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Racial, Ethnic, and Language Disparities in Early Childhood Developmental/Behavioral Evaluations: A Narrative Review

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INTRODUCTION

The U.S. Department of Health and Human Services has proposed “Increasing the proportion of children with mental health problems who receive treatment” as one of its Healthy People 2020 Objectives.(1) With high rates (2) and increasing prevalence of childhood behavioral and developmental (DB) conditions,(3–6) promptly identifying and treating these disorders is important so that children’s functional outcomes can be maximized. In addition, since long-term treatment of childhood DB conditions is expensive, (7–9) intervention in early childhood has the potential to produce large cost savings.(10)

However, as with other areas of child health,(11, 12) racial/ethnic and language disparities exist in the diagnosis and treatment of early childhood DB conditions. For instance, compared to other children, African-American and Latino children are less likely to be diagnosed with an autism spectrum disorder (ASD), and are more likely to be diagnosed at older ages and with more severe symptoms.(13–18) Likewise, African-American and Latino children are less likely to be diagnosed with Attention Deficit Hyperactivity Disorder (ADHD), and are less likely to be treated with a stimulant medication once diagnosed.(19–22) Table 1 summarizes recent peer-reviewed studies of diagnostic disparities in ASD and ADHD, two common early childhood developmental conditions. Similar disparities exist in the areas of overall developmental risk,(23) depression and mental health disorders,(24–26) use of psychotropic medications,(27) and use of mental health services.(28) These racial and ethnic disparities deserve increased attention given recent demographic trends: Census estimates suggest that the U.S. population younger than age 5 is nearly 50% racial/ethnic minority,(29) and some states are now “majority minority” for young children (30)

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The medical evaluation and treatment of young children at risk for DB disorders is a complex process involving many steps. The process begins when families identify developmental concerns about their children and raise these concerns with health care providers (Figure 1). Alternatively, a medical or other community or educational professional may recognize a concern via direct observation, developmental/behavioral surveillance, or standardized developmental/behavioral or disease-specific screening. Once a concern is identified, the next step is diagnosis and treatment. Whereas some disorders (such as ADHD) can be diagnosed and treated in the primary care setting, in many cases, a child must be referred to a developmental or mental health specialist for diagnosis through further testing and clinical evaluation. In addition, the child may require additional therapeutic services (such as Early Intervention or disorder-specific therapy).(31, 32)

In this review article, we examine the screening, referral, and evaluation process for early childhood DB conditions, assessing points in the process where racial/ethnic and language disparities are known or likely to occur. In addition, this review article contributes to the current base of knowledge by exploring possible reasons for these disparities. First, we examine different parent beliefs about DB problems among minority children. We also address how minority children are cared for in primary and specialty care settings, looking at missed opportunities for identification of concerns and follow-up of abnormal findings. We investigate the performance of developmental and behavioral screening and diagnostic tests among minority children. Finally, we highlight areas for additional research and suggest possible improvements to reduce racial/ethnic and language disparities in DB care.

METHODS

We used searched the Medline and PSYCinfo databases using title words and MeSH keywords, with a focus on original, peer-reviewed studies written in English. Our search terms included African American, Asian American, Attention Deficit Hyperactivity Disorder, Autism Spectrum Disorders, Child, Child Development, Child Development Disorders, Developmental Delay, Developmental Disabilities, Ethnic Groups, Health care disparities, Health services accessibility, Health status disparities, Hispanic Americans, Indians (North American), Intellectual Disability, Latinos, Medically Underserved, Mental Health, Mental Retardation, Minority Groups, Minority Health, Pediatric, Pervasive Developmental Disorder, Population Group, Race, Socioeconomic factors, and Underserved. Publications were individually reviewed for suitability of inclusion per the review article's goals as stated above. In addition, we reviewed the references of selected publications for other studies that would meet the review's goals. Finally, we held conversations with experts in child developmental disabilities and health care disparities to see if they could recommend additional studies that had been missed by our review.

