

Tables of Raw Data for

Are the majority of children with autism mentally retarded?:

A systematic evaluation of the data

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Table 1

Empirical articles that allow for the calculation of percentages of individuals with autism who are determined to be mentally retarded or which are included in review articles.

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
Ando & Yoshimura (1979)	n=47 children with autism ranging in age from 6-14 years. They attended Haruhidai Special School for mentally retarded and autistic children.	Performance scale of WISC	96% MR	While Ando & Yoshimura ((1979) state that there were 47 participants in their study, the data they report is for 48 participants (Table II on p. 86). Also, untestable subjects were considered to have IQs of 50 or below, and 71% of their participants scored in this IQ range (it was not possible to determine how many were untestable and how many actually scored in this range). The Performance scale of the WISC is timed and therefore may not be appropriate given attention and motivation difficulties often seen in individuals with autism. Finally, it was not stated who assessed the children and whether those doing the assessment had experience in working with children diagnosed with autism.
Barry & James (1978)	n=34 children with autism ranging in age from 4 years, 10 months to 18 years, 11 months.	Not stated how intelligence was assessed.	97% MR	It was not stated what measures of intelligence were used, by whom, when the children were assessed, and whether those doing the assessment had experience in working with children diagnosed with autism. Also, the authors wanted to match the children with autism to a control group of MR children which suggests that their sample may have deliberately focused on children with autism who were also MR.
Bender & Helme (1953)	n=30 children diagnosed as having childhood schizophrenia from patients treated at Bellevue Hospital	Standardized measures of intelligence used. It is not stated what these measures were.	33% MR	It was not stated what measures of intelligence were used, by whom, when the children were assessed and whether those doing the assessment had experience in working with children diagnosed with childhood

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	between 1934 and 1942. The children all had a confirmation of diagnosis by staff at other institutions. Mean age of sample was 10.77 years.			schizophrenia.
Bohman, Bohman, Björk, & Sjöholm (1983)	n=39 individuals between 0-3 years of age to 18-20 years of age. Twenty-one of the participants met Rutter's criteria for early infantile autism (except they could have an age of onset up to 7 years instead of Rutter's proposed 30 months); the other 18 participants had "autistic traits" but did not meet criteria for autism.	Not stated how intelligence was assessed.	79% MR	The individuals in the study did not all meet criteria for autism. Not all of the 21 participants who met Rutter's criteria for autism met the age of onset criteria (it was not stated how many did and did not). The other 18 participants had autistic traits but did not meet criteria for autism. Additionally, it was not stated what measures of intelligence were used, who assessed the individuals, when they were assessed, and whether those who assessed them had experience in working with individuals with autism. With regard to the measure of intelligence Bohman, et al. (1983) state, "these tests were often uncompleted or were carried out long ago. It is well known that psychotic-autistic children respond in an irregular way to different tests, and that it is very difficult to assess their 'real' capacity." (p. 170). Bohman, et al. then go on to state that based on a records review, parent interviews, and their observations, they made a "tentative classification of the intellectual function" (p. 170).
Bryson, Clark, & Smith (1988)	n=21 children ages 6-15 years who met criteria for autism (although criteria unclear)	Eight children given the WISC-R performance scale, 13 children given the Merrill-Palmer (depending on age and perceived functioning level)	76% MR	When eliminating children who likely did not have autism (6 cases were unlikely autism due to symptom presentation as described by the authors and 3 cases did not meet age of onset criteria for autism), only 58% of sample fell in MR range; no independent verification of

