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Introduction

Race/ethnicity differences in identification rates and access to services for children with disabilities have long been an issue of concern among child advocates. While the focus of that concern has varied depending on the services setting, disability category, and race/ethnicity group, there has been a persistent impression that minority group children in the USA, particularly African American children, are not served fairly, equally, or adequately by the child service system.

Whether with respect to special education (e.g., Tincani, Travers, & Boutot, 2009), physical health (e.g., Mehta, Lee, & Ylitalo, 2013), or mental health (e.g., Shattuck, Wagner, Narendorf, Sterzing, & Hensley, 2011), scholars have sought to understand the nature and extent of differences in the system for African American children and families. This chapter explores the literature that addresses the diagnosis and treatment of African American

children with Autism Spectrum Disorder (ASD). A review of the literature supports the conclusion that there are barriers to autism diagnosis and treatment for African American children, with considerable potential for disparities of health and health care outcomes. Disparities in diagnosis and treatment may be associated with referral bias, the cost of treatment, insurance status and coverage, local special education resources, family resources, institutionalized discrimination, cultural insensitivity, or other factors.

Prevalence: Difference or Disparity?

In recent years, reports have varied considerably with respect to differential prevalence rates of ASD across race/ethnicity groups and interpreting these prevalence data is not entirely straightforward. Two fundamental issues are essential to understanding the literature summarized below.

First is the distinction between surveillance samples and samples based on clinical populations. The most important difference between these types of samples is that those based on clinical populations are likely to be skewed to the extent that there are differences in access to care or utilization of services. Thus, if one race/ethnicity subgroup has relatively less access or utilization, that subgroup is under-represented in samples based on clinical populations and prevalence estimates will be correspondingly skewed.

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Surveillance methods are commonly used in epidemiological studies and do “not depend on family or professional reporting of an existing ASD diagnosis or classification to determine ASD case status” but involve “screening and abstracting records at multiple data sources in the community” (p. 3; Centers for Disease Control and Prevention [CDC], 2014). Samples based on surveillance methods minimize differences in access and utilization, though they do not eliminate those differences entirely. For the purpose of understanding true prevalence differences, surveillance samples provide more useful and interpretable estimates and will be emphasized, where they are available. Mandell et al. (2009) indicated that Black children found to have ASD through surveillance methods were significantly less likely to have the diagnosis documented in their health or education record, compared to White children, suggesting that the method picks up children who are missed in the usual clinical/educational identification methods.

Second, subpopulations may differ in prevalence due to other factors that are not inherent to the defining characteristic of the subgroup, but that play a causal or mediating role in those differences. Raw prevalence estimates do not take into account the effects of such factors. By convention, disparate raw prevalence figures are designated “differences” (Smedley, Stith, & Nelson, 2003).

Prevalence estimates that statistically remove the effects of those other variables are considered adjusted rates and differences in adjusted rates are, by convention, designated disparities. To illustrate, raw prevalence rates for ASD in African American children may vary considerably from the corresponding raw rates for White children; this variation would be considered evidence for a “difference” across groups. However, when one statistically removes the effect of socioeconomic status, for example, one can derive adjusted prevalence rates which come closer to what the rates would be if the groups did not differ on SES. If those adjusted rates did not differ significantly across race/ethnicity groups, there would be no “disparity” despite the raw “difference.” In the discussion that follows we seek to follow the conventional usage.

Prevalence Differences

Autism prevalence rates derived from early (1996) surveillance data from a single site were found to be “remarkably similar when examined by race” (Yeargin-Allsopp et al., 2003, p. 51). However, the most recent data available for the USA (from the year 2010 surveillance and based on 11 sites) indicated that the prevalence of ASD among African American children was 12.3 per 1000 while among White children the rate was 15.8 per 1000, almost 30 % higher (CDC, 2014).

An example of a similar finding, based on special education identification data from 2006 to 2007, indicated that African American students were substantially under-represented in the autism category (OR=0.70). Although earlier (1998–1999) African American students were more likely than White students to be identified with autism, and although the rate of autism identification in African American students has steadily climbed in the intervening years, the White rate has grown faster, resulting in the observed current under-representation (Travers, Tincani, & Krezmien, 2011). There are other indications that the discrepancy has widened in recent years. The marked increase between 1997 and 2008 in parent-report of ASD among White children has not been matched for non-Hispanic Blacks (Boyle et al., 2011).

Other reports (e.g., Becerra et al., 2014; Bhasin & Schendel, 2007; Boyle et al., 2011; Thomas et al., 2011) have supported the conclusion that there are prevalence differences for ASD across race/ethnicity subgroups, such that African American children appear to have lower rates of ASD, compared to their White counterparts, although some failed to find such differences (Fombonne, 2007).

Prevalence Disparities

Data regarding disparities in ASD prevalence has been more complicated. In some cases, statistically adjusting for family demographics has yielded prevalence rates that were not statistically different across race/ethnicity groups. In a

study of the 2000 and 2002 CDC surveillance samples for a single site, for example, Thomas et al. (2011) found that ASD prevalence rates were higher for children living in wealthier census tracts, but there were no race/ethnicity difference in prevalence once SES was accounted for.

Bhasin and Schendel (2007) found that in a Metropolitan Atlanta surveillance sample, Black children were more than twice as likely as Whites to present with ASD in a multivariate model that included maternal education and family income. However, this over-representation was evident only in the portion of the ASD sample that also displayed intellectual disability; among children with ASD but no intellectual disability, there was no disparity. A recent study of children in Los Angeles County clinical sample found that, despite substantially lower raw prevalence rates, US-born Black children were at increased risk for a diagnosis of autism once a range of individual, family, and system factors were accounted for, and the risk was even higher for foreign-born Blacks (Becerra et al., 2014). These data raise the hypothesis that low SES tends to depress ASD prevalence rates. When the effect of SES is statistically controlled, African American children appear to have higher ASD prevalence rates, at least among the subgroup of children with ASD and co-occurring intellectual disability.

While the above studies tend to indicate disparately higher adjusted prevalence rates of ASD among African Americans, Kogan et al. (2009) reported that, based on parent-report, African Americans were significantly *less* likely to have ASD when other characteristics including SES were accounted for. Similarly, Mehta et al. (2013) found that in 2009, compared to White children, Black children were less likely to be diagnosed with ASD (according to parent-report). It is of historical interest that the discrepancy in parent-reported ASD prevalence rates between White and African American children has reversed; in the late 1990s, Black children were found to be nearly 1.7 times *more* likely than White children to be diagnosed with ASD (Mehta et al., 2013).