PARENT BELIEFS ABOUT CHILD DEVELOPMENT, BEHAVIOR, AND MENTAL HEALTH SERVICES USE

Parent Understanding of Normal Child Development and Behavior

As many evaluations of a child's mental or developmental status begin with a parental concern, racial/ethnic and cultural variation in parent concerns may affect whether, and for what reason a child receives a DB evaluation. For instance, evidence suggests that perceptions of normal child development relate to family cultural background: compared to white parents, African-American and Latino parents differ in views of when children reach basic developmental milestones, and additionally have different views about parenting behaviors such as how important it is to talk or read to young children.(33–36) Table 2 shows several studies that demonstrate such points. For instance, in a survey of parents of different race/ethnicity, Pachter et al showed that Puerto Rican, African American, and European American mothers differ in their beliefs about age of attainment of developmental milestones such as smiling, knowing their own name, and toilet training—expecting some milestones earlier and others later.(34) These differences persisted even after controlling for maternal age, education, and socioeconomic status. Similarly, in the “Zero to Three” survey, which assessed a population-based sample of parents of different race/ethnicity, white parents were more likely than Latino or African American parents to identify setting and enforcing rules, comforting a child when he/she is distressed, and encouraging a children to continue working on a difficult task, as important influences on a child's socio-emotional development.(33) Little current research disentangles whether such differences arise from inherent cultural beliefs versus differential treatment or education of minority parents by health care and educational professionals.

Several studies show that differing parental understandings of the limits of typical child behavior may impact specific DB problems and result in different rates of mental health care utilization (Table 2). For instance, in a large survey of parents of youths with identified mental health problems, Yeh et al showed that African-American, Asian/Pacific Islander, and Latino parents were less likely to view emotional/behavioral problems as having a mental health basis.(37) Other studies have shown that some minority families are more likely to attribute mental health symptoms to “emotional” or “personality” conditions, and are less likely to agree with mental health professionals' labels of the condition.(38) These different beliefs are associated with lower rates of use of mental health services.(38, 39) Minority parents may also have lower awareness of the symptoms of common mental health disorders: in both ethnographic interviews and surveys, Bussing et al found that African American parents were found to be less likely to have heard of ADHD, less likely to have had recent exposure to ADHD information, know less about the causes and treatment of ADHD, and are less likely to report knowing someone who has ADHD.(21, 40)

Parent Beliefs about Mental Health Care

Because of cultural beliefs, historical factors, and long-standing mistreatment of minorities by health care and educational systems, minority parents may additionally feel there is less value in interacting with the healthcare and educational systems to obtain DB treatment for their child. Minority parents may be more likely to distrustful of medicine in general,(41)

and mental health treatment in particular. For example, a survey of 501 caregivers of children found that African American parents viewed use of antidepressants in children as more risky and less beneficial than other parents.(42) Additionally, minority parents may also have greater concerns about the stigma attached to seeking mental health services. This stigma may be compounded by the fact that many parents believe that mental health treatment is ineffective or unhelpful. In a survey of 235 low-income families of school-age children, Richardson et al found that African-American parents are twice as likely as white parents to expect disapproval from family members and to be embarrassed about seeking mental health care for their child, are twice as likely to perceive mental health professionals as untrustworthy and disrespectful, and are three times more likely to expect poor care.(43) Likewise, in a mental health clinic setting serving a predominately African-American and Latino population, McKay et al showed that many parents expressed skepticism regarding the potential helpfulness of mental health care. This skepticism about the benefits of mental health care was associated with about half the odds of attending mental health appointments. (44) Other studies have shown that Latino and other minority parents do not bring their children into care because providers don't understand cultural differences,(45) do not put forth effort to getting their child services, have negative attitudes toward minorities, or treat minority families poorly.(46) In many cases, these beliefs may be justified because the mental health system does not perform as well for minority and other under-served families. (26,47)