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				autism diagnosis and no mention of whether testers had experience working with children with autism or made any modifications of test given autism. Many subtests of the WISC-R performance subscale are timed; given processing difficulties in individuals with autism, this is not an appropriate measure.
Chess (1971)	n=243 children exposed to rubella in utero, of whom 10 were identified as having autism. The children were 2 ½-3 years old at the beginning of the study and most were 5-6 years old at the conclusion of the study which was longitudinal in design.	Not stated. Unknown how children were diagnosed with autism and unknown how they were determined to be MR	90% MR	Methodology is vague. All that is stated is that psychiatric diagnoses were based on “retrospective behavioral descriptions obtained from the parents,” “direct examination of the children in a playroom,” and “review of behavioral descriptions obtained from schools or from previous medical examinations of the child.” (p. 37). Not only is the criteria for the diagnoses of autism and MR unclear, it is unknown whether the children were administered any tests of intelligence or whether they were merely diagnosed with MR as no actual scores are provided nor tests indicated.
Chung, Luk, & Lee (1990)	n=38 of 87 children with autism for whom IQ scores were available at time 1. n=66 of 87 children with autism for whom IQ scores were available 2-10 years later. Autism was determined based on Rutter’s criteria, and cases were obtained from the central registration books of the Department of Psychiatry at the	Most were assessed using the Merrill-Palmer scale or the Raven Progressive Matrix Test.	Time 1: 79% MR Time 2: 76% MR	Many of the items on the Merrill-Palmer scale are timed. It is not stated who assessed the children, when, and whether those who assessed them had experience in working with individuals with autism.

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	University of Hong Kong from 1976-1986.			
DeMyer, et al. (1973)	n=120-146 children with autism referred to the Clinical Research Center for Early Childhood Schizophrenia at LaRue D. Carter Memorial Hospital between 1954 and 1969. The children's mean age at initial assessment was 65.6 months and 12 years at follow-up. (the authors sometime state there were 120 children studied and sometimes state there were 146 children studied). Performance IQs were obtained on 121 children initially and 87 children at follow-up; verbal IQ measures were obtained on 101 children initially and 87 children at follow-up.	At initial assessment, the authors note that the main source of performance IQ scores came from the Vineland Social Maturity Scale; later in the study they state that another maternally-completed adaptive scale, the Alpern-Boll Self-Help scale was used along with unspecified nonverbal items from unspecified standardized tests. Initial verbal IQs were obtained from parent interviews and psychiatric interviews with the children and then verbal mental age was "estimated." Later verbal IQs were obtained from the Alpern-Boll Communication Scale primarily and unspecified verbal items from unspecified standardized tests. Initial general IQs were "estimated" by averaging performance and verbal IQ scores. Later general IQ was "estimated" from tests such as the Cattell-Binet, the Stanford-Binet, the Merrill-Palmer, and the WISC.	77% MR at initial evaluation and 73% MR at follow-up based on performance IQs; 80% MR at initial evaluation and 58% MR at follow-up based on verbal IQs.	Performance IQs are dependent either on measures of adaptive or social behavior (described by the child's mother); this is inappropriate given what is known about autistic symptomatology. The remaining IQs were based on unspecified nonverbal items from unspecified tests. Initial verbal IQs come from interviews with the mothers or children and then verbal age is "estimated." General IQs often averaged performance and verbal IQs. One hundred four of the children with autism were functionally noncommunicative according to the descriptions thus calling into question the methods used to evaluate verbal and general IQ. The fact that 22% of the sample moved from MR at initial assessment to non-MR category at follow-up on the basis of verbal IQ suggests the initial IQs may have been inaccurate. No mention is made of who assessed the children and whether they had experience in working with individuals with autism. In fact, most of the IQs appear to have been "estimates."
DeMyer, et al. (1974)	n=155 children with autism (mean age=64 months); n=115 of these children who had at least one IQ test at initial evaluation	Performance IQ was measured using the Vineland Social Maturity Scale (in 77 children) or the DeMyer Profile Test (in 50 children). Verbal IQ was "estimated" (in 68 children) or by using the DeMyer Profile Test (in 38 children). General IQ was obtained by averaging performance and verbal IQ (in 69 children), by	94% MR	The Vineland Social Maturity Scale is not a measure of performance IQ; it is a measure of social abilities and thus an inappropriate measure for measuring cognitive ability, especially in individuals with autism. The DeMyer Profile Test is an unstandardized test with no normative data. Verbal IQ was obtained by "estimating" verbal age through an interview or by using the DeMyer, both

