Factors Influencing the Differential Diagnosis of Asperger’s Disorder
and High-Functioning Autism

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Abstract

We examined the influence of a child’s IQ level, the presence of a language delay, and his desire to engage others in social interaction on clinicians’ diagnosis of Asperger’s Disorder. Seventy-four clinicians read an excerpt from a fictional psychological report and recommended a primary diagnosis for the child described in the report. Results indicated that the presence of a delay in language milestones decreased the likelihood but did not rule out an Asperger’s diagnosis. In addition, a higher IQ and a desire to engage others in social interaction when combined with an absence of a language delay significantly increased the likelihood of an Asperger’s diagnosis. Results of this study suggest that, when presented with a high-functioning child exhibiting symptoms within the autistic spectrum, clinicians do attend to elements of the DSM-IV criteria when considering differential diagnosis, but do so in conjunction with other factors.

Key Words: differential diagnosis, Asperger’s disorder, developmental disabilities, autism
Factors Influencing the Differential Diagnosis of Asperger’s Disorder and High-Functioning Autism

Asperger’s Disorder (AsD) was first included in the DSM-IV in 1994 (APA, 1994). Since that time, there has been considerable controversy about whether Asperger’s Disorder should be considered distinct from high-functioning autism and whether the current diagnostic criteria are adequate for making such a determination (Klin & Volkmar, 2003; Kugler, 1998; Mayes, Calhoun, & Crites, 2001). According to the 1994 criteria, both Asperger’s Disorder and Autistic Disorder (AuD) involve significant impairment in social interaction accompanied by restricted, repetitive and stereotyped behaviors or interests. However, a diagnosis of AuD requires that problems related to symbolic or imaginative play, social interaction, or social communication be present before the age of 3 (APA, 1994). Also, to receive a diagnosis of AsD, there must be no evidence of clinically significant delays in either language or cognitive development (APA, 1994; Eisenmajer et al., 1996). Despite these differentiating characteristics, there is considerable overlap in the diagnostic criteria for each disorder and several researchers have noted potential problems with the DSM-IV classification of AsD and AuD (Freeman, Cronin, & Candela, 2002; Kugler, 1998; Mayes & Calhoun, 2004; Mayes, Calhoun, & Crites, 2001).

One common criticism of the DSM-IV criteria for AsD is that they do not represent empirically supported distinguishing characteristics. For instance, the DSM-IV operationally defines significant language delay in terms of developmental milestones (i.e., single words used by age 2, communicative phrases used by age 3). However, research has failed to support the discriminant validity of the language delay criterion. Specifically, normal language onset does not preclude subsequent communication difficulties and the presence of a language delay does not predict differences in other core areas of disturbance (Eisenmajer, et al., 1998; Mayes &
Calhoun, 2001). Furthermore, other research has documented important forms of communication impairment not related to language acquisition milestones (e.g., comprehension and use) that are not mentioned in the DSM-IV (Eisenmajer et al., 1996; Kugler, 1998; Leekam et al., 2000).

Substantive concerns have also been raised over the DSM-IV criteria pertaining to cognitive development, stereotyped or restricted patterns of behavior, and social interaction in AsD and AuD. To be diagnosed with AsD, a child must not evidence a significant delay in general cognitive development (i.e., Full-Scale IQ). However, a diagnosis of AuD can be made across the range of cognitive skills (APA, 1994). Thus, at higher levels of functioning, general cognitive ability is unlikely to discriminate between the two diagnoses. Similarly, the criteria for restricted or stereotyped behavior and for social impairment are identical for AsD and AuD. The DSM-IV criteria require the mere presence of a preoccupation or stereotyped pattern of behavior despite research supporting qualitative differences between the two diagnostic groups. For instance, special interests in AsD typically involve amassing large amounts of information on a circumscribed topic, whereas special interests in AuD are more likely to involve object manipulation (Volkmar & Klin, 2000). With regard to social impairment, the DSM-IV criteria do not reflect qualitative differences in the nature of social interactions in AsD and AuD children. Children with AsD are typically more interested in social interaction than children with AuD (Eisenmajer et al., 1996; Kugler, 1998).