ACCESS TO DB SERVICES IN THE PRIMARY AND SPECIALTY CARE SETTINGS

Access to Primary Care and Primary Care Quality

Identification of DB disorders in minority children in the medical setting may be problematic for a variety of reasons. First, and perhaps most importantly, minority children are less likely to have access to primary care,(48, 49) and are more likely to face barriers to needed care compared to other families,(45) leaving less opportunity for parents to present their concerns to providers or have concerning findings further evaluated. Poorer access to basic services may relate to poorer access to health insurance among minority children;(12, 45) however, minorities still have poorer access to care even after insurance status is taken into account.(47, 50) Additionally, the primary care that minority children and children from limited English proficient (LEP) families receive is generally of lower quality than that of white children,(11) so minority families may not receive all recommended services even when care is accessed. For instance, minority and LEP families are less likely to receive desired anticipatory guidance or family-centered care,(51–53) which are associated with improved identification of developmental issues.(54) This may be particularly the case for children with developmental disorders: in a study using the National Survey of Children with Special Health Care Needs, Montes and colleagues showed that family-centered care is lower among African-American children with ASDs than among white children with ASDs. (55) Liptak and colleagues used a similar national dataset to show that African-American and Latino children with ASDs are less likely to have access to care than white children, even after adjusting for socio-demographic differences.(56)

As many DB disorders are identified through primary care-based developmental surveillance or standardized developmental screening (Figure 1), access to these services is critical. The American Academy of Pediatrics (AAP) recommends standardized developmental and behavioral screening at minimum of at the 9-, 18-, and 24–30 month well-child visits and subsequently when indicated,(32) and additionally recommends specific screening for autism spectrum disorders at the 18- and 24- month visits.(31) Once a concern has been identified, a healthcare provider must evaluate the concern, and (if necessary) refer a child to diagnostic and/or therapeutic resources (Figure 1).

Despite these recommendations, recent studies have shown that Spanish-speaking Latino parents and African-American parents are less likely to be asked by a provider about their developmental concerns, a difference that persists even when their child is at high risk of a developmental disorder.(54, 57) In contrast, other studies have suggested that when they do access care, minority children are more likely to receive standardized developmental and behavioral screening.(58, 59) It is possible that providers are depending on standardized screening of minority children because they feel they are less able to identify developmental or behavioral problems in minority children through surveillance or discussion alone.(60) This may particularly be a problem when the patient and the provider are from different linguistic and cultural backgrounds.(61) Though low numbers for surveillance are concerning, high rates of screening may be a positive development, as screening is more effective than surveillance in detecting developmental and behavioral disorders.(32)

Access to Specialty Services, Specialty Referral Process, and Quality of Specialty Care

When indicated, early referral to DB services is important because early access to therapy services is associated with improved cognitive, behavioral, and social outcomes.(10, 31) Part C of the Individuals with Disabilities Educational Act (IDEA) entitles children to have access to appropriate therapy services (such as Early Intervention or Special Education) even prior to diagnosis (Figure 1).(32) However, when a child is referred from primary care to a specialist such as a developmental-behavioral pediatrician, child psychiatrist, or child psychologist, additional disparities occur. Multiple studies document racial, ethnic, and language disparities in access to specialist care in general, (62, 63) and disparities particular to DB specialty services may also exist.(50) For instance, several studies show racial/ethnic differences in Early Intervention participation: African-American children are less likely to participate in Early Intervention services,(64, 65) and one study suggests that part of this difference may be related to race differences in provider referral patterns.(66) Clements et al recently showed that African-American infants were less likely to receive a developmental evaluation from Early Intervention once referred, and that having a foreign-born, non-English speaking, or Asian parent was also associated with decreased likelihood of enrollment in Early Intervention therapy services.(67) Paradoxically, though fewer minority children access Early Intervention, multiple studies show that once they reach school age, Latino children, Native American children, and children in LEP households are over-represented in Special Education settings, especially those with qualifying diagnoses of intellectual disability or emotional disturbance.(68, 69) Though reasons for this disproportionate representation are complex,(70) these findings suggest that increasing

minority participation in early intervention programs may be one way to prevent more serious DB diagnoses later in childhood.