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		using the Stanford-Binet (in 10 children), or by using the Cattell-Binet (in 14 children)		methods are inappropriate given the population. In most cases, the general IQ was obtained by averaging the performance and verbal IQs. Seventy-eight out of the 115 children in their sample for whom IQ could be tested had no speech or echolalic speech only; thus, reliance on verbal IQ (both in verbal and general IQ estimates) is inappropriate.
Eaves & Ho (1996)	n=76 children born between 1974-1984 who were referred to a developmental diagnostic clinic in Vancouver, BC. The children were assessed at two times; the mean age of the participants at time 1 was 7 years, 6 months, and at time 2 the mean age was 11 years, 6 months. Diagnoses at time 1 were not stated but at time 2, 46 of the 76 children in the sample met DSM-III-R criteria for autistic disorder.	WISC-R (n=52), Stanford-Binet (n=5), the Leiter (n=5—for verbal IQ the Peabody Picture Vocabulary Test was used), and the Bayley Scales (n=14)	Time 1: Verbal IQ: 72% MR; Performance IQ: 56% MR. Time 2: Verbal IQ: 62% MR; Performance IQ: 53% MR.	Only 46 of the 76 children met criteria for autism based on DSM-III-R criteria. The other diagnoses represented included Pervasive Developmental Disorder, NOS (n=12), Mentally Retarded or Language Disordered with Autistic Features (n=10), and Asperger Syndrome (n=8; it should be noted that Asperger Syndrome was not a diagnostic category in DSM-III-R). It cannot be determined from the data what tests were used with the children with autism nor at what level of functioning these children scored. It can be assumed that the children who had already met criteria for MR scored in the MR range. It is not stated who assessed the children, when, and whether those doing the assessments had experience in working with children with autism.
Edelson, Schubert, & Edelson (1998)	n=258 individuals with autism ranging in age from 4-41 years, with a mean age of 12.06 years and a standard deviation of 7.08 years.	Test of Nonverbal Intelligence, 2nd edition (TONI-2)	19% MR, an additional 17.8% fell in the borderline range (IQ 71-79)	Edelson, Schubert, & Edelson (1998) only reported data from testable participants. The authors changed the administration of the test so that instructions were presented verbally rather than nonverbally.
Fish & Shapiro (1965)	n=16 children ages 6-12 years of age diagnosed with childhood	Does not state how intelligence testing was done. Only states that the children were given “baseline	Unable to determine. 86% of 7 children with	No discussion of how intelligence was assessed nor mention made of who assessed the children and whether they had experience

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	schizophrenia using the APA guidelines at the time. All children were residents of the psychiatric ward of Bellevue Hospital.	psychiatric, psychological, and neurological evaluations during the first two weeks after admission” (p. 33).	childhood schizophrenia were MR; but the percentage of MR in the other 9 children cannot be determined given the way the data are reported.	in working with individuals with autism. Also, Fish & Shapiro (1964) note that 80% of the Bellevue Hospital population is drawn from a “very deprived” SES group; they discuss the many factors which can depress intellectual functioning including: institutional living, lack of stimulation, bilingual background, and lack of motivation for school resulting from this environmental condition.
Fisher, Burd, & Kerbeshian (1987)	n=21 children with infantile autism for whom intellectual functioning was assessed. Children were obtained from a data base on North Dakota children with pervasive developmental disorder.	Does not state how intelligence was assessed.	91% MR	No discussion of how intelligence was assessed nor mention made of who assessed the children and whether they had experience in working with individuals with autism.
Fombonne (1998)	n=10 epidemiological studies in which the assessment of intelligence was obtained for individuals with autism.	The studies included were: Lotter (1966a); Wing, et al. (1976); Bohman, et al. (1983); Steinhausen, et al. (1986); Bryson, et al. (1988); Ritvo, et al. (1989); Gillberg, et al. (1991); Fombonne & du Mazaubrun (1992); Wignyosumatro, et al. (1992); and Fombonne, et al. (1997).	Median prevalence rate across studies is 80.8% MR	Fombonne (1998) notes that the intellectual assessments were “conducted with various approaches; furthermore, results were pooled together in broad bands of intellectual level which do not share the same boundaries. As a consequence, different rates of cognitive impairments across and between studies should be interpreted with caution” (p. 46). Also, there were a wide range of results across studies with some studies reporting very low percentages of MR in individuals with autism. For all articles cited by Fombonne (1998) except the one by Wignyosumatro, et al. (1992), percentages of individuals with autism who scored in the MR range can be computed. See the entries in this table regarding the studies cited by Fombonne (1998).