Many criticisms of the original DSM-IV criteria were addressed in the most recent text revision (DSM-IV TR; APA, 2000). Although the diagnostic criteria remained the same, the differential diagnosis section in the DSM-IV TR describes important distinguishing features that have been supported by more recent research. For instance, the DSM-IV TR acknowledges that the pattern of restricted and stereotyped behaviors in AuD (e.g., presence of motor mannerisms,
Factors influencing preoccupation with objects) may differ from the pattern seen in AsD (e.g., circumscribed interest in a topic). Furthermore, qualitative differences in social intention (i.e., children with AsD appear more motivated to engage others) are also reflected in the DSM-IV TR discussion of differential diagnosis. However, some criticisms of the original DSM-IV criteria for AsD and AuD have not been addressed in the most recent text revision. For instance, the DSM-IV and the DSM-IV TR criteria tend to neglect the interactive nature of the core symptom areas. Children with social impairment and circumscribed interests are also likely to have communication difficulties (Kugler, 1998; Mayes & Calhoun, 2001). Likewise, children’s communication skills may influence social impairment. Consequently, if clinicians adhere strictly to the DSM-IV criteria, it is virtually impossible to make a diagnosis of AsD because meeting the criteria for AuD precludes a diagnosis of AsD (Mayes & Calhoun, 2001). Several studies have documented that many, if not most, children who receive a diagnosis of AsD should or could have been diagnosed with AuD (Eisenmajer et al., 1996; Leekam et al., 2000; Mayes, Calhoun, & Crites, 2001; Szatmari et al., 1995).

If the diagnosis of AsD is being made in cases where the diagnostic criteria suggest otherwise, then clinicians may be basing their decisions on factors not specified in the DSM-IV (Klin & Volkmar, 2003; Mayes et al., 2001). In a study of children who had been diagnosed with AuD or AsD, Eisenmajer and colleagues found relatively few clinical differences between children who were diagnosed with AsD and those diagnosed with AuD (Eisenmajer et al., 1996). In addition to social impairment and restricted interests, most of their sample had some significant impairment in communication skills. Consequently, every child in the sample would have met the DSM-IV criteria for AuD. However, many children had received a diagnosis of AsD. Furthermore, there was clear evidence of a delay in language milestones in nearly half
(43%) of the children who had received a diagnosis of AsD. Eisenmajer and his colleagues suggest that clinicians’ differential diagnosis of AsD may rely on factors other than those specified in the DSM-IV criteria. Specifically, they suggest that clinicians appear to give a diagnosis of AsD to children who (a) exhibit less social impairment, (b) desire friendship, but make flawed attempts at social interaction, (c) show milder cognitive delay, (d) do not have a history of delay in language development, (e) display idiosyncratic word use and pedantic speech patterns, (f) engage in repetitive, one-sided conversations, (g) have narrow circumscribed interests, and (h) seek to engage other children in their circumscribed interest. Because they examined children after a diagnosis was made, however, Eisenmajer and colleagues could not determine which factors were most important and how, if at all, these factors interacted with each other.

The purpose of the present study was to extend the findings of Eisenmajer et al. (1996) by using experimental methods. More specifically, we investigated the effects of three factors suggested by Eisenmajer on clinicians’ diagnostic judgments: (a) the presence of language delay as defined in the DSM-IV, (b) the extent to which a child seeks to engage others in his or her preoccupation or circumscribed interest, and (c) the child’s overall level of cognitive ability. According to the DSM-IV criteria, only the language delay should influence differential diagnosis of AsD and AuD for children considered to be “high-functioning”. By using experimental methods, we sought to isolate the effects of each factor and determine how these factors interact to influence clinicians’ judgments.
Method

Participants and Procedure

Our target population was practicing clinicians who were experienced in the assessment and diagnosis of childhood disorders, particularly pervasive developmental disorders. Accordingly, we requested a random sample of 500 members of the American Psychological Association who were licensed as a psychologist, paid a “special assessment” fee charged to practicing clinicians, and reported an interest or training in at least one of the following areas: (a) Autism, (b) child and pediatric psychology, (c) child therapy, (d) clinical child psychology, (e) clinical psychology, or (f) school psychology. Although this sampling method closely approximated our desired target population, it is also possible that our selection procedure identified a number of false positives (e.g., clinicians who do not work with children).