Provider bias may also be contributing to different rates of referral and diagnosis. Providers may find it more difficult to disentangle underlying medical disorders from a child's cultural and socioeconomic context, and thus may be less likely to refer a child whose social or cultural context is unfamiliar. For instance, in a study by Cuccaro et al, pediatric speech-language pathologists, psychologists, and psychiatrists were provided vignettes describing children at risk for developmental difficulties. In these vignettes, higher socioeconomic status correlated with an increased assignment of autism diagnoses.(71) Likewise, in a study where white psychotherapists studied case vignettes of African-American and white adolescents, therapists gave less severe ratings for 8 of 21 pathological behaviors when they occurred in African Americans.(72)

Minority families may also have less information about how to access and effectively use developmental services(73, 74) and fewer support services that connect them to specialty care, such as a case manager or care coordinator.(74, 75) Poor quality of services, or lack of cultural competence among service providers, may lead to visit non-attendance or early disenrollment. For instance, studies show that African-American and Latino families are more likely than white families to be unsatisfied with Early Intervention services,(73) and Latino parents are more likely to state that they did not have adequate involvement in decision-making about their child's care in Early Intervention.(74, 76)

Another important factor may be service availability: overall, unmet needs for mental health care are high, and may be particularly unavailable to minority children, who often face barriers related both to access and insurance coverage.(50) In particular, developmental assessment and therapy may be poorly covered by insurance, making care unaffordable to many minority families.(77) Even if services are available, specialty mental health services often are not located where minority children live. Sturm et al found that geographic disparities in mental health care account for many apparent differences in mental health utilization according to race/ethnicity.(78) Minority families may also have difficulty accessing services due to financial, transportation, or child care issues.(79)

SCREENING AND ASSESSMENT TOOLS

Given that developmental and behavioral screening is now recommended for all children, parents, health care providers, and community professionals need to rely on screening tools' ability to assess risk for developmental or behavioral disorders among all children, including racial/ethnic minorities, and children from LEP households. Likewise, reliability of standardized diagnostic tools in the specialty care setting is important to making definitive diagnoses of DB disorders.

Although improvements have been made to several tools, many screening and diagnostic tools were developed using relatively small numbers of children,(80) and in many cases, racial/ethnic, and language minority children were under-represented on the test's norming sample (the sample population on which the test parameters were developed). For example, some minorities were under-represented in the norming populations of the Denver

Developmental Screening – II, (81) one of the most commonly used developmental screening instruments. Other tests, such as the Parents' Evaluation of Developmental Status (PEDS) or the Ages & Stages Questionnaires, Third Edition (ASQ-3) were initially normed on less-diverse populations, although both tests have been subsequently re-validated on larger, more diverse samples.(82, 83)

Even when minority children were included as part of the reference population, it is often unclear whether this population included enough poorly-performing children to be sure that the test meets sensitivity and specificity parameters in this population.(80) Conversely, if too many included minority children perform poorly, the inclusion of these children may decrease the mean performance on the test, so that minority children who are at risk for disorders still score in the normal range.(84) For example, the initial norming group for the Modified Checklist for Autism in Toddlers (MCHAT) included only eight Spanish speakers, none of whom were deemed "high-risk." (85) The Spanish MCHAT instrument was recently modified and validated for a larger population of children in Spain; (86) however, the Spanish – Western Hemisphere version of the M-CHAT has not been validated(87) and testing of a Mexican Spanish M-CHAT version reveals evidence for cultural differences in item responses.(88)

When developing an instrument, individual items should also undergo validity testing in different racial/ethnic and language groups. Content bias can occur because individual items may perform differently across racial/ethnic and cultural groups due to different parent beliefs, child-rearing practices, or customs.(84, 89) For instance, in the Spanish validation of the MCHAT, several of the items had to be changed because of the use of different toys in Spain and Spanish colloquialisms.(86) Racial/ethnic differences have also been found in diagnostic scales such as the Autism Diagnostic Interview – Revised (ADI-R),(90) and the Diagnostic Interview Schedule for Children (ADHD measurement scale).(91) Even if minority parents understand the content of the individual items, they may respond differently because they interpret the intent of the test as a whole in a different way.(89)

