Psychology
2012. Vol.3, No.2, 175-182
Published Online February 2012 in SciRes (http://www.SciRP.org/journal/psych)
http://dx.doi.org/10.4236/psych.2012.32026

The Effects of Early Neglect on Cognitive, Language, and Behavioral Functioning in Childhood

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Received October 5th, 2011; revised November 21st, 2011; accepted December 24th, 2011

Objectives: Few studies have explored the impact of different types of neglect on children's development. Measures of cognition, language, behavior, and parenting stress were used to explore differences between children experiencing various forms of neglect, as well as to compare children with and without a history of early neglect. **Methods:** Children, ages 3 to 10 years with a history of familial neglect (USN), were compared to children with a history of institutional rearing (IA) and children without a history of neglect using the Differential Abilities Scale, Test of Early Language Development, Child Behavior Checklist, and Parenting Stress Index. Factors predicting child functioning were also explored. **Results:** Compared with youth that were not neglected, children with a history of USN and IA demonstrated lower cognitive and language scores and more behavioral problems. Both internalizing and externalizing behavior problems were most common in the USN group. Externalizing behavior problems predicted parenting stress. Higher IQ could be predicted by language scores and an absence of externalizing behavior problems. When comparing the two neglect groups, shorter time spent in a stable environment, lower scores on language skills, and the presence of externalizing behavior predicted lower IQ. **Conclusion:** These findings emphasize the importance of early stable, permanent placement of children who have been in neglectful and pre-adoptive international settings. While an enriching environment may promote resilience, children who have experienced early neglect are vulnerable to cognitive, language and behavioral deficits and neurodevelopmental and behavioral evaluations are required to identify those in need of intervention.

Keywords: International Adoption; Child Neglect; Childhood Adversity

Introduction

Neglect is the most prevalent form of child maltreatment in the United States [1] and has been associated with negative social, behavioral, and cognitive consequences [2,3]. In addition to physical and emotional neglect in a home setting, neglect can take place in international institution environments where a lack of consistent caregivers, crowded conditions, and too few employees may lead to an infant or toddler not having their physical, social, and/or emotional needs met [4]. Early childhood is a vulnerable period for the acquisition and development of cognitive, language, and emotion regulation abilities, and therefore neglect in early childhood is of particular concern [5]. Normal development may be disrupted by deprivation associated with neglect and can result in dysregulation of neural systems during vulnerable periods of brain development [6-9], leading to pronounced neurocognitive deficits due to maltreatment [10-13].

Low-stimulation environments and inconsistent parenting (lack of rules, failure to monitor child, inconsistent punishment and reward) [14], common in both physical neglect environments and orphanage setting [15,16], can lead to lower scores on intelligence and language tests [17-19]. A study including 33 mother-child dyads found that children with a history of neglect scored significantly lower on measures of syntactic ability and receptive vocabulary when age and maternal IQ were controlled [18]. A 2001 study found progressive cognitive decline in children experiencing substantiated neglect in comparison to non-neglected children [19]. Children reared in institutional settings fall victim to similar risk factors; there are poor child-caregiver ratios, inadequate cognitive, sensory, and linguistic stimulation, and unresponsive care-giving practices [20]. Therefore, the children may exhibit delays in development of IQ, language, and social emotional functioning as well as impaired attachment [21-24].

The purpose of the current study was to compare cognitive, language, and behavioral functioning of children with no history of neglect to children with early neglectful situations, specifically those who experience physical and emotional neglect from a caregiver or deprivation due to pre-adoptive placement in an international institution environment. This study examined children who had the experience of international institution life and were then adopted into higher socioeconomic status (SES) households. This international adoption group was com- pared with United States born children with a history of physi-

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cal or emotional neglect. These children remained in a similar SES when placed in an extended family member's household (grandmother, great aunt) post-removal from neglectful environment. Both neglect groups (international adoption and US neglect) were also compared to a control group of United States-born children without a history of neglect.