We obtained mailing labels for the sample from the research office of the American Psychological Association and mailed participants a packet containing the experimental materials. Each experimental packet contained (a) an introductory letter of consent, (b) a copy of a psychological report excerpt, (c) a survey regarding the child described in the report, (d) a background information survey, and (e) a postage-paid return envelope. Approximately 2 weeks after the initial mailing, we mailed a reminder postcard to all 500 participants. Upon receipt of the completed materials, we separated the experimental data from requests for results and the return envelope. To document the geographic location of our respondents, we recorded the state of origin from the postmark and/or the return address.

Of the 500 packets mailed, 100 were returned. Of the 100 responses, 74 contained usable and complete data. Twenty-six responses were discarded due to either (a) ineligibility (i.e., no

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3 An annual fee included as part of American Psychological Association membership dues for psychologists who provide or supervise services in the health or mental health field (http://www.apa.org/membership/assessment.html).
Factors influencing child-related clinical experience; \( N = 14 \), (b) incomplete data \( (N = 2) \), or (c) missing information (i.e., participants removed information that identified the experimental condition; \( N = 10 \)). After taking into consideration these problems with ineligibility, our usable response rate was approximately 15% (74 of 486). Because there may have been other ineligible respondents who did not return surveys, 15% is most likely an underestimate of the response rate among clinicians with the desired experience. Despite the relatively low response rate, however, the demographic and professional characteristics of the responders were representative of the random sample from which they came. Tables 1 and 2 present the demographic and professional characteristics of the entire target sample and the responders.

Because we were interested primarily in clinicians, we also asked about respondents’ current work responsibilities and settings. On the whole, the sample reported being involved primarily in practice related activities. For instance, respondents reported spending approximately two-thirds of their time in the delivery of mental health services, with only 32% of the sample spending less than half of their time providing direct mental health services. With regard to setting, most of the respondents (63%) reported private practice as their primary work setting, followed by outpatient clinics (13%), school or university settings (8%), other settings not specified (7%), hospitals (6%), and multiple settings (3%).

**Materials**

*Psychological report excerpt.* Each report excerpt contained information about a fictional child’s academic, social, and developmental history. Specifically, each report excerpt was formatted to simulate a formal psychological report and contained a description of the reason for referral, relevant background information, and intelligence test scores for an 8-year-old boy. The reports varied by the child’s cognitive ability (i.e., IQ), language development
history, and whether the child sought to engage others in his preoccupation (i.e., social intention). Aside from these manipulations, each report reflected symptoms in each of the three core areas of autism specified in the DSM-IV (i.e., social impairment, communication impairment, restricted or stereotyped behaviors or interests). All other information in the report excerpt (e.g., family history, school performance) was identical across conditions. We randomly assigned each clinician in the target sample to one of the eight versions of the report excerpt. Comparisons of respondent characteristics across the 8 experimental conditions revealed no significant differences in age, $F(7, 65) = 0.81, p = .580$, years of experience, $F(7, 65) = 1.45, p = .201$, level of experience in diagnosis of childhood disorders, $F(7, 66) = 0.63, p = .730$, confidence in diagnosing children, $F(7, 66) = 0.99, p = .450$, or percentage of time spent in direct mental health service, $F(7, 65) = 0.53, p = .810$.

After reviewing the information in the report, each participant answered a series of questions pertaining to the child described in the report. Specifically, participants indicated a primary diagnosis and one or more rule-out diagnoses from a list of the childhood disorders taken from the DSM-IV TR (APA, 2000). Using a scale of 1 (not at all confident) to 7 (extremely confident), participants also rated their confidence in (a) the primary diagnosis for the child depicted in the report and (b) their general ability to make an accurate diagnosis of psychological dysfunction in children (ages 6 – 12). We also asked participants to rate their level of experience in the assessment and diagnosis of childhood disorders on a scale of 1 (no experience) to 7 (extensive experience).