In sum, there are indications that there may be true disparities in prevalence of ASD between Black and White populations, i.e., prevalence dif-

ferences that cannot be attributed to other individual, family, or community factors. The bulk of these data suggest that African American children may be at increased risk for displaying ASD. Nonetheless, while prevalence differences across race/ethnicity groups may be statistically accounted for, or even reversed, by adjusting for SES, the fact remains that African American children are disproportionately affected by poverty and that they are therefore at increased risk for a missed diagnosis of ASD.

Proposed Explanations for Disparities in Diagnosis

The causes of prevalence rate differences across race/ethnicity groups are unclear, in part no doubt, because the etiology of ASD is unknown. It is possible that the true prevalence of ASD varies somewhat across race/ethnicity/cultural groups, as it does for some physical conditions. Characteristics associated with autism are endorsed more frequently in some Eastern cultures (India, Malaysia), compared to Western cultures (UK; Freeth, Sheppard, Ramachandran, & Milne, 2013). However, this finding is somewhat at odds with the common perception of *lower* rates of disability generally among Asian Americans in the USA (cf., Coutinho, Oswald, & Best, 2002). And, indeed, early studies indicated comparable rates of autism around the world (Fombonne, 2007).

Literature addressing apparent under-representation of ASD in African American children has considered factors such as the effects of poverty, clinician bias, cultural differences in stigma associated with developmental disabilities, and family help-seeking; it is to those factors that we now turn.

Socioeconomic Status As noted above, family SES appears to be an important correlate of ASD prevalence rates, with higher SES predicting increased prevalence. There are well-established race/ethnicity group differences in socioeconomic status and early evidence suggested that autism was less likely to be perceived by clinicians in lower SES children (Cuccaro et al.,

1996). Poverty is typically associated with increased risk for disease and disability, and the hypothesis that lower SES is associated with lower prevalence rates is generally attributed to differences in access to care (e.g., Thomas et al., 2011). However, Durkin et al. (2010) suggested that while “biased ascertainment [might result] from those with higher SES having greater access to diagnostic services, it is possible that ‘diagnostic bias’ on the part of clinicians might contribute to ascertainment bias” (p. e11551), i.e., increased likelihood of assigning autism diagnosis in children from higher SES families.

Durkin et al. (2010) also speculated that the excess risk for high SES children might be related to “physical or social environmental factors to which children living in more advantaged environments might have higher exposures, to immunological factors (such as that suggested by the “hygiene hypothesis” . . .) or other biological factors (for example, those associated with parental age)” (p. e11551). However, there is no consensus that ASD actually occurs less frequently in low-income and African American populations, as suggested by the raw prevalence figures, and there are important reasons to further investigate whether the under-representation of African Americans sometimes reported in the literature, particularly in clinical samples, is instead a result of under-diagnosis.

Differences in prevalence rates might arise because the clinical characterization of a condition is often based on how the condition presents in majority subgroups. Mandell and Novak (2005) suggested that there may be “cultural differences in the presentation of the symptoms of ASD due to genetic or environmental factors” (p. 111) but acknowledged that there are few data available to support or refute the suggestion. If such differences exist, they may contribute to misdiagnosis, or missed diagnoses, in African American children.

Cultural and Family Characteristics

Differences in cultural and family characteristics may influence the likelihood that parents will seek, or accept, a diagnosis of ASD. The threshold of concern for features of autism, particularly in indi-

viduals with little or no intellectual impairment, is almost certainly different across families and that variation may be associated with race and culture. More explicitly, differences in expectations with respect to the variety of behavioral presentations that are perceived as within the typical range (i.e., that are judged to be acceptable or “normal”) might cause some parents to delay or defer diagnostic evaluation. Lau et al. (2004) found that African American parents were less likely than white parents to endorse behavior problems in their children. If African American parents are similarly more accepting of “borderline” presentations of ASD, less prototypical or less severely affected children may go undiagnosed; this hypothesis is consistent with the data cited above regarding race group differences in intellectual impairment in ASD.

Culture also affects the expectations of children’s behavior and their overall development (Liptak et al., 2008). Perhaps some cultures expect or are more tolerant of a wider range of behaviors from children and are less concerned about developmental disabilities. African American toddlers diagnosed with ASD are found to be more likely to display aggressive and destructive behaviors, compared to their White counterparts (Horovitz, Matson, Rieske, Kozlowski, & Sipes, 2011). Such a difference may reflect differences in families’ willingness to accept less-troubling manifestations of disability; perhaps it is not until children’s behavior becomes dangerous that some parents seek diagnosis and intervention.

To the extent that such a dynamic occurs in families of children with ASD, even the surveillance-based prevalence data cited above may not accurately reflect differences across race/ethnicity groups in the rate of occurrence of ASD. Surveillance-based methods may also be affected by the rate of detection in that, while they do not depend on the existence of a documented diagnosis, they are dependent on the quality of data in existing medical (and often, educational) records (CDC, 2014). It is possible that individuals with less marked impairment or less prototypical presentations will still be overlooked by such an approach.

One bit of evidence supporting this concern was the finding that the proportion of children with ASD who were also classified in the range of intellectual disability differed by race/ethnicity; nearly half of the non-Hispanic black children with ASD were found to have co-occurring intellectual disability, compared to only one-fourth of non-Hispanic white children (CDC, 2014). A disproportionate amount of the increase in individuals with ASD in recent years has been among those without intellectual disability (CDC, 2012), raising the question of whether those without intellectual disability in the African American population have been overlooked.

Stigma Concern about the stigma of an ASD diagnosis may be heightened among African American parents for a variety of cultural and historical reasons. African Americans who used mental health services have been found to be less likely than whites to have positive attitudes toward their friends knowing they had sought help (Diala et al., 2000). Such concern, if it extends to attitudes about developmental disabilities, would be likely to cause parents to be cautious in seeking help or in pursuing and accepting a diagnosis of ASD.

Clinician Bias Clinician bias has been suggested as an important contributor to possible under-diagnosis of ASD in African American children. “Physicians may . . . more quickly discount the concerns of African American parents than they do the concerns of white parents related to their children’s developmental delays, or not elicit those concerns in the first place” (Mandell & Novak, 2005, p. 112). A Dutch study found that clinical vignettes of European majority cases were more likely to lead pediatricians to suggest autism than were vignettes of non-European minority cases, although the effect disappeared when they were specifically asked to rate the likelihood of ASD (Begeer, El Bouk, Terwogt, & Kout, 2009). These authors concluded “pediatricians may be inclined to attribute social and communicative problems of children from non-European minority groups to their ethnic origin, while they would possibly attribute the same

problems to autistic disorders in children from majority groups” (p. 146). Similarly, Feinberg, Silverstein, Donahue, and Bliss (2011) speculated that “it is possible that clinicians, who play a major role in identifying children with developmental delay and referral to EI services, are less likely to identify such delays in black children” (p. 289).