Following previous research on the effects of neglect and child resilience [20,25], we hypothesized that the control group would have significantly better scores than either of the neglect groups on all cognitive, language, and behavioral measures. It was also hypothesized that adopted children would have lower language scores but less behavior problems and parental stress than US neglect children. In the neglect groups, we predicted that behavior problems would be associated with parental stress, and that a longer time in a non-neglectful environment would account for any differences in externalizing and internalizing symptoms between the two neglect groups.

Methods

Design

A cohort of 60 children was divided into three groups: 1) US children with a history of physical or emotional neglect as defined by the Barnett Child Maltreatment Classification Scheme (MCS) [26] (USN); 2) children adopted from international institutions (IA); and 3) US children with no history of neglect, abuse, or adoption (Control).

Participants

Participants were between the ages of three and ten years. Seventeen children met criteria for the USN group and were living with a care-giving relative, a rehabilitated offending parent, or a non-offending parent at the time of the study. Fifteen children met criteria for the IA group; one child was from a Central American foster home and the rest were from Eastern European institutions. These children were living with their adoptive families at the time of the study. Twenty-eight children had neither experienced neglect nor out-of-home placement and met criteria for the control group.

Participants with any of the following conditions were excluded from the study: 1) malnutrition as indicated by Centers for Disease Control charts [27] (weight adjusted for stature <1st percentile); 2) morbid obesity (Body Mass Index over 40); 3) birth complications (birth weight <2500 g, gestational age <37 weeks, or respiratory distress syndrome); 4) IQ below 70; 5) neurobiological disorders (Cerebral Palsy, Childhood Schizophrenia, Autism, Morbid Obesity, or Central Nervous System Disorders); 6) known in-utero substance exposure that led to a prolonged hospital stay for the infant or, 7) a serious medical condition. It is also important to note that children in current Child Protective Services (CPS) and/or foster care were excluded from the study because the state agency would not give permission to do research with this population.

Research Procedures

This study was approved by the Institutional Review Board (IRB) at the Medical University of South Carolina (MUSC) and sponsored by the National Institutes of Health and the MUSC Clinical and Translational Research Center (CTRC).

Children and their caregivers participating in the study were referred by medical or mental health practitioners or were self-referred after reviewing flyers. The caregivers signed a release of information form to obtain educational, medical (birth records, prenatal care of mother, and ongoing medical and mental health care), and adoption records. Families were interviewed to clarify details about the child's clinical and neglect history. All participants signed a release to allow access to the state's Child Protective Services (CPS) records to assure that controls had no abuse or neglect history and to obtain additional details on cases that were involved with CPS. For clarification, Child Protective Services is a government agency in many states that responds to reports of child abuse or neglect. The Department of Social Services includes CPS, as well as assistance with Medicaid, child support, public housing, foster care, adoptions, Adult Protective Services, and a supplemental nutrition assistance program. Once informed consent was obtained, children and their caregivers attended an appointment at the CTRC outpatient clinic where the child underwent a physical examination, which included vital signs, head circumference, height, weight and collection of serum, urine, and saliva. Standardized measures of language and cognitive abilities were administered to children, and caregivers completed questionnaires assessing child behavioral functioning and parental stress. Psychometric and cognitive evaluations were administered by a licensed psychologist.

Measures

All tests administered were standardized, and testing was always done with a measure appropriate for the participant's age.

Cognitive functioning. The Differential Abilities Scale for Children (DAS): Third Edition [28] is a standardized cognitive assessment for children between 2 years 6 months and 17 years 11 months [28] and is particularly useful when testing children in the late toddler and early childhood range. The DAS yields 17 cognitive and 3 achievement subtest scores and enables identification of a child's cognitive capabilities with a score for General Conceptual Ability (GCA). The GCA is derived from only those subtests which have high correlations to overall general abilities. The cluster scores yield broad measures of verbal ability, nonverbal reasoning ability, and general conceptual ability (GCA) [29]. The standard scores, ranging from 20 to 80, for each subtest are based on age with a mean of 50 and a standard deviation of 10. Percentiles may also be expressed.