Because this study used fictional case studies, it was necessary to establish that the report excerpts were realistic and that the experimental manipulations were effective. To evaluate these issues, we distributed the experimental materials to a sample of 16 mental health professionals
with extensive experience and training in the diagnosis of childhood disorders. We gave each rater one version of the hypothetical report followed by a checklist of 20 problematic childhood behaviors. The list of problematic childhood behaviors contained all 12 symptoms depicted in the DSM-IV criteria for Autistic Disorder and one item pertaining to social intention (i.e., attempts to engage others in conversations or play pertaining to areas or objects of interest). To minimize demand characteristics associated with presenting only autistic symptoms, we also included 7 symptoms unique to other childhood disorders (e.g., Rett’s Disorder, ADHD, and Oppositional Defiant Disorder). Responses of the expert raters were used to evaluate the realism of the stimulus materials and the effectiveness of the experimental manipulations.

According to the responses of the expert raters, the child in the case history met the DSM-IV criteria for Autistic Disorder. Specifically, 15 of the 16 raters (94%) endorsed at least one symptom in each of the 3 core symptoms areas and at least 6 symptoms overall as required by the DSM-IV criteria for Autistic Disorder. The lone rater whose responses did not indicate a diagnosis of AuD identified at least one symptom in the communication and social impairment areas, but not in the restricted or stereotyped behaviors area. The average number of symptoms endorsed by the expert raters was 7.88 ($SD = 1.09$). The percentage of raters agreeing on specific symptoms ranged from 63% to 100% ($M = 88.76$, $SD = 12.92$).

Manipulation of language delay involved altering the description of the child’s developmental history in the background information section of the psychological report. In accordance with the DSM-IV operational definition of language delay, we changed the age at which the child spoke his first word (12 months or 30 months) and the age at which he began using phrases (2 years or 3½ years). To evaluate the validity of this manipulation, we compared expert raters’ responses to the checklist item pertaining to language delay (i.e., delay in, or total
lack of, the development of spoken language). Significantly more raters in the language delay condition (80%) endorsed this item than in the no delay condition (17%), suggesting that the experimental manipulation was effective, $\chi^2 (1, N = 16) = 6.11, p = .013, \phi = .62$.

To manipulate social intentionality, we modified descriptions of the extent to which the child attempted to engage others in his preoccupation with toy cars. Below is the section of the report that describes the target child’s (Jon) preoccupation with cars and the extent to which he attempted to engage others in his interest. The portions of the text contained in brackets replaced the preceding italicized text in order to represent the presence of social intentionality.

Mrs. Smith reported that, by the age of three, Jon became extremely preoccupied with cars. He takes his two favorite cars with him everywhere (e.g., to bed) and, by age seven, Jon knew the make and model of all the cars on the road. According to his parents, Jon plays exclusively with his collection of matchbox cars and shows little interest in other toys. Although he occasionally plays or converses with other children, he rarely initiates interactions and frequently becomes agitated when those children do not share his interest or enthusiasm for cars. [He frequently tries to engage other children in play or discussion of cars, but becomes agitated when those children do not share his interest or enthusiasm. He frequently talks about cars to anyone who will listen.] When he does engage in conversation, these conversations [However, these conversations] are often one-sided and Jon frequently repeats sentences over and over despite being assured that he was understood.

To evaluate whether this manipulation was effective, we looked at the percentage of expert raters who endorsed the checklist item pertaining to social intention (i.e., attempts to engage others in conversations or play pertaining to areas or objects of interest). Significantly more raters in the
social intention condition (100%) endorsed this item than in the no social intention condition (50%), suggesting that the experimental manipulation was effective, $\chi^2 (1, N = 16) = 4.36, p = .037, \phi = .52$.

To manipulate the child’s general level of cognitive ability, we altered Full Scale IQ scores in the report excerpt. To ensure that there was a meaningful difference between the low IQ and high IQ conditions, we chose Full scale IQ scores for which the 95% confidence intervals did not overlap. For the low IQ condition, the child’s Full Scale IQ was reported to be in the low average range (Full Scale IQ = 86; 95% CI = 81 - 92). For the high IQ condition, the child’s Full Scale IQ was in the average range (Full Scale IQ = 105; 95% CI = 98 - 109). We chose these IQ levels to be consistent with the range of cognitive ability in high-functioning autism and Asperger’s disorder.