Observational and interview-based scales, such as the Denver-II, may be subject to additional biases related to the race/ethnicity or language of the interviewer, rater, or coder. For instance, if the observer/coder is of a different language or dialectical background than the subject, language delays may be either over identified or under identified because the interviewer does not understand what the subject is saying.(84) It is also possible that raters interpret the behavior of children of different race/ethnicity or cultural groups differently. For example, in a study using videotaped vignettes of child behavior, Chinese and Indonesian clinicians gave the same children significantly higher scores for hyperactivity than did Japanese and American clinicians.(92) Similar clinician/child ethnicity interactions have been found with the Conners ADHD Rating Scale.(93) For diagnostic scales that require the child to interact with the rater or scorer, such as the Bayley Scales of Infant Development – II or the Autism Diagnostic Observation Schedule, accurate scoring may not be possible if a same-language, culturally-congruent examiner is not available.(94) Scoring errors could also occur due to racial bias or prejudice of the scorers.(95)

PROGRAM AND POLICY IMPLICATIONS

Improving Access and Quality of Care

At the most basic level, improving access to DB care necessitates improvements in access to primary and specialty care services. Although most U.S. children successfully access primary care, rates are lower in minority children,(11) and specialist access is particularly challenging for underserved children.(63) However, given the preponderance of minority children do access basic care, improving the quality of services is perhaps as important as improving access. Increased availability of culturally-congruent patient materials, interpreters, and case managers may help minority families access the services they need. Coordination of DB services may particularly help minority families, as they are more likely to lack information, feel dissatisfied about developmental services, and experience barriers to care. Several recent efforts show potential to reduce mental health disparities in the primary care setting. For instance, the Healthy Steps program uses co-located developmental specialists to identify and follow-up on developmental problems, provide developmental screening, follow-up parental concerns, and make home visits.(96) This program might particularly benefit minority families as it allows more of the developmental screening and referral process to take place in the medical home. Providers should also take advantage of the opportunity to collaborate with community home visitors such as the Healthy Families and Nurse-Family Partnership programs.(97, 98)

Increasing Surveillance and Screening

Because minority parents are less likely to be asked about their concerns in the primary care setting,(54, 57) providers should be actively encouraged to inquire about minority parents' concerns and provide continuous surveillance in addition to conducting standardized screening. Parental concerns or abnormal screening results should not be easily dismissed on the basis of bilingualism, "cultural differences," or "social risk factors." Additionally, since developmental surveillance may under-reach minorities, standardized developmental screening in the primary care setting holds particular promise for improving identification of disorders among minority children.

With recent policy recommendations from the AAP and the American Academy of Family Practice Physicians,(32) developmental screening has become more widespread. Nonetheless, less than one third of pediatric primary care providers use a formal screening instrument to assess developmental risk(99) and a survey found that only 10% of primary care providers in California offered both general developmental and ASD screenings in Spanish.(60) Encouraging providers to use formal screening in addition to clinical judgment may help minority children connect to developmental services. Several recent projects have demonstrated the feasibility of increasing developmental surveillance and screening in the primary care setting. In the Assuring Better Child Health and Development (ABCD) project, North Carolina undertook a county-based program to encourage developmental screening, successfully raising rates of screening to >70% of well child visits.(100) Providing specific, culturally-tailored information to parents about the importance of developmental surveillance and screening may help providers more accurately identify minority parents' concerns. In addition, providers need a better system to follow-up referrals that are placed as

a result of abnormal developmental screens, since minority families may be less likely to complete specialty evaluations. Consideration of simultaneous referral to diagnostic and therapeutic (intervention) services may be particularly important for minority and LEP families.