Language functioning. The Test of Early Language Development: Third Edition (TELD) [30] is a standardized, norm-referenced test that was designed to measure the expressive and receptive language development of children ages 2 through 6 years 11 months. Standard scores are provided for Receptive Language, Expressive Language, and an overall Oral Language Composite. A standard score has a mean of 100 and a standard deviation of 15, and percentiles are usually listed for clarification. All participants in the international adoption group had to meet language competency skills to participate in the study.

Children above the TELD age range were given the Test of Language Development (TOLD). If the children were between the ages 7 to 9 years, they were given the TOLD-Primary. This assessment looks at nine sub-categories of oral language competency and is approved for children ages 4 to 9 years. If the children were above 9 years old, they were given the TOLD-Intermediate. This assessment examines six sub-tests and is approved for children ages 8 to 18 years old. Both the TOLD-

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Primary and the TOLD-Intermediate are used to assess the oral language proficiency of children [31].

Behavioral functioning. The Child Behavior Checklist (CBCL) [32], measures caregiver ratings of behavioral and emotional functioning of children ages 1 1/2 to 18 and includes three broad band behavior problem scales: Internalizing, Externalizing, and Total. Subscales include withdrawn, anxious/depressed, somatic complaints, attention problems and aggressive behavior. The score on each syndrome is derived from summing the numbers circled by the parent. The percentile of the national normal sample for each syndrome score is used through comparison to give a T score. Using the T score, practitioners are able rank the child's score and percentile as compared to thousands of other same gender and age children. For example, if a child was at the 69th percentile, then 69% of the children in the national normative sample scored either at or below this score. There are several cutoffs for normal range, borderline range, and clinical range to categorize behavior problems.

Parenting Stress Index (PSI-SF) [33]. The PSI Short Form is a 36-item parent self-report instrument containing three factor-analytically-derived subscales (Parental Distress, Parent-Child Dysfunctional Interaction, and Difficult Child) and a Total Stress score. Each subscale consists of 12 items that can be rated from 1 to 5 (strongly disagree to strongly agree). It is a sound, brief screening measure of parenting stress where higher scores on subscales and total scores indicate greater amounts of stress.

Child Maltreatment—Neglect. Measurements used to determine neglect and other maltreatment summary variables were obtained from archival record data including CPS, medical, mental health and institutional records. After reviewing archival data and interviewing the current guardian, investigators determined whether the child experienced neglect (physical or medical) and/or abuse (physical, sexual, or emotional). It was also noted if the child witnessed domestic violence. Out of the 32 children from the international adoption and US neglect groups combined, it was known that 8 (25%) had a previous caregiver who abused drugs, 11 (34.4%) who abused alcohol, and 13 (40.6%) who smoked in utero. In reference to the neglect and abuse findings, 18 (56.3%) children were known to have experienced physical neglect, 6 experienced medical neglect (18.8%) (with 4 being from no prenatal care), 7 (21.9%) experienced physical abuse, 1 (3.1%) experienced sexual abuse, and 3 (9.4%) experienced emotional abuse. Seven (21.9%) children witnessed domestic violence.

It is important to note that these measurements, evaluations, and parental reports were obtained after all neglected children were placed in a stable, non-neglectful environment for at least a year by adoptive parents or a relative. The IA group had an average time of 51.6 months in a stable environment, and the USN had an average time of 27.5 months. The control group participants had always been living in a stable environment. Although spending time in a stable environment prior to testing may be seen as a limitation, the time frame could have served as an adjustment period to better understand the long term pervasive and more deeply rooted cognitive, emotional and behavioral concerns.

Statistical Analysis

SAS (version 9.2, SAS Institute, Inc.) or SPSS (version 16.0.1, SPSS, Inc.) statistical programs were used for all analyses. Student's t-test or ANOVA were used to compare means of normally distributed continuous variables. Chi Square or Fisher's Exact test were used to assess group differences in categorical variables. ANCOVA (controlling for annual household income) was used to compare the three groups on measures of cognitive ability, language ability, behavioral issues, and parenting stress. Multiple Linear Regression was used to examine predictive models while simultaneously adjusting for potential confounding variables.

