression coefficient values with a significance level of .05 or less were retained in the models. All models were constructed with Variance Inflation Factor (VIF) values for all variables <2, indicating no multicollinearity problems (Fox, 1991). SAS (SAS Institute, 2006) was used for all analyses.

RESULTS

Homelessness and Psychiatric and Behavior Disorders

One-third (33.0%) of the children met the criteria for any DISC diagnosis by mother report. The most prevalent diagnostic category was anxiety disorders, with nearly one-fourth (23.5%) of the children meeting criteria (simple phobia, 14.8%; social phobia, 7.1%; overanxious disorder, 5.4%; separation anxiety disorder, 3.3%; avoidant disorder, 1.1%; generalized anxiety disorder, 1.1%). The next most common category was disruptive behavior disorders (14.9%) including oppositional defiant (9.8%), attention deficit/hyperactivity (6.0%), and conduct (2.8%) disorders. Homeless children had about four times the prevalence of disruptive behavior disorders as housed children (homeless, 19.7% vs. housed, 5.1%, Fisher's Exact $p = .013$). Few children were diagnosed with mood disorders (4.9%) including major depression (3.8%) and dysthymic (2.2%) disorders. The homeless and housed children did not differ in prevalence of mood (homeless, 5.1% vs. housed, 4.8%) or anxiety (homeless, 26.4% vs. housed, 17.2%) disorders, or in prevalence of meeting criteria for any disorder (homeless, 37.1% vs. housed, 24.1%).

Prevalence rates of psychiatric diagnoses of homeless and housed mothers from this study's sample have been published previously (LaVesser et al., 1997). This publication described higher rates of psychiatric disorders (especially substance use disorders and PTSD) among homeless than domiciled mothers.

Homelessness and Cognitive Ability

Verbal cognitive scores as measured by the K-BIT were significantly lower among homeless than housed children (89.3 [SD = 16.7] vs. 94.3 [SD = 15.2]; $t = 2.03$, df = 215, $p = .043$). Homeless children did not differ from housed children, however, in nonverbal and composite scores. Similarly, verbal scores were lower in homeless than in housed mothers (84.1 [SD = 12.6] vs. 90.2 [SD = 12.4]; $t = 3.19$, df = 211, $p = .002$), and the same was true for composite scores (83.1 [SD = 13.9] vs. 88.8 [SD = 13.8]; $t = 2.70$, df = 211, $p = .008$). Nonverbal cognitive scores did not differ between the two groups of mothers.

Bivariate Relationships with Child Psychiatric and Behavior Disorders

Lower educational level of mothers was associated with disruptive behavior disorders in their children (mothers of children with behavior disorders had 10.8 [SD = 1.1] years of education vs. 11.5 [SD = 1.5] years for mothers of children without; $t = 2.31$, df = 171, $p = .022$). No other maternal demographic variables were associated with child psychiatric (anxiety and depressive) disorders.

The children of mothers with any Axis I diagnosis had a higher prevalence of disruptive behavior disorders than the children of mothers with no Axis I diagnosis (77.8% vs. 54.0%, $\chi^2 = 5.26$, df = 1, $p = .022$). Only one specific maternal psychiatric disorder, panic disorder, was associated with child behavior disorders (Fisher's Exact $p = .026$). No other maternal psychiatric diagnoses were associated with child psychiatric or disruptive behavior disorders.

No significant relationships were found between maternal cognitive ability and child disruptive behavior disorders.

More children with (29.6%) than without (10.3%) disruptive behavior disorders had a psychiatric disorder (either anxiety or mood) ($\chi^2 = 9.66$, df = 1, $p = .002$). Specifically, more children with (26.8%) than without (11.5%) a behavior disorder had any anxiety disorder ($\chi^2 = 5.83$, df = 1, $p = .016$). More children with (62.5%) than without (12.7%) a behavior disorder were also diagnosed with a mood disorder (Fisher's Exact $p = .002$).

Children with disruptive behavior disorders had lower nonverbal scores compared to those without (86.8 [SD = 21.0] vs. 95.2 [SD = 17.2]; $t = 2.26$, df = 178, $p = .025$). Conduct disorder was associated with lower child nonverbal (68.4 [SD = 20.8] vs. 94.6 [SD = 17.5]; $t = 3.28$, df = 176, $p = .001$) and composite scores (74.2 [SD = 21.4] vs. 92.1

[SD = 16.3]; $t = 2.41$, df = 176, $p = .017$). Oppositional defiant disorder was also associated with lower child nonverbal (81.9 [SD = 21.5] vs. 95.1 [SD = 17.2]; $t = 3.02$, df = 181, $p = .003$) and composite scores (82.9 [SD = 17.0] vs. 92.3 [SD = 16.5]; $t = 2.29$, df = 181, $p = .023$). No other child psychiatric or behavior diagnoses were associated with child cognitive scores.

Bivariate Relationships with Children's Cognitive Ability

Child verbal scores were positively associated with number of years of maternal education (Pearson $r = .17$, $p = .016$) and negatively associated with the number of children in the family (Pearson $r = -.15$, $p = .028$). Children of mothers who were married at the time of the interview had significantly higher composite cognitive scores compared to children with unmarried mothers (97.0 [SD = 19.1] vs. 90.0 [SD = 15.9]; $t = 2.07$, df = 212, $p = .040$). Child cognitive scores were unrelated to other demographic information and maternal psychiatric diagnoses and child psychiatric and disruptive behavior problems.