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Fombonne & du Mazaubrun (1992)	n=154 children with autism (as identified by surveys with agencies who worked with children with special needs) born in 1972 or 1975 in four regions in France	Notes that “few detailed results of psychometric testing were reported for the autistic subjects” (p. 204). Also notes that “children described as ‘untestable’ were assigned to severe/profound category.” (p. 205). Because of a lack of testing done, intellectual level was assessed using a five step scale which was compared to tests where available. The specific tests used were not mentioned.	87% MR	The authors note that the large standard deviations of average IQ scores and lack of perfect agreement at each of the five levels obtained from the clinical scale indicates that the two assessments were independently obtained. It also indicates that the clinical scale is not an adequate substitute for appropriate testing, especially for those determined to be MR by the clinical scales, where the greatest standard deviations in IQ scores occurred. The authors do not state which tests were given for those tested, how the clinical scale was applied and by whom, and whether the individuals assessing the children with autism had experiencing in working with this population. Equates untestability with MR and, in fact, states that because untestable subjects were classified as MR, this means that untestable children are MR. This does not follow logically.
Freeman, et al. (1985)	n=62 children ranging in age from 2-6 years at initial assessment referred for diagnosis to the Division of Mental Retardation and Child Psychiatry, UCLA School of Medicine from 1973 to 1980. The authors state that the children met DSM-III diagnostic criteria for autism.	For children under 4 years old and/or with IQs <45, the Merrill-Palmer Pre-School Performance Test was used as a measure of nonverbal intelligence and either the Cattell Infant Intelligence Scale or the Stanford-Binet was used to assess verbal skills. For children over 4 years old and with IQs>45, the Wechsler Scales were used to assess intelligence	77% MR	Freeman, et al. (1985) state that they determined which test to give the children partly based on whether their IQs were greater or less than 45. How was this determined if they were not yet tested? The implication of this practice is that the children were already determined to be MR prior to testing thus introducing bias into the testing process. Also, the statistic reported includes children for whom both verbal and performance IQs were less than 70 and for whom verbal IQ but not performance IQ was less than 70. If one only considers the children for whom both verbal and performance IQs were less than 70, the prevalence of MR reduces to 48%. Using the verbal IQ as the determining indicator of MR status is concerning given that the authors

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				describe their sample as largely nonverbal. Finally, the authors state that the children met DSM-III criteria for autism yet DSM-III was not published until 1980 and much of their sample was obtained prior to this.
Gibson (1968)	n=60 children diagnosed with early infantile autism sampled from a Canadian provincial children's hospital and community clinic. Ages not stated.	No mention is made of how intelligence was assessed.	100% MR (reports an IQ range of 15-60)	Gibson (1968) provides very little data regarding the sample and the methodology by which the children were assessed. No mention is made of the ages of the children sampled nor the criteria by which they were diagnosed and by whom. Further, no mention is made regarding the measure of intelligence used, who tested the children, when they were tested, and whether or not the person assessing the children had experiencing in working with children with autism.
Gillberg (1984)	n=26 cases of infantile autism identified by diagnosis team with experience working with psychotic children. Children sampled from entire child population born in Gothenburg region of Sweden from 1962-1976	Intelligence assessment came from case reports was assessed by WISC, Leiter, Terman-Merrill, Merrill-Palmer, Griffiths Developmental Scale for Children, or the Vineland Social Scale.	77% MR	Many of the tests used were inappropriate, and it is unknown how many children were assessed by which test and what differences, if any, were found across tests. Also, it is unknown whether those doing the assessment had experience in working with individuals with autism. Finally, those who were untestable were judged to be mentally retarded.
Gillberg,Steffenburg, & Schaumann (1991)	n=55 children diagnosed with autistic disorder according to DSM-IIIR criteria and living in the Goteborg and Bohuslan regions of Sweden and born between 1975-1984	Assessed using the Griffiths' Developmental Scale for Children, the Vineland Social Maturity Scale, or the WISC-R.	80% MR	Neither the Griffiths' nor the Vineland are measures of intelligence. It is not stated how many children were assessed on each measure, when they were assessed, by whom, and whether those doing the assessments had experience in working with individuals with autism. Considered some children to be so retarded that they were deemed untestable which suggests that the determination of MR