Results

Demographic and environmental variables are reported in **Table 1**. There were no significant differences between groups on race, age, or gender. USN group members were older at the time of placement with a relative, non-offending or rehabilitated offending caregiver, $t(30) = 2.82$, $p = .008$. These children had spent a larger proportion of time in the unstable environment than the IA group, $t(30) = 3.11$, $p = .004$. The time spent in the current home (defined as a stable environment) prior to study participation was greater for children in the IA than USN group, $t(30) = 4.13$, $p =. 010$. It is however suspected that the deprivation was more chronic and severe during the first year(s) of life for the IA group. Although it is challenging to describe and control for a stable environment (in the control group as well as the neglect groups), the term is used to describe the households who have no recent reports of child neglect or abuse and have parents or caretakers concerned enough for these children to be seen in medical or mental health clinics. No significant concerns were identified when the project study coordinator visited the home to obtain the informed consent. When

Table 1.
Demographic information.

	Control	US	IA
Gender	Male = 15; Female = 13	Male = 8; Female = 9	Male = 9; Female = 6
Race	White = 20; Black = 6; Other = 2	White = 12; Black = 2; Other = 3	White = 14; Other = 1
Age (in months)	M = 67; SD = 21.4	M = 64; SD = 26.9	M = 73; SD = 12.7
Annual household income	M = 109,019; SD = 54,995	M = 37,889; SD = 22,031	M = 120,466; SD = 68,376
Age at time of removal from neglectful environment (in months)		M = 32.1; SD = 15.5	M = 20.7; SD = 13.0
Proportion of life in neglectful environment		M = 55.8%; SD = 24.9%	M = 30.9%; SD = 19.8%
Time in current home (in months)		M = 28.8; SD = 17.3	M = 51.7; SD = 28.8

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studying people and their home environments, there are limitations to knowing the specifics of the household and to knowing their constant activity. The inability to measure a "stable environment" in any way other than home observation and medical record review could be considered a limitation of this study. The three groups differed on annual household income, F(2,57) = 10.48, $p < .0001$, with the USN group having significantly lower current income than IA ($p < .0001$) and healthy controls ($p = .008$).

As shown in **Table 2**, when controlling for annual household income using analysis of covariance, the USN, IA, and Control groups differed significantly on measures of cognitive and language functioning, behavior problems, and parenting stress. Significant group differences were explored as reported below.

Control v. USN

The control group performed significantly better than the USN group on the DAS nonverbal ($p = .05$) and GCA ($p = .008$) subscales as well as the TELD receptive ($p = .004$), expressive ($p = .006$), and Oral Composite ($p = .002$). The USN group scored significantly higher than controls on the CBCL Attention ($p < .0001$), Aggression ($p < .0001$), Anxiety and Depression ($p < .0001$), Internalizing ($p < .0001$), Externalizing ($p < .0001$), and Total Problems ($p < .0001$) subscales as well as the PSI Parent-Child Dysfunctional Interaction subscale ($p < .0001$).

Control v. IA

Children in the control group performed significantly better than children in the IA group on DAS verbal ($p = .04$) and GCA ($p = .003$) as well as TELD receptive ($p = .002$), expressive ($p < .001$) and Oral Composite ($p < .001$). The IA group exhibited significantly higher scores on the CBCL Attention ($p = .002$), Internalizing ($p = .026$), Externalizing ($p = .03$) and Total Problems ($p < .001$) subscales.

USN v. IA

The USN group scored significantly higher than the IA group on CBCL Anxiety and Depression ($p = .009$), Attention ($p = .002$), Aggression ($p = .001$), Internalizing ($p = .02$), Externalizing ($p = .01$), and Total Problems ($p = .02$) subscales.

Correlations

When USN and IA groups were combined to form one child neglect (CN) group, there were significant positive correlations between time in stable environment and scores on the DAS GCA scale (r = .468, $p = .014$) and the DAS nonverbal scale (r =.451, $p = .021$). Considering the USN group individually, there were significant positive correlations between time in stable environment and DAS GCA (r = .535, $p = .027$) and DAS nonverbal (r = .630, $p = .007$). Considering the IA group individually, a significant positive correlation was observed between time in neglectful environment and CBCL internalizing subscale (r = .542, $p = .037$).