While not specific to autism, van Ryn and Fu (2003) proposed a mechanism by which health and human service providers might influence race/ethnicity disparities in treatment. The model includes consideration of help-seeker behavior, cognition, and affect, as well as provider beliefs about the help-seeker, provider interpretation of information or symptoms, and provider interpersonal behavior, as those factors influence professional decision-making regarding diagnosis and treatment. The processes involved in diagnostic determination and treatment recommendation are more complex than is generally appreciated and there is substantial opportunity for those processes to be significantly affected by individual differences in help-seekers and clinicians.

Other Systemic Issues A referral for diagnostic assessment often begins in the primary care office. African American children are less likely to have a usual source of care, compared to White children (USDHHS, 2013) raising the possibility that some children with ASD are missed due to the lack of a primary care referral. It has also been suggested that professionals may screen for ASD less often in African American children due to different expectations about treatment and service needs by race (Mandell, Listerud, Levy, & Pinto-Martin, 2002).

There is some evidence that African American families are substantially more likely to no-show for an initial appointment to a pediatric outpatient autism clinic (Kalb et al., 2012), a phenomenon that could be related to their differing experience of primary care (Stevens & Shi, 2003). The failure to keep an initial appointment is likely to contribute to delayed or absence of diagnosis and thus may be one of the intervening factors contributing to lower prevalence rates for ASD in African American children. The model yielding this result

did not include a measure of SES; thus, the question of whether this difference is due to poverty, rather than race, is unresolved. Missing an initial appointment for evaluation increases the potential for delay of an autism diagnosis, as well as delays in intervention (Kalb et al., 2012).

There is evidence that the rate of identification of autism by schools is associated with community SES; school divisions with a higher proportion of economically disadvantaged students had lower rates of identification of autism (Palmer, Blanchard, Jean, & Mandell, 2005). Parsing this effect between family and community factors is difficult, but the end result is that children with ASD in poorer communities are more likely to be overlooked or misdiagnosed.

Differences across states in the rate of autism identification by schools has been found to be associated with education-related spending, the number of pediatricians in the state, and the number of school-based health centers in the state (Mandell & Palmer, 2005). While this report did not examine race/ethnicity differences, it would not be surprising to find that access to the resources they explored is, on average, diminished for African American children.

Delays in Diagnosis A delay in the diagnosis of ASD affects prevalence rates by undercounting young children. A further effect of delayed diagnosis, however, is that with increasing age often comes increasing co-occurring emotional and behavioral concerns which may mask ASD symptoms or may take precedence in terms of treatment.

In the early years of the autism explosion, African American children with ASD were found to be diagnosed later than their White counterparts; average age of diagnosis in one 1999 sample was 7.9 years for African American children, compared to 6.3 years for White children (Mandell et al., 2002). The difference was not explained by age of entry into the mental health system; while White children did enter the system earlier, once in treatment, “African American children required three times the number of visits over a period three times as long as white children before receiving an autistic disorder diagnosis” (p. 1450).

This delay in diagnosis for African American children persisted in a sample of children given an ASD diagnosis between the years 2003 and 2010. In that sample, African American children were more likely to be diagnosed with an ASD after age 4 years, compared to Caucasian children. This association was observed, as well, in multivariate models that included individual characteristics and demographic factors that might be expected to influence age of diagnosis (Valicenti-McDermott, Hottinger, Seijo, & Shulman, 2012). Other differences have also been noted in the pathway leading to a diagnosis of ASD. For example, African American children with ASD were more often first diagnosed with a conduct disorder, adjustment disorder, or ADHD (Mandell et al., 2002).

In more recent data, the median age of earliest known ASD diagnosis did not differ significantly by race/ethnicity (CDC, 2014). Thus, it appears that current differences in prevalence rates cannot be attributed entirely to delays in diagnosis for Black children with ASD.

Access and Utilization: Differences and Disparities

In addition to differences in autism diagnosis for African American children with autism, their families may experience similar difficulties when they try to navigate the system to arrange intervention services for their child. In this section, we consider the extent to which access to and utilization of health care and education services differ across race/ethnicity groups. In particular, we are interested in the extent to which African American children and families experience differences in access to, or utilization of, evidence-based intervention services designed to address the needs of children with ASD.

Education

The first intervention services for many children with ASD are offered through the Part C Early Intervention (EI) program. As this program

extends only to age 3 years, many children with ASD are not diagnosed until after they exit Part C services. Nonetheless, at age 2 years, African American children who are eligible for Part C services are one-fifth as likely to receive those services, compared to White children even after adjusting for sociodemographic characteristics (Feinberg et al., 2011). Failure to access early intervention services becomes increasingly important as the age of diagnosis of ASD declines. The evidence for the value of early, intensive treatment of ASD is substantial (Weitlauf et al., 2014) and any factor that interferes with access to such services may be expected to affect outcome.

Special education services and other intervention services for children with ASD differ by race and ethnicity (Thomas, Ellis, McLaurin, Daniels, & Morrissey, 2007). Intensive behavioral intervention services may be less available in schools serving low-SES families because of the associated costs (Gourdine, Baffour, & Teasley, 2011), disproportionately affecting minority children. Community-level and school-division resources are associated with prevalence rates (King & Bearman, 2011; Palmer et al., 2005) and may also affect educational quality. African American students with ASD are less likely to receive support services following their exit from high school (Shattuck et al., 2011), suggesting absent or less effective transition processes. There is a disparity in the range and quality of services in predominantly low-income school systems (Evans, 2004). School staff training and fiscal resources available for teaching children with ASD are dissimilar across communities. The amount of time available for staff to implement intensive instructional interventions may be affected by school system limitations. Low-income African American parents may have no choice but to send their children to schools where the teachers lack adequate training and experience, and they may be less involved in school-based activities, including those that could help increase parent awareness and involvement (Tincani et al., 2009).

Differences in developmental trajectory and outcomes for children with ASD have been attributed to factors such as home and neighbor-

hood environments, quality and intensity of treatment, quality of education, and the efficacy with which parents are able to advocate for their children with institutions providing services (Fountain, Winter, & Bearman, 2012). Many of these factors are associated with socioeconomic status and thus, as noted above, also differ across race/ethnicity groups.