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				was not just based on the tests but on clinical judgment as well.
Gillberg, Steffenburg, Wahlström, et al. (1991)	n=6 individuals with autism age 4-32 years. The individuals are presented as case studies and no details are provided about how they were included for study.	Does not state how intelligence was assessed.	Gillberg, Steffenburg, Wahlström, et al. (1991) do not report any data, but state that 100% had Iqs<55.	Gillberg, Steffenburg, Wahlström, et al. (1991) do not state how intelligence was assessed, when, who assessed the individuals and whether those doing the assessments had experience in working with individuals with autism.
Gillies (1965)	n=28 psychotic children who were inpatients in a child psychiatric unit. Mean age was 8.5 years	Peabody Picture Vocabulary Test, Seguin Formboard, Wallin Pegboards, performance scale of the WISC (for those over 7 who had a mental age of at least five years on the Seguin), the Vineland Social Maturity Scale, and the Goodenough Draw-a-Man test.	68% MR	Gillies (1965) does not state the criteria by which the children were diagnosed. The PPVT is a measure of receptive language ability, not intelligence, and is largely influenced by verbal ability despite the fact that no verbal response is required. The Seguin is timed as are the performance scales of the WISC, neither the Vineland nor the Goodenough are measures of intelligence. Also, Gillies (1965) assigned nonspeaking children to the lowest category with regard to Vocabulary IQ.
Gittelman & Birch (1967)	n=97 children previously and currently enrolled over a nine-year period (specific years not stated) at a day school for children who were severely disturbed. All children had been diagnosed as having childhood schizophrenia by the referring agency or psychiatrist prior to enrollment in the school. The children ranged in	The Stanford-Binet and the WISC were used for some children, but it is unclear whether other tests were used as well and how many children were tested on each test.	56% MR	Gittelman & Birch (1967) report that 56% of the children were MR, but by looking at the numbers of children who scored in the MR range that they present in their Table 1, only 52% of the children score in the MR range; 40% have IQ scores above 70, and 8% are untestable. Both the Stanford-Binet and the WISC are inappropriate measures for individuals with autism because of their reliance on verbal tests. Also, while Gittelman & Birch (1967) acknowledge that “it has been suggested that estimates of intellectual functioning in psychotic children are both unreliable and spurious estimates of