Improving Quality of Screening and Diagnostic Instruments

Any recommendation to increase surveillance or screening must be balanced by increasing calls to improve the quality and performance of screening and diagnostic instruments for minority children and children in LEP households. This includes sampling adequate numbers of minority children of all developmental levels in instruments' norming populations, as well as performing construct and content validity testing among minority children. Screening instruments must not only be made available in more languages, but translations should also be validated in these languages so that they function similarly to the English versions. The publishers of the Ages and Stages Questionnaires have recently published guidelines for cultural and linguistic adaptation of their instruments(101) which is an encouraging example of how to improve the quality and performance of screening tools for diverse populations. Improved education of providers regarding cultural variations in child behavior and cultural expectations of developmental milestones may also help providers appropriately score instruments and interpret their results.

Collaborating with Community Providers

The health care environment is not the only setting in which children's development can be assessed. Many early childhood education programs (such as Early Head Start) provide developmental screening and surveillance, and screening can also occur in community programs such as Women, Infant, and Children supplemental nutrition programs(102) and state child welfare programs.(103) Although research is lacking in this area, informal networks and other groups such as faith-based groups, parenting classes, and health fairs may also be important information sources about early childhood development. Health care partnerships with community providers and organizations may allow healthcare professionals more opportunities to identify at-risk children. One promising model is Connecticut's Help Me Grow program, which offers a centralized hotline that providers or parents with concerns about a child's behavior can use to assess a child's developmental risk and connect the child with appropriate resources. The program also provides additional training to providers in developmental surveillance and screening.(104)

Increasing Provider Education and Diversity

Improving the cultural competency of providers at all points in the system is essential in improving access to care for vulnerable minority children. This includes education in cultural variability in developmental and behavioral expectations for children, cultural variation in views of mental health treatment, typical language development in bilingual children, and education on the stigma and bias that many minority families face when attempting to interface with the mental health system. Education should start early in health care providers' careers, preferably during medical/nursing school or residency, exposing medical students and residents to the problems minority children face in accessing DB services. Programs that allow trainees to participate in Early Intervention evaluations, or

spend additional time in minority communities may allow for increased competence in advocating for at risk children.(105) In addition, ongoing efforts should be made to increase the number of minority providers at all levels of care. Having a race-concordant provider has been shown to improve patient comfort and satisfaction with care, which is particularly important when discussing sensitive issues such as child mental health.(106) Minority providers are also more likely to serve in minority communities, which could improve access to DB care.(95, 106) Grant and scholarship programs targeted at increasing minorities in health professions should be encouraged and sustainably funded. In addition, mentorship programs for minority students and others interested in minority health can provide important early career experience and information about career opportunities. Such programs should be supported and expanded.

CONCLUSION

Early evaluation and treatment of all children with developmental, behavioral, and mental health concerns is in the best interest not only of children, families, and healthcare providers, but also of institutions and policymakers. Though disparities exist in many parts of the evaluation and referral process, reducing disparities is possible through coordinated efforts. Ensuring equitable access to early childhood developmental, behavioral, and mental health services is an important long-term investment in the health of minority children.

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Figure 1.

Developmental evaluation and referral process

Adapted from AAP developmental surveillance and screening algorithm and autism screening algorithm (31, 32)

Table 1

Racial and Ethnic Differences in Attention Deficit Hyperactivity Disorder (ADHD) and Autism Spectrum Disorder (ASD) Diagnosis Rates