Health and Mental Health Care

Children with ASD generally have diminished access to medical homes and are more likely to experience problems accessing health care, compared to children with other developmental disabilities (Tregnago & Cheak-Zamora, 2012) and these difficulties appear to be exacerbated in minority subgroups.

As noted above, differences in health care for African American children with ASD begin at the primary care level (Stevens & Shi, 2003) and such differences likely contribute to discrepancies in access and utilization. There are well-documented barriers to adequate health care for minorities (Reichard, Sacco, & Turnbull, 2004). In one sample, compared to White families, racial and ethnic minority families of children with ASD were half as likely to use a case manager to help coordinate treatment, and one-fourth as likely to receive sensory integration therapy or to have a psychologist or developmental pediatrician on the treatment team. Low levels of parent education and living in a non-metropolitan area exacerbate limitations in access to treatment services (Thomas et al., 2007).

Children with ASD are more likely to have problems obtaining needed care from specialty doctors, compared to children with other developmental disabilities, although differences in the likelihood of such difficulties have not consistently been noted across race/ethnicity groups (Krauss, Gulley, Sciegaj, & Wells, 2003). However, African American children with ASD have a low rate of utilization of subspecialty care in general as compared to whites, including a lower use of gastrointestinal/nutrition services, neurology, and psychiatry/psychology services.

They are also less likely to access procedures such as endoscopy, colonoscopy, and stool studies (Broder-Fingert, Shu, Pulcini, Kurowski, & Perrin, 2013).

Health care quality measures also show disparities across race/ethnicity groups. For example, African American families of children with ASD were more likely to report that their doctor did not spend enough time with their child, compared to White families (Magana, Parish, Rose, Timberlake, & Swaine, 2012). While the data with respect to health care disparities for African American children with ASD are limited, there are substantial concerns based on other studies examining the effects of race and disability (ASD) separately.

Racial differences in the utilization of health care services and access to health care are documented for children with a variety of conditions; for example, minority children are more likely to have no usual source of medical care, to have unmet needs for prescription medicine and dental care, and to have fewer preventive dental visits (Flores & Tomany-Korman, 2008). Minority children are more likely to experience barriers to treatment and service utilization such as lack of transportation (Broder-Fingert et al., 2013). Even after accounting for the effects of SES, African American children were less likely to get acute care in a timely fashion, less likely to have visited a personal doctor for preventive care, and less likely to have used any prescription medication and their families were more likely to have difficulty obtaining needed phone advice (Liptak et al., 2008). African American children have been found to experience less use of specialist services such as genetic testing or counseling (Shea, Newschaffer, Xie, Myers, & Mandell, 2014).

Other data indicate that, in some contexts, African American youths may not differ from White youths in overall use of mental health counseling, but those services are more likely to be school-based (Narendorf, Shattuck, & Sterzing, 2011). This finding emphasizes the importance of the school in providing services to children with minority status (Siller, Reyes, Hotez, Hutman, & Sigman, 2014) but may also suggest, for African American youth, reduced

access to counseling in the health and mental health care context.

There is a disparity regarding health care transition services for youth with ASD from pediatric services to adult services. Only a fraction of youth with autism has health care transition services. In one study only 14 % of youth with autism had discussed transitioning to an adult provider with their pediatrician, less than 25 % discussed retaining health insurance, and less than 50 % had discussions regarding health care need as they age (Cheak-Zamora, Yang, Farmer, & Clark, 2013). While this study did not find race/ethnicity group differences in access to transition services, factors associated with adequate transition raise concerns that as access improves for majority youth, minority youth may fail to experience similar gains.

Vocational Training/Community Support

There is limited information on autism through the life span, for example, postsecondary education and employment outcomes for African American youth with autism. However, compared to their White counterparts, African American youth with ASD have been found to have a three times higher likelihood of receiving no postsecondary services (mental health, medical, speech, and case management services), in a model adjusted for SES (Shattuck et al., 2011). Shattuck et al. concluded that African American youth are at a high risk for service disengagement after high school, suggesting that there is a need for targeted assistance and community outreach for this population.

There are other differences in postsecondary outcomes as well. Young people with autism have the lowest rates of employment compared to youth with other disabilities, and in a large national sample, more than half of African American youth with autism who graduated from high school within the last 2 years had no paid employment or further education, compared to about 29 % of White youth with ASD (Shattuck et al., 2012).

Explanations for Differences in Utilization

The most basic reason for differences in utilization of services is the presence of differences in identification rates. If, as suggested by prevalence differences, African American children with ASD are under-identified, they are by default less likely to receive appropriate intervention services. However, there are other possible explanations for differences in service access and utilization.

Individual and Family Differences Lower use of some subspecialty services could be a function of increased aggressive behavior in young African American children with ASD (Horovitz et al., 2011). If the aggression becomes the main focus of encounters with the health care system, other issues such as depression, anxiety, or gastrointestinal concern may be overlooked (Broder-Fingert et al., 2013). Broder-Fingert et al. also cited physician referral bias, differences in self-referral, or differences in rates of referral follow-up as factors that may play a role in the referral discrepancies.

Other differences in presentation of ASD may also affect access to, and utilization of, intervention services. The over-representation of African American children among the group with ASD and co-occurring intellectual disability could contribute to differences in service use. Children with ASD and ID may have difficulty reporting physical complaints, resulting in lower utilization of health care services. Further, the increased likelihood of aggressive behavior among young African American children with ASD could contribute to lower health care service use if families do not view the problems as related to a health condition (Broder-Fingert et al., 2013).

There is some evidence, for children with AD/HD, that African American families are less likely than White families to use medical language to describe their children's problems. Because African American parents are more likely to attribute their children's problems to causes such as diet, rather than more generally accepted etiologies, at least with respect to AD/

HD, they may be less likely to seek care through traditional medical systems (Bussing, Schoenberg, & Perwien, 1998). To the extent that similar attitudes prevail in the families of children with ASD, those children are likely to experience decreased access to intervention through the health care system.

Economic and cultural factors, and experience of discrimination have produced a mistrust of the service system among some African American families. Other factors that may restrict access and utilization include religious beliefs, fear of stigma in the community, lack of culturally competent medical and educational professionals, and insufficient or ineffective outreach efforts to the African American community (Thomas et al., 2007).

Cultural differences can also influence how the family perceives treatment options. Involvement with the mental health treatment system is controversial in some minority communities. As a result, African American families may be hesitant to attribute symptoms to mental health issues and reluctant to seek treatment. Stigma regarding mental health and developmental conditions in the African American community may also play a role in reduced utilization.