All maternal verbal, nonverbal, and composite cognitive subscale scores were positively associated with all cognitive scores among their children at $p < .001$, with Pearson r values ranging from .24 to .35. Child verbal and nonverbal cognitive scores were also positively related to one another (Pearson $r = .45$, $p < .001$).

Multivariate Analyses for Child Behavior Disorder and Verbal Ability

Multivariate models for predicting child psychiatric (mood/anxiety) disorders and child nonverbal and composite abilities are not provided because no significant predictors emerged in the models.

A logistic model for predicting child disruptive behavior ($\chi^2 = 19.25$, $p < .001$, C statistic = .75, $N = 172$) revealed that homelessness ($b = 1.42$, Wald $\chi^2 = 4.63$, $p = .031$), maternal education ($b = -.33$, Wald $\chi^2 = 4.12$, $p = .042$), and child psychiatric disorders ($b = 1.35$, Wald $\chi^2 = 8.17$, $p = .004$) were all independent predictors. Homeless children were 4.1 times (95% CI = 1.14–15.03) more likely, in terms of odds, to have behavior disorders compared to housed children. For each year increment in maternal education, children were 0.7 times (95% CI = .52–.99) less likely to have a behavior disorder. Children with mood or anxiety disorders were 3.9 times (95% CI = 1.53–9.73) more likely to have a behavior disorder. Maternal psychiatric disorders

and child cognitive ability were not retained in the model due to nonsignificance.

A linear model for predicting child verbal cognitive scores ($R^2 = .27$, $F(3, 208) = 26.08$, $p < .001$) showed that child nonverbal ($b = .36$, $t = 6.53, p < .001$) and maternal verbal ($b = .31, t = 3.90, p < .001$) scores independently predicted child verbal scores. Homelessness, however, was not predictive in this model. Maternal psychiatric disorders were also not found to be predictors.

DISCUSSION

More than one-third (37%) of the homeless children met criteria for a psychiatric or disruptive behavior disorder, but the combined prevalence rates were not significantly higher than among the housed comparison children (24%). Rates of psychiatric disorders in previous studies using screening tools such as the Revised Children's Manifest Anxiety Scale (Reynolds & Richmond, 1985) and the Child Depression Inventory (Kovacs, 1983) are notably higher than in our study and the study of McCaskill et al. (1998), both of which used structured diagnostic instruments. Other studies, of housed as well as homeless children, have also demonstrated higher rates of psychopathology with screening scales than with structured diagnostic instruments (Bassuk & Rubin, 1987; Menke & Wagner, 1998). Despite higher reported rates of psychopathology, studies using screening instruments have confirmed the similarities among homeless and housed children in terms of anxiety and depression (Reynolds & Richmond, 1985; Kovacs, 1983).

The examination of disruptive behavior disorders separately from psychiatric disorders (e.g., mood and anxiety) yielded differences not observed with these variables combined. Behavior disorders were four times more prevalent in the homeless children than in the housed children. Other studies have not made the distinction and have reported either no differences or only marginal differences between homeless and housed children on total scores of the CBCL (Bukowski, 1998; Menke & Wagner, 1998).

In the area of cognitive ability, testing revealed lower verbal cognitive skills among homeless compared to housed children. Nonverbal skills, however, were equivalent in the homeless and housed children. A previous study completed on 3–5 year old children (Rescorla et al., 1991) identified significantly lower Peabody Picture Vocabulary Test

scores among homeless children compared to housed children on nonverbal tasks, but no differences in vocabulary (using the Stanford-Binet [Thorndike, Hagen, & Sattler, 1986]). Brief intelligence tests like the K-BIT in this study might be a better choice for clinical and research uses than short forms of intelligence tests (especially of traditional Wechsler's scales) due to normative and statistical issues (Kaufman & Kaufman, 2001). Yet, there is no consensus regarding cognitive abilities in homeless children in the literature due to inconsistencies among studies regarding ages of children sampled, assessment choice, and control for socioeconomic status.

In multivariate models predicting child psychiatric disorders, homelessness predicted only the presence of a child disruptive behavior disorder. It suggests that solving behavioral problems among homeless children may require directing energies more broadly toward eradicating homelessness itself. In another model, maternal verbal cognitive abilities and child nonverbal cognitive abilities predicted child verbal cognitive abilities; homelessness, however, was not an independent contributor to child cognitive abilities in this model. These data suggest that the most effective means of prevention and intervention for children with cognitive problems might be through the provision of educational and skills training programs for their mothers. In general, indigent children (regardless of homeless status) may benefit from screening and resources to address their psychiatric and behavior problems and cognitive abilities. It is also useful to know that, in establishing intervention and prevention strategies for indigent children, maternal psychiatric disorders were not related to any child psychiatric and behavior disorders or cognitive abilities.

A potential limitation of this study was that the matched sample was incomplete. Fewer housed mothers were identified to serve as matched cases to the homeless mothers. This problem was mitigated at least in part by the fact that the matched homeless mothers did not differ statistically on any demographic or psychiatric variable from the homeless mothers with no match. The lack of racial and ethnic diversity in the sample (almost all African–American) as well as confinement to a single geographic area (St. Louis) may limit the generalizability of findings to other ethnic groups and other geographic locations. Because the data are now more than a decade old, more recent increases in drug abuse documented among homeless women especially are not reflected in this sample (North, Eyrich, Pollio, & Spitznagel, 2004). It is possible that homelessness itself may be a

proxy for other problems not represented in this study's analysis (e.g., personality traits or disorders, alcohol and substance use disorders, and characteristics of uneven social service delivery). Future studies should consider additional potential variables in seeking to further clarify other sources of the problems associated with homelessness.

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