Author	Data source	Major Findings
ADHD		
Rolwand, 2002(107)	School-based sample of 7333 children	African-American children were less likely to be diagnosed with ADHD than white children, and were less likely to be currently taking medication to treat ADHD.
Stevens, 2005(20)	18,708 children in 1997–2000 Medical Expenditures Survey Panel	Latino and African-American children were less likely to be diagnosed with ADHD by parent report than were white American children. African-American youths with ADHD were less likely to initiate stimulant medication relative to white children.
Pastor, 2005(19)	21,294 children in the 1997–2001 National Health Interview Survey	Latino and African American children, compared to white children, had less frequent parental reports of ADHD.
Miller, 2009(108)	Systematic Review/Meta-analysis	African Americans were less likely to have an ADHD diagnosis. African-Americans, when diagnosed, had greater severity scores.
ASD		
Mandell, 2002(14)	Medicaid claims for 406 children diagnosed with autism	African-American children were diagnosed with autism at older ages than white children, and required more time in treatment before receiving an autism diagnosis.
Croen, 2002(16)	Birth certificate and health service agency records for >3 million children in California	Children of African-American mothers were more likely to have ASD compared to children of white mothers. Children of Latino mothers and of Mexican immigrants were less likely to have ASD than white children.
Liptak, 2008(56)	102,353 in the 2003 National Survey of Children's Health	Parent-reported prevalence of ASD was lower for Latino than white children; rates were similar for African-American and white children.
Kogan et al, 2009(5)	78,037 children included in the 2007 National Survey of Children's Health	African-American children were less likely than white children to have ever had, or currently have, an ASD.
Mandell et al, 2009(13)	Review of medical and educational records for 2168 children in a multi-site network	African-American, Latino, and other race children were less likely to have a documented ASD.
Palmer et al, 2010(15)	Data from Texas Educational Agency and Health Resources and Services Administration	School districts with more Latino children had lower rates of ASD.
Fountain et al, 2011(17)	Linked birth and administrative records on 17,185 children with diagnoses of autistic disorder born in California between 1992 and 2001	African-American, Latino, Asian, and other race children were diagnosed with ASDs at older ages than white children.
Jarquin et al, 2011(109)	Data from the Metropolitan Atlanta	Prevalence of ASDs was higher for Non-Hispanic Whites than for Non-Hispanic Black children

Table 2

Parent Perceptions about Child Development and Behavior

Author	Data source	Major Findings
Beliefs about normative development and parenting		
Pachter, 1997(34)	Survey of 255 mothers seeking healthcare for their children at clinics in Hartford, CT.	Parents of Puerto Rican, African American, and European American children differed in views about age of attainment of 9/25 developmental milestones.
Bornstein, 2004(35)	Survey of 114 mothers of 20-month-old infants in Washington, DC.	Japanese and South American immigrant mothers scored significantly lower on an evaluation of parenting knowledge compared to multigenerational US mothers.
Keels, 2008(36)	Analysis of Early Head Start Research and Evaluation Study data on 1198 families.	Hispanic-, European-, and African-American parents differ significantly in parent beliefs and behaviors as assessed on a standardized measure.
Hart Research Associates, 2009(33)	Consumer-based survey of 1,615 parents of infants and toddlers	African-American and Hispanic parents differ from white parents in beliefs about important influences on socio-emotional development of children (e.g. talking about feelings, establishing routines, enforcing rules).
Beliefs about mental health and developmental disorders		
Yeh, 2004(37)	Survey of 1,338 parents of youths age 6–17 with identified mental health problems.	Parents of African-American, Asian/Pacific Islander American, and Latino youths were less likely than parents of white children to endorse etiologies consistent with biopsychosocial beliefs about mental illness.
Bussing, 2003(40)	Interviews with 182 parents of school-age children with ADHD	More African-American than white parents were unsure about potential causes and treatments for ADHD.
Bussing, 1998(110)	Interviews with 486 parents of school-age children qualified for special educational services	Fewer African-American parents had heard of ADHD, knew about it, or had received ADHD information from a physician.
Garcia, 2000(111)	Ethnographic interviews with 7 Mexican-American parents of children with communication problems	Mexican-American parents perceived their child's language delay as within normal range. Parents did not perceive early interventionists' interactions with children as modeling communication strategies but rather as "playing" with their children.
Kummerer, 2007(112)	Qualitative interviews with 14 Mexican immigrant parents of children with expressive language delays	Mexican parents perceive expressive language delays but not receptive language delays; causal attributions were medical or familial in nature.