Family beliefs about the cause of a condition can vary across cultures and may affect the choice of treatment for a child with ASD (Bernier, Mao, & Yen, 2010; Yeh, Hough, McCabe, Lau, & Garland, 2004). As noted elsewhere, African American families may be less likely to attribute a child's symptoms to a health condition and they may be less inclined to seek traditional medical treatments because of these differences in beliefs (Schnittker, 2003).

Terhune (2005) examined differing perspectives on services among low-income African American women caring for family members with developmental disabilities. She identified one perspective, labeled "spiritual kin discourse," which favored relying on natural or informal supports rather than accessing the developmental disabilities service system. Terhune attributed this difference to the fact that the system failed to reflect the values professed by these families. Informal supports can be an

important factor in outcomes for children with ASD and their families, though there are few data to illustrate that effect.

Cultural Competence The cultural competence of providers, and the resultant experiences African American families have with providers, may also affect utilization. Providers may project insensitive attitudes or make unwarranted assumptions about the child and his/her behaviors, causing the family to be wary of seeking out and utilizing further services. Thus, provider behavior that is perceived as biased or discriminatory may influence how likely the family is to use services in the future (Gourdine et al., 2011). African American families, especially those with lower incomes, may be intimidated by or distrustful of clinicians, or may be skeptical about their intentions; as a result, they may be reluctant to seek out or utilize long-term services for their children. Similar concerns have been documented with respect to the special education system (Zionts, Zionts, Harrison, & Bellinger, 2003).

Disparities in Quality of Care

There is continuing concern that racial and ethnic minorities receive lower quality health care, and other, services; such differences may be related to historical inequalities such as discrimination or contemporary inequalities such as lack of insurance and fewer services offered by Medicaid providers (Magana et al., 2012; Smedley et al., 2003).

Family Centered Health Care Low quality, or inadequate, care (e.g., less family centered) is more common for African American children with autism than for white children with autism, or for African American children with other special health care needs. African American parents are more likely than white parents to report that doctors do not spend adequate time with their child during appointments, and that doctors are not sensitive to their values; they are less likely to feel like a partner in the care of their child

(Magana et al., 2012; Montes & Halterman, 2011). The lack of family centered care for African American families may contribute to the disparity in utilization of services and may increase potential for poorer outcomes. Without receiving specific, relevant information, and without feeling like a valued partner in their child's care, parents will be less likely to seek out and utilize needed services and effective treatments for their children.

Disparities in the quality of care have also been attributed to institutional racism, provider biases, lack of training or experience with minority communities, and lack of cultural competency of providers.

Positive behavior support (PBS) is a family centered approach and has been shown to be a promising and sensitive treatment approach for diverse settings (Dunlap, Newton, Fox, Benito, & Vaughn, 2001). A family centered approach to PBS considers the following: how maladaptive behaviors impacts the quality of life for the child and the family; the capacity of families to be involved in the intervention; and the impact of the intervention program on the daily schedules, routines, and environment (Tincani et al., 2009). Such an approach may serve to overcome some of the barriers to quality intervention experienced by African American families.

Access to Evidence-Based Treatments Because school systems serving mostly minority children may not have appropriate staff:student ratios or skilled staff to implement intensive interventions, parents may be forced to seek a combination of public and private funded interventions for their children. Applied behavior analysis-based therapy (ABA) is a promising evidence-based intervention for children with the autism spectrum. ABA therapy is a behavioral approach that focuses on behavioral interventions for skill deficits and maladaptive behaviors associated with ASD. Many find this treatment approach helpful especially during early intervention.

However, the resource demands of ABA-based interventions may be prohibitive for low-income

African American families. ABA therapy is expensive and requires considerable time, effort, and dedication. Minorities, especially African Americans who live in poverty may lack the resources to pursue this treatment. The stress of implementing an intensive ABA program, especially in the home, may also contribute to maternal stress and depression (Schwichtenberg & Poehlman, 2007).

While no medication treats core symptoms of ASD, access to psychotropic medication has often been an important adjunct to behavioral treatment. There is a disparity across race/ethnicity groups in the use of psychotropic drugs to treat children with ASD. White children were more likely to have used psychotropic drugs, while children who lived in areas with a lower percentage of white residents or greater urban density were less likely to use such medications (Mandell et al., 2008). Differences in psychotropic drug use may be attributable to disparities in access to health care, beliefs about adverse effects of medication, or general trust of the health care system (Bussing et al., 1998; DosReis et al., 2003).

Explanations for Differences in Quality of Care Quality of care differences may be attributable to a variety of factors. Interventions and treatment options chosen by minority families may take into consideration not only the uniqueness of the child with ASD, but also the dynamics of the family, and the values and world view of their culture. Parent involvement is essential for positive treatment outcomes in children with ASD. Culture influences how the parents perceive their child's disability as well as how they respond. Culture also contributes to a family's belief system and this belief system can shape the decisions about which interventions and treatments to pursue.

The support of family in minority cultures is crucial, especially extended families (Dyches, Wilder, Sudweeks, Obiakor, & Algozzine 2004). The presence of another generational member in the household is often an added support especially to single parent households, which are a

reality for many African American families (Jackson, 1991). Extended family involvement (particularly three-generation families) increases support and care in single-mother African American households (Wilson, 1986). Many African Americans live with extended family members in multigenerational homes.

Along with culture, ethnic identity may also be a consideration. Ethnic identity derives from membership in an ethnic group and includes the emotional value that is placed on that group membership (Jackson, 1991; Spencer & Markstrom-Adams, 1990; Tajfel, 1981). Ethnic identity is also associated with self-esteem, social and peer interactions, and relationships of family members in ethnic groups (Phinney, 1990). The strength of ethnic identity may affect parents' views of the service system, the helping professionals, and the intervention options open to them.

Cultural beliefs about the cause of a disorder influence families' decision-making about what treatments to use and what outcomes to expect. Families may base their choice of treatment for a child with ASD on their belief as to the cause of the condition, and this can vary across cultural subgroups (Bernier et al., 2010). Autism offers a striking example, as there is no established cause for the condition, while there is an overwhelming array of treatments available in the West for autism, including behavioral, cognitive, pharmaceutical, sensory, relational, vitamin, and diet therapies. Other cultures' world views may contribute alternative views as to the cause of ASD (e.g., Karma, Allah's will) and the viability of alternative treatments (e.g., acupuncture, herbal medicines, ayurveda). A broad cultural view can help professionals understand families' treatment choices as they fit into the family culture in the context of the treatment delivery system (Ravindran & Myers, 2012).