With regard to ecological validity, we asked the expert raters to evaluate the realism of the hypothetical report. Specifically, we asked the raters to respond to the following question using a scale of 1 (very unrealistic) to 5 (very realistic):

The case report above is intended to be only an excerpt from a formal psychological report. Obviously, more assessment and background information would be desirable in a complete report. Aside from the abbreviated nature of this report, how realistic is this report based on your experience?

Several raters commented that they would prefer additional information in specific areas (e.g., gross motor functioning, abstract reasoning, rote academic task performance), but they generally judged that the report excerpt was realistic ($M = 4.06, SD = 0.77$).
Results

Across all conditions, Asperger’s Disorder was the most frequent primary diagnosis given by the clinicians in this sample. Asperger’s Disorder was listed as the primary diagnosis by 68% of respondents, followed by Autistic Disorder (14%), PDD-NOS (10%), and Obsessive-Compulsive Disorder (4%). The most common diagnoses to be “ruled-out” were Autistic Disorder (47%), PDD-NOS (32%), OCD (28%), Asperger’s Disorder (19%) and Schizophrenia (10%). Because Asperger’s Disorder was, by far, the most frequently recommended diagnosis, we used the presence or absence of an Asperger’s diagnosis as the primary dependent measure for subsequent analyses.

To examine the effects of specific factors on differential diagnosis, we examined the frequency of an Asperger’s diagnosis as a function of each of the three independent variables (language delay, social intention, IQ). Clinicians’ decisions to recommend an Asperger’s diagnosis were not related to the presence of social intention, $\chi^2 (1, N = 74) = 0.12, p = .726, \phi = .04$, or to the child’s IQ, $\chi^2 (1, N = 74) = 0.10, p = .747, \phi = .04$. However, the presence of a delay in language milestones was significantly related to whether a clinicians recommended a primary diagnosis of Asperger’s, $\chi^2 (1, N = 74) = 5.40, p = .020, \phi = .27$. Specifically, in accordance with the DSM-IV criteria, clinicians were less likely to recommend a diagnosis of AsD when there was evidence of a language delay (55%; 21 of 38) than when there was no language delay (81%; 29 of 36). However, if clinicians were strictly following the DSM-IV criteria, evidence of a language delay should have precluded a diagnosis of Asperger’s Disorder. In this study, a majority (55%) of clinicians in the language delay condition still gave a diagnosis of Asperger’s Disorder.
To probe for interactive effects, we conducted a series of analyses in which we assessed the association between primary diagnosis (Asperger’s Disorder vs. other) and language status (delay vs. no delay) at each level of the other independent variables (i.e., social intention, IQ level). Specifically, for each of the four possible 2 x 2 contingency tables, we used Fisher’s exact test to assess whether the association between language delay and the diagnosis of AsD varied as a function of IQ level and social intention. Results of these analyses indicated that the absence of a language delay resulted in a significantly greater likelihood of an Asperger’s diagnosis only when it was accompanied by a higher IQ and a desire to engage others in social interaction (see Figure 1).

In addition to the experimental manipulations, it is also possible that clinician characteristics systematically influenced the diagnostic recommendations. In this study, however, the likelihood of giving a primary diagnosis of AsD was not significantly related to clinicians’ years of experience, $r(71) = .02, p = .868$, confidence in diagnosing children, $r(72) = -.08, p = .513$, experience in diagnosing children, $r(72) = -.05, p = .668$, or percentage of time spent in direct mental health service, $r(71) = .18, p = .125$.