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	age from 4 years, 6 months to 19 years, 5 months.			intellectual ability” (p. 17), they compute test-retest correlations for 47 children who completed the same test on two separate occasions on average of two years apart. They report “a high level of individual stability on these measures” and conclude that the results are neither unreliable nor spurious. However, researchers such as Goldfarb, Goldfarb, & Pollack (1969) note that reports of a significant correlation between a test and a retest only confirms that the relative rank in the group is unchanged; it does not provide support that the IQ score is stable and, therefore, reliable.
Goldfarb, et al. (1969)	n=26 schizophrenic children in residential treatment at the Henry Ittleson Center for Child Research. Mean age of the children was 6.7 years.	All children given the WISC within six weeks of admission and then annually within three months of their birthday. The six week delay allowed for the examiner and child to become familiar with one another prior to the testing.	27% MR at admission, 19% MR at 3-year follow-up	Given the reliance on verbal scales and timed performance measures, the WISC may underestimate the intelligence of children with autism
Jacobson & Ackerman (1990)	There were two study samples. The validation of diagnosis sample had n=1271 individuals with autism; the adaptive development sample had n=1442 individuals with autism. Participants in both samples ranged in age from 5-35 years old and all had received developmental disabilities services in New York.	Not stated how intelligence was assessed.	94% MR in validation of diagnosis sample; 100% MR in adaptive development sample.	It is not stated how intelligence was assessed, by whom, when, and whether those doing the assessment had experience in working with individuals with autism.

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Janicki, Lubin, & Friedman (1983)	n=895 or 896 (two different numbers are reported) individuals with autism identified by the New York Developmental Disabilities Information Survey (DDIS). Individuals were identified between 1978-1981 and ranged in age from under 6 years of age to over 45 years of age (no specific ages given).	Not stated how intelligence was assessed. Janicki, et al. (1983) only state how many had been “tested for IQ.” (p. 76). The authors state that only 706 individuals had been tested (although data are reported for 705 individuals).	It is reported that 72% of all individuals with autism in their sample were MR. However, the data they present in Table 1 of their article indicates that 92% of those tested were MR (Janicki, et al. report this number to be 91%)	It is not stated how intelligence was assessed, by whom, when, and whether those doing the assessments had experience in working with individuals with autism.
Kobayashi, Murata, & Yoshinaga (1992)	n=201 individuals with autism with whom the authors had a therapeutic relationship when the individuals were children. The authors maintained that all would have met DSM-III-R criteria for autistic disorder, yet 8 had age of onset after 36 months. The age range of the participants was 18-33 years old. Intelligence was assessed when the individuals were 6 years old.	Tanaka-Binet, Suzuki-Binet, or WISC were used in most cases. Some children were evaluated based on “intensive observations.”	76% MR	According to the data the authors present in Table V, nearly 80% of the participants had significant language impairments at age 6, the age when the intelligence testing was done. Given this, the tests used, which rely heavily on verbal abilities, were inappropriate. Also, it is not stated who assessed the individuals and whether those who assessed them had experience in working with individuals with autism.
Kolvin (1971)	n=30 children with late onset childhood psychosis (between 5-15 years) and n=47 children	Not stated how intelligence was assessed.	17% MR for late onset group, 78% MR for the early onset group	Those who were untestable were assumed to be MR for both late and early onset groups. It is not stated how many of the children scoring in the MR range actually scored in this range

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	with early onset childhood psychosis (before age 3 years). It is the latter group whose symptoms match those with autism.			and how many were untestable. It is not stated how intelligence was assessed, by whom, when, and whether those doing the assessments had experience in working with children with autism.
Kolvin, Humphrey, & McNay (1971)	n=47 cases of “infantile psychosis” seen at Park Hospital for Children in Oxford, England and the Newcastle Child Psychiatry Unit	Intelligence was assessed with the WISC, Stanford-Binet, or the Merrill-Palmer	78% MR	Both WISC and Stanford-Binet are verbally based and have timed performance components. The authors assumed that untestable children had IQs under 50; 51% of their sample were considered in this group, although it is not clear how many of these children scored under 50, and on which measure, and how many were untestable. The authors note “a high percentage of these children were untestable.” Finally, it is unknown whether those doing the assessments had experience in working with individuals with “infantile psychosis.”
Lord & Schopler (1988)	n=213 children with autism tested first when they were less than 6 years old and retested at least 2 years later.	Intelligence was assessed using the Bayley Scales of Mental Development, the Vineland Social Maturity Scale, the Merrill-Palmer Scales of Mental Development, the WISC-R, and the Leiter.	77% MR at time 1; 63% MR at time 2	According to Lord & Schopler (1988), “Although most of the items on the Bayley do not require language, about one third of the items after the age of 1 year measure behavioral responses to language or involve expressive language. Language items become more frequent as age increases. The Bayley also differs from other tests in that includes direct assessment of social behaviors” (p. 177). Thus, the Bayley would not be appropriate for individuals with autism. These authors also note that many of the items on the Merrill-Palmer are timed, thus making this inappropriate as well. The Vineland is a measure of social development, not intelligence. The WISC-R relies on both verbal and timed subtests. The Leiter was the