Culture can also influence the goals of treatment for children with ASD. Some families may have a tendency to focus on treatment that targets maladaptive behaviors and facilitates being able to go out in the community and do activities

as a family. Other families may concentrate on increasing individual independence and adaptive daily living skills. Parents' views of how their child should be raised can also play a part in treatment selection; differences in child rearing and cultural values must be considered when providers propose treatment plans to ethnic minority families (Bernier et al., 2010).

Many interventions are dependent on parent involvement and support in the treatment plan. Expectations of the roles of the parent and provider may vary across cultures. In some cultures parents do not expect, or wish, to have a role in treatment decisions or the delivery of treatment interventions. They may expect therapists, doctors, and schools to play the primary role in treatment plan decisions and may, as a result, lessen their involvement (Bernier et al., 2010). Differences in parents' expectations and cultural values and worldview can affect goals and outcomes of treatment and must be considered by service providers.

Responses to Disparities

The literature on autism assessment and treatment has benefitted from the larger discussion in health care and education with respect to the field's response to disparities, but there are few data specific to African American children with ASD. The literature suggests that many providers could benefit from cultural competency training. Such training might include knowledge about specific ethnic groups and methods of enhancing communication skills, as well as expanded use of cultural brokers (Magana et al., 2012).

A specific intervention to address differences in age of diagnosis for children with ASD would be to ensure that physicians and healthcare providers screen *all* children aggressively as a routine part of primary care, including children whose parents have not raised any particular concerns (Fountain, King, & Bearman, 2011). The use of structured screening and diagnostic tools can help to decrease the likelihood of a race/ethnicity bias in the identification of autism (Begeer et al., 2009).

Implications and Future Research

The impact of cultural diversity is an essential consideration for health care personnel, school system staff, and others who serve children with ASD. Family structure, belief systems, ethnic identity, attitudes toward the medical community, and expectations about parent involvement in treatment and education can have profound effects on access to, utilization of, and response to intervention for children with ASD. Additional research on the barriers to access to services and how to overcome them, and choices of treatments for minority children is needed with a particular focus on families of children with ASD.

Cultural competence training has been widely promoted in both health care and education contexts. However, the actual practical impact of such training on services to children with autism is largely unknown. Research considering the extent to which such training contributes to reducing racial and ethnic disparities in health care and education is sorely needed.

Further research is needed to investigate whether the observed differences in the ASD phenotype across race/ethnicity groups that are noted in the literature (e.g., differences in rates of aggression and in IQ) are valid or are a reflection of provider and system factors (Horovitz et al., 2011). Families would benefit from a better understanding of the factors that go into decisions about utilization of specialty care services such as genetic testing and counseling. Cultural or racial differences in the rate of acceptance of these services may substantially affect families of children with ASD, particularly as individually tailored interventions emerge from basic genetic research (Shea et al., 2014).

Finally, there is an urgent need to ensure that minority children with ASD and their families are appropriately represented in research samples and that, where appropriate, consideration is given to race/ethnicity subgroups to ensure that reported findings are equally relevant to all such subgroups. Research selection factors that systematically exclude African American families have been observed (Hilton et al., 2010) and

deliberate efforts to overcome or circumvent such barriers will be required to achieve the goal of adequate representation.

References

- Becerra, T. A., von Ehrenstein, O. S., Heck, J. E., Olsen, J., Arah, O. A., Jeste, S. S., . . . Ritz, B. (2014). Autism spectrum disorders and race, ethnicity, and nativity: A population-based study. *Pediatrics*, *134*, e63–e72.
- Beger, S., El Bouk, S., Terwogt, M. M., & Kout, H. M. (2009). Underdiagnosis and referral bias of autism in ethnic minorities. *Journal of Autism and Developmental Disorders*, *39*, 142–148.
- Bernier, R., Mao, A., & Yen, J. (2010). Psychopathology, families, and culture: Autism. *Child and Adolescent Psychiatric Clinics of North America*, *19*, 855–867.
- Bhasin, T. K., & Schendel, D. (2007). Sociodemographic risk factors for autism in a US metropolitan area. *Journal of Autism and Developmental Disorders*, *37*, 667–677.
- Boyle, C. S., Boulet, S., Schieve, L. A., Cohen, R. A., Blumberg, S. J., Yeargin-Allsopp, M., . . . Kogan, M. D. (2011). Trends in the prevalence of developmental disabilities in US children, 1997–2008. *Pediatrics*, *127*, 1034–1043.
- Broder-Fingert, S., Shu, A., Pulcini, C. D., Kurowski, D., & Perrin, M. (2013). Racial and ethnic differences in subspecialty service use by children with autism. *Pediatrics*, *132*, 94–100.
- Bussing, R., Schoenberg, N. E., & Perwien, A. R. (1998). A knowledge and information about ADHD: Evidence of cultural differences among African American and White parents. *Social Science & Medicine*, *46*, 919–928.
- Centers for Disease Control and Prevention [CDC]. (2012). Prevalence of Autism Spectrum Disorders—Autism and Developmental Disabilities Monitoring Network, 14 Sites, United States, 2008. *Morbidity and Mortality Weekly Report*, *61*, 2–19.
- Centers for Disease Control and Prevention [CDC]. (2014). Prevalence of Autism Spectrum Disorder Among Children Aged 8 Years—Autism and Developmental Disabilities Monitoring Network, 11 Sites, United States, 2010. *Morbidity and Mortality Weekly Report*, *63*, 2–21.
- Cheak-Zamora, N. C., Yang, X., Farmer, J. E., & Clark, M. (2013). Disparities in transition planning for youth with autism spectrum disorder. *Pediatrics*, *131*, 447–454.
- Coutinho, M. J., Oswald, D. P., & Best, A. M. (2002). The influence of sociodemographics and gender on the disproportionate identification of minority students as having learning disabilities. *Remedial and Special Education*, *23*, 49–59.
- Cuccaro, M. L., Wright, H. H., Rownd, C. V., Abramson, R. K., Waller, J., & Fender, D. (1996). Brief report: Professional perceptions of children with developmental difficulties: The influence of race and socioeconomic status. *Journal of Autism and Developmental Disorders*, *26*, 461–469.
- Diala, C., Muntaner, C., Walrath, C., Nickerson, K. J., LaVeist, T. A., & Leaf, P. J. (2000). Racial differences in attitudes toward professional mental health care and in the use of services. *American Journal of Orthopsychiatry*, *70*, 455–464.
- DosReis, S., Zito, J. M., Safer, D. J., Soeken, K. L., Mitchell, J. W., & Ellwood, L. C. (2003). Parental perceptions and satisfaction with stimulant medication for attention-deficit hyperactivity disorder. *Journal of Developmental and Behavioral Pediatrics*, *24*, 155–162.
- Dunlap, G., Newton, S. J., Fox, C., Benito, N., & Vaughn, B. (2001). Family involvement in functional assessment and positive behavior support. *Focus on Autism and Other Developmental Disabilities*, *16*, 215–221.
- Durkin, M. S., Maenner, M. J., Meaney, J., Nicholas, J. S., Kirby, R. S., Pinto-Martin, J. A., . . . DiGiuseppi, C. (2010). Socioeconomic inequality in the prevalence of autism spectrum disorder: Evidence from a U.S. cross-sectional study. *PLoS One*, *5*, e11551.
- Dyches, T., Wilder, L., Sudweeks, R., Obiakor, F., & Algozzine, B. (2004). Multicultural issues in autism. *Journal of Autism and Developmental Disorders*, *34*, 211–222.
- Evans, G. W. (2004). The environment of childhood poverty. *American Psychologist*, *59*, 77–92.
- Feinberg, E., Silverstein, M., Donahue, S., & Bliss, R. (2011). The impact of race on participation in Part C early intervention services. *Journal of Developmental and Behavioral Pediatrics*, *32*, 284–291.
- Flores, G., & Tomany-Korman, S. (2008). Racial and ethnic disparities in medical and dental health, access to care, and use of services in US children. *Pediatrics*, *121*, 286–298.
- Fombonne, E. (2007). Epidemiological surveys of prevalence developmental disorders. In F. Volkmar (Ed.), *Autism and pervasive developmental disorders* (2nd ed., pp. 33–68). New York, NY: Cambridge University Press.
- Fountain, C., King, M. D., & Bearman, P. S. (2011). Age of diagnosis for autism: Individual and community factors across 10 birth cohorts. *Journal of Epidemiology and Community Health*, *65*, 503–510.
- Fountain, C., Winter, A. S., & Bearman, P. S. (2012). Six developmental trajectories characterize children with autism. *Pediatrics*, *129*, e1112–e1120.
- Freeth, M., Sheppard, E., Ramachandran, R., & Milne, E. (2013). A cross-cultural comparison of autistic traits in the UK, India and Malaysia. *Journal of Autism and Developmental Disorders*, *43*, 2569–2583.
- Gourdine, R. M., Baffour, T. D., & Teasley, M. (2011). Autism and the African American community. *Social Work in Public Health*, *26*, 454–470.
- Hilton, C. L., Fitzgerald, R. T., Jackson, K. M., Maxim, R. A., Bosworth, C. C., Shattuck, P. T., . . . Constantino, J. N. (2010). Brief report: Under-representation of African Americans in autism genetic research: A rationale for inclusion of subjects representing diverse