Multiple Regression

A series of five multiple linear regression models was developed to examine the predictors of outcome on the DAS GCA, PSI Total Stress scale, CBCL Internalizing, and CBCL Externalizing scales and to compare US, IA, and control groups. Variables included in each model are listed in **Table 3**.

Model 1 revealed that 78% of the variance in scores on the DAS GCA could be accounted for by scores on the TELD Oral composite scale and CBCL Externalizing subscale. Model 2 explained that 62% of variance in PSI Total Stress scores was accounted for by scores on the CBCL externalizing subscale. Being a member of either the USN or IA groups was not pre-

Table 2.
ANCOVA comparison of US, IA, and control on cognitive, language, and behavioral functioning with means adjusted for income.

	Control	US	IA	MSE	F	P
	Least Squares Mean					
DAS Verbal	97.77	90.44	87.33	12.40	3.74	.018
DAS Nonverbal	107.16	95.96	97.62	14.56	3.46	.025
DAS GCA	104.41	92.12	89.97	12.30	10.56	<.0001
TELD Receptive	106.14	92.40	90.49	12.74	9.33	<.0001
TELD Expressive	100.13	87.64	83.71	12.01	8.96	.0001
Oral Composite	103.84	87.76	84.00	13.50	10.69	<.0001
PSI-PCDI	17.05	28.09	20.41	7.11	7.07	.0004
CBCL Anxiety Depression t-score	51.16	61.24	54.57	5.94	9.48	<.0001
CBCL Attention t-score	51.63	67.59	58.84	6.57	21.38	<.0001
CBCL Aggression t-score	51.38	70.98	55.69	10.61	9.95	<.0001
CBCL Internalizing t-score	44.49	61.83	52.21	10.09	11.63	<.0001
CBCL Externalizing t-score	44.77	65.26	53.03	11.11	12.03	<.0001
CBCL Total t-score	43.33	66.02	55.80	10.36	18.41	<.0001

Note: DAS = Differential Abilities Scale; DAS GCA = Differential Abilities Scale General Conceptual Ability; TELD = Test of Early Language Development; PSI-PCDI = Parenting Stress Index-Parent-Child Dysfunctional Interaction; CBCL = Child Behavior Checklist.

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Table 3.
Multiple linear regression models 1 - 5.

Variable	β	Standard Error	T	P
Model 1: Dependent Variable DAS GCA*				
TELD Oral Composite	.71	.08	9.00	<.0001
CBCL Internalizing Subscale	–.03	.13	–.23	.91
CBCL Externalizing Subscale	–.25	.12	–2.01	.05
USN	1.88	3.28	.57	.56
IA	1.43	3.15	.45	.65
Model 2: Dependent Variable PSI Total Stress*				
TELD Oral Composite	.28	.17	1.67	.10
CBCL Internalizing Subscale	.39	.28	1.39	.17
CBCL Externalizing Subscale	1.11	.27	4.18	.0001
USN	3.20	6.92	.46	.65
IA	–1.78	6.66	–.27	.79
Model 3: Dependent Variable CBCL Internalizing*				
DAS GCA	–.35	.19	–1.85	.07
TELD Oral Composite	.11	.18	.62	.53
USN	12.93	3.89	3.33	.0017
IA	2.22	4.27	.52	.61
Model 4: Dependent Variable CBCL Externalizing*				
DAS GCA	–.53	.19	–2.79	.0076
TELD Oral Composite	.22	.18	1.24	.22
USN	13.96	3.97	3.51	.0010
IA	.40	4.37	.09	.93
Model 5: Dependent Variable DAS GCA**				
TELD Oral Composite	.71	.13	5.18	<.0001
CBCL Internalizing Subscale	.24	.17	1.41	.17
CBCL Externalizing Subscale	–.29	.15	–2.00	.06
Time in Neglectful Environment	.12	.13	.89	.38
Time in Stable Environment	.40	.14	2.87	.009
USN	–1.55	3.69	–.42	.68