Discussion

Asperger’s Disorder was, by far, the most likely diagnosis recommended by the clinicians in this sample. In fact, clinicians in this sample were likely to recommend a diagnosis of Asperger’s Disorder even in cases where there was evidence of a language delay, which should preclude an Asperger’s diagnosis according to the DSM-IV criteria. It is possible that the nature of the case report was more consistent with the criteria for Asperger’s Disorder and was therefore biased toward this diagnosis. However, when we presented a sample of expert raters with a checklist of individual symptoms based on the DSM-IV criteria for Autistic Disorder, there was clear
agreement that the child presented in the fictional report met the DSM criteria for Autistic Disorder. The discrepancy between the expert raters and the clinicians in our sample is not necessarily one of expertise or competence, but rather of the type of response required. Our sample of expert raters checked off the individual DSM criteria met for the case presented in the hypothetical report. However, the clinicians in our sample were not asked (although they may have done so independently) to check off the specific criteria. They were asked to integrate the information and provide a global judgment. It is this type of integration that often leads to bias in decision making (Dawes, 1994). In our study, it is possible that clinicians’ decisions may have reflected the use of a representativeness heuristic. In other words, clinicians’ diagnostic recommendations may have been influenced by the extent to which the case, as a whole, appeared to be prototypical of Asperger’s disorder.

When looking at the effects of specific factors on diagnosis, we found that the presence of a delay in language milestones decreased the likelihood of clinicians recommending a diagnosis of Asperger’s Disorder. This finding is not surprising and suggests that clinicians do attend, to some extent, to the differential diagnosis guidelines in the DSM-IV criteria. However, many clinicians (55%) recommended a diagnosis of AsD even in cases where there was evidence of a language delay. Our findings suggest that the absence of language delay appears to make a diagnosis of AsD more likely, but the presence of language delay does not necessarily dissuade many clinicians from an AsD diagnosis. Eisenmajer and colleagues found similar results when examining a clinical sample of children with AsD or AuD (Eisenmajer et al., 1996). In their sample, there was evidence of a delay in language milestones in many (43%) of the children who had been diagnosed with AsD. It appears that clinicians are attending to the DSM-IV criteria
when making differential diagnoses of AsD and AuD, however, they also appear to be using other factors, such as the child’s overall IQ and his desire to engage others in social interaction.

Based on the results of our study, however, social intention and IQ do not appear to influence diagnosis by themselves, but rather in combination with the presence or absence of a language delay. According to the DSM-IV criteria, language delay is supposed to preclude a diagnosis of Asperger’s disorder. However, the absence of a delay in this area does not necessarily indicate a diagnosis of Asperger’s over Autism. In high-functioning cases, the absence of more definitive distinguishing features may lead clinicians to pay more attention to other factors that are not part of the DSM criteria. Data from this study seem to suggest that this is happening. Specifically, our results suggest that when there is no evidence of language delay in a high-functioning child exhibiting symptoms within the autistic spectrum, clinicians may look for “prototypical” features of AsD when making a differential diagnosis. Moreover, these features appear to be factors that have been represented in the research literature (i.e., social intention, overall IQ) even though they are not formally specified in the DSM-IV criteria (Eisenmajer, et al., 1996).

A significant limitation of this study was that it used an analogue methodology. The nature of material presented to clinicians in this study is considerably less complex, less detailed, and less interactive than what normally happens in diagnostic assessment. Therefore, it is unclear how much the decisions made in this study are representative of the ways in which diagnostic decisions are made in practice. However, analogue methodologies, such as the one used in this study, may provide unique and important information about decision-making processes (Huebner, 1991), and may suggest hypotheses to be tested using more clinically realistic methods. For instance, the interaction of social intention and language delay in the diagnosis of Asperger’s Disorder could be evaluated experimentally using videotaped illustrations of
children’s behavior or through a systematic examination of clinical records for children already diagnosed with pervasive developmental disorders.

Another significant limitation of this study was the relatively low response rate. Our results and conclusions are based on the responses of approximately 15% of the targeted sample. Although the demographic characteristics of the respondents appear to be representative of the target population, the relatively small number of responses suggests a clear need for replication to ensure the stability of these results.