- family structures. *Journal of Autism and Developmental Disorders*, *40*, 633–639.
- Horovitz, M., Matson, J. L., Rieske, R. D., Kozlowski, A. M., & Sipes, M. (2011). The relationship between race and challenging behaviours in infants and toddlers with autistic disorder and pervasive developmental disorder—Not otherwise specified. *Developmental Neurorehabilitation*, *14*, 208–214.
- Jackson, J. S. (Ed.). (1991). *Life in Black America*. Thousand Oaks, CA: Sage.
- Kalb, L. G., Freedman, B., Foster, C., Menon, D., Landa, R., Kishfy, L., & Law, P. (2012). Determinants of appointment absenteeism at an outpatient pediatric autism clinic. *Journal of Developmental and Behavioral Pediatrics*, *33*, 685–697.
- King, M. D., & Bearman, P. S. (2011). Socioeconomic status and the increased prevalence of autism in California. *American Sociological Review*, *76*, 320–346.
- Kogan, M. D., Blumberg, S. J., Schieve, L. A., Boyle, C. A., Perrin, J. M., Ghandour, R. M., . . . van Dyck, P. C. (2009). Prevalence of parent-reported diagnosis of autism spectrum disorder among children in the US, 2007. *Pediatrics*, *124*, 1395–1403.
- Krauss, M. W., Gulley, S., Sciegaj, M., & Wells, N. (2003). Access to specialty medical care for children with mental retardation, autism, and other special health care needs. *Mental Retardation*, *41*, 329–339.
- Lau, A. S., Garland, A. F., Yeh, M., McCabe, K. M., Wood, P. A., & Hough, R. L. (2004). Race/ethnicity and inter-informant agreement in assessing adolescent psychopathology. *Journal of Emotional and Behavioral Disorders*, *12*, 145–156.
- Liptak, G. S., Benzoni, L. B., Mruzek, D. W., Nolan, K. W., Thingvoll, M. A., Wade, C. M., & Fryer, G. E. (2008). Disparities in diagnosis and access to health services for children with autism: Data from the national survey of children's health. *Journal of Developmental and Behavioral Pediatrics*, *29*, 152–160.
- Magana, S., Parish, S. L., Rose, R. A., Timberlake, M., & Swaine, J. G. (2012). Racial and ethnic disparities in quality of health care among children with autism and other developmental disabilities. *Intellectual and Developmental Disabilities*, *50*, 287–299.
- Mandell, D. S., Listerud, J., Levy, S. E., & Pinto-Martin, J. A. (2002). Race differences in the age of diagnosis among Medicaid-eligible children with autism. *Journal of the American Academy of Child and Adolescent Psychiatry*, *41*, 1447–1453.
- Mandell, D. S., & Novak, M. (2005). The role of culture in families' treatment decisions for children with autism spectrum disorders. *Mental Retardation and Developmental Disabilities Research Reviews*, *11*, 110–115.
- Mandell, D. S., Morales, K. H., Marcus, S. C., Stahmer, A. C., Doshi, J., & Polsky, D. E. (2008). Psychotropic medication use among Medicaid-enrolled children with autism spectrum disorders. *Pediatrics*, *121*(3), 441–448.
- Mandell, D. S., & Palmer, R. (2005). Differences among states in the identification of autistic spectrum disorders. *Archives of Pediatric and Adolescent Medicine*, *159*, 266–269.
- Mandell, D. S., Wiggins, L. S., Carpenter, L. A., Daniels, J., DiGuseppi, C., Durkin, M. S., . . . Kirby, R. S. (2009). Racial/ethnic disparities in the identification of children with autism spectrum disorders. *American Journal of Public Health*, *99*, 493–498.
- Mehta, N. K., Lee, H., & Ylitalo, K. R. (2013). Child health in the United States: Recent trends in racial/ethnic disparities. *Social Science & Medicine*, *95*, 6–15.
- Montes, G., & Halterman, J. S. (2011). White-Black disparities in family-centered care among children with autism in the United States: Evidence from the NS-CSHCN 2005–2006. *Academic Pediatrics*, *11*, 297–304.
- Narendorf, S. C., Shattuck, P. T., & Sterzing, P. R. (2011). Mental health service use among adolescents with an autism spectrum disorder. *Psychiatric Services*, *62*, 975–978.
- Palmer, R. F., Blanchard, S., Jean, C. R., & Mandell, D. S. (2005). School district resources and identification of children with Autistic Disorder. *American Journal of Public Health*, *95*, 125–130.
- Phinney, J. S. (1990). Ethnic identity in adolescents and adults. *Psychological Bulletin*, *108*, 499–514.
- Ravindran, N., & Myers, B. J. (2012). Cultural influences on perceptions of health, illness, and disability: A review and focus on autism. *Journal of Child and Family Studies*, *21*, 311–319.
- Reichard, A., Sacco, T. M., & Turnbull, H. R. (2004). Access to health care for individuals with developmental disabilities from minority backgrounds. *Mental Retardation*, *42*, 459–470.
- Schnittker, J. (2003). Misgivings of medicine? African Americans' skepticism of psychiatric medication. *Journal of Health and Social Behavior*, *44*, 506–524.
- Schwichtenberg, A., & Poehlman, J. (2007). Journal of Applied Behavior Analysis: Does intervention intensity relate to family stressors and maternal well being? *Journal of Intellectual Disability Research*, *51*, 598–605.
- Shattuck, P. T., Wagner, M., Narendorf, S. C., Sterzing, P. R., & Hensley, M. (2011). Post high school service use among young adults with autism spectrum disorder. *Archives of Pediatric and Adolescent Medicine*, *165*, 141–146.
- Shattuck, P. T., Narendorf, S. C., Cooper, B., Sterzing, P. R., Wagner, M., & Taylor, J. L. (2012). Postsecondary education and employment among youth with an autism spectrum disorder. *Pediatrics*, *129*, 1042–1049.
- Shea, L., Newschaffer, C. J., Xie, M., Myers, S. M., & Mandell, D. S. (2014). Genetic testing and genetic counseling among Medicaid-enrolled children with autism spectrum disorder in 2001 and 2007. *Human Genetics*, *133*, 111–116.
- Siller, M., Reyes, N., Hotez, E., Hutman, T., & Sigman, M. (2014). Longitudinal change in the use of services