*Controls included as intercept. **IA included as intercept. Note: DAS GCA = Differential Abilities Scale Global Conceptual Ability; TELD = Test of Early Language Development; USN = US born neglect group; IA = International adoption group.

dictive of scores on the DAS GCA or PSI Total Stress scale. Model 3 showed that being in the USN group significantly predicted scores on the CBCL Internalizing subscale accounting for 41% of variance. Model 4 revealed that scores on the DAS GCA and being a member of the USN group explained 49% of the variance in externalizing behavior. Model 5 including only USN and IA groups was created to examine the predictive value of time in a stable environment on DAS GCA scores. This model explained 71% of the variance with the TELD oral composite scale and predicting scores related to time in a stable environment on the DAS GCA.

Discussion

As hypothesized, when controlling for SES, children in the control group exhibited higher levels of cognitive, language, and behavioral functioning than both neglect groups, and the IA group exhibited better behavioral adjustment than the USN group. The greatest differences in behavioral and cognitive measures were found between the USN and control groups.

As children develop, the neurocognitive deficits associated with adverse early life events can impair functioning and increase the vulnerability for social and behavioral difficulties. A cross-sectional study of 420 children indicated that those with a history of maltreatment performed more poorly in school than their non-maltreated counterparts [34]. When controlling for age, maltreated children had lower grades and more suspensions, disciplinary referrals, and grade repetitions in elementary, junior high, and senior high school [34].

Neglect is the type of maltreatment most strongly associated with delays in expressive, receptive, and overall language development [35]. Slow language development plays a role in behavioral difficulties across the life span, with approximately 70% of children with language impairments exhibiting co-morbid behavior problems [36]. Children who are unable to communicate effectively may not have the necessary skills to negotiate or resolve conflict and may have difficulties understanding and relating to others. Psychiatric disorders such as attention-deficit/hyperactivity disorder, anxiety, depression, conduct disorder, and oppositional defiant disorder are highly associated with language impairment, and a combination of these problems may lead to poor social functioning as these individuals enter adulthood [36]. Although the current sample of USN children had difficulties in all realms tested, it may be that impaired language development, as determined by the USN children's significantly lower scores on all subscales of the TELD as compared to controls, is contributing to the higher number of behavior problems in the USN group.

Children with a history of neglect are at risk for impaired language development if they are not provided the complex linguistic input and personal interactions necessary for optimal development of language skills. Studies have shown that the quality of mother-child interactions help predict cognitive and linguistic outcomes in preschool-aged children of high social risk mothers [37]. Interpersonal interaction is necessary for the acquisition of early language [38], and these interactions may be limited for children that have been in institutional settings [39] or have experienced physical or emotional neglect [18]. In addition to the hardships of neglectful environments, children adopted internationally are also at risk for deficits in language acquisition due to the challenges of learning a new language [40].

In the current study, children in the IA group were living in homes with higher annual household incomes than children in the USN group, which may have provided greater opportunities for enrichment and subsequent cognitive, language, and behavioral development. Juffer and van Ijzendoorn (2005) found similar behavioral results when comparing children adopted internationally with children adopted domestically and deduced that parents of international adoptees tend to have more financial resources to invest in the child's development, which may be a contributing factor to their having fewer behavioral prob-

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lems [41]. Consistent with the demographic information of our study sample, low income is strongly associated with child abuse and neglect [42], and children living in poverty are exposed to environmental hazards such as violence, hunger, inferior health care, and few recreational opportunities [43]. Although both IA and USN children were exposed to neglectful environments in early childhood, the placement of IA children in higher income families may have provided an environment that promoted resilience from adversity. Factors that promote resilience for children that have experienced abuse and neglect include structured school environment, involvement in extracurricular activities and the religious community, and a supportive adult providing emotionally responsive care-giving [44]. Numerous studies have examined the association between neglect and poverty as well as poverty and child outcomes [45]; however, little research has investigated the association between neglect and child outcomes as mediated by annual household income. This enrichment of cognitive and language skills that often accompanies higher SES status in turn may have helped to provide protection from behavioral problems [46]. In addition, the perceived variance in language scores between the USN group and the children in the IA and control groups may be due in part to parental language and education level.