In conclusion, results of the present study suggest that, when presented with a high-functioning child exhibiting symptoms within the autistic spectrum, clinicians do attend to elements of the DSM-IV criteria (i.e., presence or absence of a language delay) when considering differential diagnosis, but do so in conjunction with other factors. Specifically, our results suggest that clinicians consider the presence or absence of a language delay along with the child’s overall IQ and the extent to which the child seeks to engage others in social interaction. However, knowledge of these factors alone does not account for all of the variability in diagnostic decisions. Some clinicians appeared to be paying attention to factors other than those in this study. In fact, for some clinicians, other factors appeared to override the presence of a language delay. Future research should examine factors leading some clinicians to disregard language delay information and evaluate the role of other potentially relevant characteristics that may influence the diagnosis of AsD (e.g., motor clumsiness, perceived stigma).

Finally, the results of the present study highlight the importance of resolving the conceptual problems associated with the differential diagnosis of AsD and other pervasive developmental disorders. Consistent with prior clinical research, many clinicians in our sample appeared to adhere only loosely to the DSM-IV criteria, suggesting that they perceive other
factors to be important as well. To the extent that clinicians stray from standardized criteria, research on the distinction between AsD and AuD becomes more difficult and the generalizability of treatment outcome research will be adversely affected. Accordingly, there is a need for research that examines discriminating features that are external to the criteria themselves. For instance, evaluation of the utility of the various diagnostic schemes for AsD will be aided by research on neuropsychological profiles, patterns of comorbidity, and patterns of genetic liability (Klin & Volkmar, 2003). Without such research to inform the diagnostic criteria, there is likely to be continued variability in the adherence to standardized criteria and continued debate over the legitimacy of Asperger’s disorder as a unique developmental disability. Unfortunately, continued conceptual ambiguity over the distinction between AsD and AuD may undermine the legitimate treatment needs of some “high functioning” children with pervasive developmental disorders.
Factors influencing

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References


Table 1

**Demographic and Educational Characteristics for Responders and Target Sample**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Random Sample ($N = 500$)</th>
<th>Responders ($N = 74$)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gender</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Men</td>
<td>53.8</td>
<td>51.4</td>
</tr>
<tr>
<td>% Women</td>
<td>46.2</td>
<td>48.6</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>50.9</td>
<td>51.6</td>
</tr>
<tr>
<td>SD</td>
<td>7.6</td>
<td>8.0</td>
</tr>
<tr>
<td><strong>Highest Educational Degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Ph.D.</td>
<td>83.0</td>
<td>81.1</td>
</tr>
<tr>
<td>% Ed.D.</td>
<td>2.6</td>
<td>2.7</td>
</tr>
<tr>
<td>% Psy.D.</td>
<td>11.0</td>
<td>12.2</td>
</tr>
<tr>
<td>% Masters</td>
<td>1.8</td>
<td>1.4</td>
</tr>
<tr>
<td>% Other/Not Specified</td>
<td>1.6</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Years Since Degree</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>M</td>
<td>18.1</td>
<td>19.9</td>
</tr>
<tr>
<td>SD</td>
<td>7.7</td>
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</tr>
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Table 2

*Geographic Distribution of Responders and Target Sample*

<table>
<thead>
<tr>
<th>Geographic Region (N = 92)</th>
<th>Random Sample (N = 500)</th>
<th>Responders (N = 92) (^a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>7.6</td>
<td>7.6</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>20.8</td>
<td>21.7</td>
</tr>
<tr>
<td>East North Central</td>
<td>14.4</td>
<td>13.0</td>
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<tr>
<td>West North Central</td>
<td>5.0</td>
<td>8.7</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>17.4</td>
<td>14.1</td>
</tr>
<tr>
<td>East South Central</td>
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</tr>
<tr>
<td>West South Central</td>
<td>4.4</td>
<td>6.5</td>
</tr>
<tr>
<td>Mountain</td>
<td>6.2</td>
<td>7.6</td>
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<tr>
<td>Canada</td>
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<td>2.2</td>
</tr>
</tbody>
</table>

*Note.* Numbers in table represent percentages.

\(^a\) Eight additional responses were received but did not include sufficient information on which to base geographic location.
Figure Caption

*Figure 1.* Percentage of clinicians recommending a diagnosis of Asperger’s Disorder as a function of language delay, IQ level, and social intention.