- in autism spectrum disorder: Understanding the role of child characteristics, family demographics, and parent cognitions. *Autism*, 18, 433–446.
- Smedley, B. D., Stith, A. Y., & Nelson, A. R. (Eds.). (2003). *Unequal treatment: Confronting racial and ethnic disparities in healthcare*. Washington, DC: National Academies Press.
- Spencer, M. B., & Markstrom-Adams, C. (1990). Identity processes among racial and ethnic minority children in America. *Child Development*, 61, 290–310.
- Stevens, G. D., & Shi, L. (2003). Racial and ethnic disparities in the primary care experiences of children: A review of the literature. *Medical Care Research and Review*, 60, 3–30.
- Tajfel, H. (1981). *Human groups and social categories*. Cambridge, UK: Cambridge University Press.
- Terhune, P. S. (2005). African-American developmental disability discourses: Implications for policy development. *Journal of Policy and Practice in Intellectual Disabilities*, 2, 18–28.
- Thomas, K. C., Ellis, A. R., McLaurin, C., Daniels, J., & Morrissey, J. P. (2007). Access to care for autism-related services. *Journal of Autism Developmental Disorders*, 37, 1902–1912.
- Thomas, P., Zahorodny, B., Peng, B., Kim, S., Jani, N., Halperin, W., & Brimacombe, M. (2011). The association of autism diagnosis with socioeconomic status. *Autism*, 16, 201–213.
- Tincani, M., Travers, J., & Boutot, A. (2009). Race, culture, and autism spectrum disorder: Understanding the role of diversity in successful educational interventions. *Research and Practice for Persons with Severe Disabilities*, 34, 81–90.
- Travers, J., Tincani, M., & Krezmien, M. P. (2011). A Multiyear national profile of racial disparity in autism identification. *Journal of Special Education*, 47, 41–49.
- Tregnago, M. K., & Cheak-Zamora, N. C. (2012). Systematic review of disparities in health care for individuals with autism spectrum disorders in the United States. *Research in Autism Spectrum Disorders*, 6, 1023–1031.
- U.S. Department of Health and Human Services, Health Resources and Services Administration [USDHHS]. (2013). *The National Survey of Children with Special Health Care Needs Chartbook 2009–2010*. Rockville, MD: U.S. Department of Health and Human Services.
- Valicenti-McDermott, M., Hottinger, K., Seijo, R., & Shulman, L. (2012). Age at diagnosis of autism spectrum disorders. *The Journal of Pediatrics*, 161, 554–556.
- van Ryn, M., & Fu, S. S. (2003). Paved with good intentions: Do public health and human service providers contribute to racial/ethnic disparities in health? *American Journal of Public Health*, 93, 248–255.
- Weitlauf, A. S., McPheeters, M. L., Peters, B., Sathe, N., Travis, R., Aiello, R., . . . Warren, Z. (2014). *Therapies for children with autism spectrum disorder: Behavioral interventions update*. Rockville, MD: Agency for Healthcare Research and Quality.
- Wilson, M. N. (1986). Perceived parental activity of mothers, fathers, and grandmothers in three-generational Black families. *Journal of Black Psychology*, 12, 43–59.
- Yeargin-Allsopp, M., Rice, C., Karapurkar, T., Doernberg, N., Boyle, C., & Murphy, C. (2003). Prevalence of autism in a US metropolitan area. *Journal of the American Medical Association*, 289, 49–55.
- Yeh, M., Hough, R. L., McCabe, K., Lau, A., & Garland, A. (2004). Parental beliefs about the causes of child problems: Exploring racial/ethnic patterns. *Journal of the American Academy of Child and Adolescent Psychiatry*, 43, 605–612.
- Zionts, L. T., Zionts, P., Harrison, S., & Bellinger, O. (2003). Urban African American families' perceptions of cultural sensitivity within the special education system. *Focus on Autism and Other Developmental Disabilities*, 18, 41–50.