Externalizing behavioral problems of children play a primary role in elevating stress levels for parents, particularly in conjunction with perceived inadequacy of support and/or resources [47]. The current study revealed an association between behavior problems and parenting stress, consistent with prior research [48-51]. Hung et al. (2004) [52] suggests that quantifying parental distress is an essential part of a diagnostic assessment for young children with special needs. Parent support groups and parenting education courses have proved to be useful intervention strategies for stressed parents [53]. Since there is often great diversity in the families of children with a history of neglect or international adoption, successful interventions might include components addressing parental coping styles and support in dealing with behavioral challenges. Because the current study relied on parental report at least 1 year post-placement in stable environment, it is unclear whether child behavior problems exacerbated parental stress or vice versa. Associations between IQ and behavior problems can lead to increased parental stress, or stressed parents may cause children to exhibit more behavior problems. The findings that neglected children perform more poorly on tests of cognition and have significantly elevated behavior problems reflect to the need for earlier evaluations and interventions for children with a history of neglect.

Time in a stable environment does appear to be protective as there was a positive association with measures of cognitive ability in the USN group. These findings support the recommendations of Nelson et al. (2007) that intervention as early as possible through placement in a nurturing environment yields improved outcomes such as increase in cognitive ability [20]. Our suspicions are that the periods of deprivation were longer and more chronic for those in an institution vs a neglectful home. One study has found that children with a history of neglect that do not return to biologic parents may fare best [54]. The influence of time spent in neglectful environments on behavioral and cognitive impairment, as well as a closer examination of factors that appear to be protective against neurodevelopmental and behavioral problems, should be the focus of subsequent research studies.

In the small number of studies examining deprivation due to institutionalization, internationally adopted children have demonstrated difficulties with attention, language, and aggression similar to children experiencing physical neglect [55,56]. A strength of this study is that to date, no published studies have compared neglected children from the United States who live with their relatives or foster families to children who have experienced early deprivation in an institution. Understanding the differential impact of these two kinds of deprivation and neglect may help with the development of family-based interventions for these and other populations experiencing adverse childhood events.

Despite a small sample size, there were statistically significant findings which emphasize the prevalence and severity of the issues addressed. However, all behavioral participant information obtained was by parental report (not by a blinded rater or outside observer) and therefore might reflect the view only of the parent. Some of the limitations faced included the challenge of assessing the severity and chronologic sequence of neglect, institutions differing in the quality of care, adoptive parents being more tolerant of negative behaviors, and possible incomplete historical records. We cannot exclude other types of maltreatment that play a role in the outcomes of this study, but the predominant insult for these young children was a history of physical neglect and less than optimal care. Children in current child protective services and foster care were not involved in this study, leaving out the more severe US neglect cases. Future studies would benefit from unbiased child behavioral data through reliable coders, teachers, and whenever possible, caregiver and child self-report measures.

In closing, some researchers have written of the “neglect of neglect” [45]. In the maltreatment field, there has been a tendency to focus on physical and sexual abuse leaving many clinicians and educators with poor understanding of the potential impact of neglect on a young child’s cognitive, language, and behavioral development. Neglect may be the most detrimental maltreatment type on brain development [6,57,58]. As this study indicates, environment post-neglect may serve as a buffer for some problems, and children from a neglectful environment require more intervention than placement in a non-neglectful home. Multifaceted interventions addressing cognitive, language and behavioral difficulties are needed to maximize the optimum potential in each of these children.

Acknowledgements

NIH/NIMH K23MH064111: Neurodevelopmental Biology of Neglected Children (PI: Eve G. Spratt). NIH/NIDA K24DA 00435: Midcareer Investigator Award in Patient-Oriented Research (PI: Kathleen T. Brady). NIH/NIMH K24MH71434: Midcareer Investigator Award in Patient-Oriented Research (PI: Michael D. De Bellis). Special thanks to: Medical University of South Carolina Clinical and Translational Research Center; Pam Ingram, M. Ed, Josie Kirker, MSW, Loriann Ueberroth and Mary Kral, PhD.

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