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				<p>most appropriate measure used and mean IQ scores on this measure were highest than for any other test used. Unfortunately, it is not possible to determine how many of those who did not score in the MR range were tested on the Leiter and, as the children were tested on more than one measure, which measure was used to determine the IQ reported. It is unknown whether those doing the assessments had experience in working with individuals with autism as this is not stated.</p>
Lord, Schopler, & Revicki (1982)	<p>n=475 children with autism between the ages of 3-8 years old. Children were participants of the TEACCH program between 1975 and 1980.</p>	<p>Merrill-Palmer, Bayley Scales, the Leiter, the WISC-R performance scales, the Vineland, and the Peabody Picture Vocabulary Test were used.</p>	84% MR	<p>The Merrill-Palmer has many timed items which may not be appropriate for children with autism. The Bayley increasingly relies on language skills as the child gets older. The WISC-R performance scales are also timed. The Vineland is not a measure of intelligence but rather a measure of social ability. The PPVT depends on language ability. The best measure is the Leiter, but Lord, Schopler, & Revicki (1982) do not state how many children were assessed using this measure. Also, it is not stated who assessed the children and whether those doing the assessments had experience in working with children with autism.</p>
Lotter (1966a)	<p>n=35 individuals with autism (age range 8-10 years) from County of Middlesex, England</p>	<p>Attempted to use Peabody Picture Vocabulary Test; if untestable on the PPVT, previous scores were obtained using the Seguin Formboard Test, Goodenough Draw-a-Man Test, or the Binet</p>	67%MR	<p>Seguin is timed and, as Lotter (1966) noted, measured performance given motivation, not the child's potential. Binet is both largely verbally-based and has timed performance subtests, therefore inappropriate for use with individuals with autism. The Draw-a-Man Test is not an appropriate measure of intelligence. Lotter (1966) acknowledged possible interfering effects of autism on test results. It is not clear who assessed the</p>

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				children and whether they had experience in working with individuals with autism.
Lotter (1966b)	n=3049 autistic children living in England and Wales, age 5-14 years	Does not state how intelligence was assessed, but reader is referred to Lotter (1967). Lotter (1967) states: "each child was given intelligence tests." (p. 163). No other information is provided.	58% had IQs less than 55 or were untestable.	It is unclear what measures of intelligence were used, whether these measures were appropriate for use with individuals with autism, when the children were assessed, who assessed the children, and whether they had experience in working with individuals with autism. Also, it is not possible to determine how many of the 58% were untestable and how many scored less than 55.
Mittler, Gillies, & Jukes (1966)	n=27 children diagnosed as psychotic at the time of admission to Smith Hospital in England. The children in the same were discharged from the hospital between 1951-1963. The average age at admission was 7.4 years, and the average age at follow-up was 15.2 years.	The Stanford-Binet was administered at time 1. The Wechsler scales, the Peabody, or the Seguin Form Board was used at time 2.	48% MR at time 1; 11% MR at time 2. At time 1, eight children were untestable, and there was no testing information available for two additional children. At time 2, four children were untestable, and there was no testing information available for thirteen additional children. If percentages of children who were tested only are considered, 76% MR at time 1, and 30% MR at time 2.	Mittler, Gillies, & Jukes (1966) state that the Wechsler was preferred at follow-up to the Stanford-Binet is less appropriate for a "subnormal population" (p. 77). In fact, the Wechsler scales are also inappropriate given the symptoms of autism due to its high reliance on verbal and timed scales. The Peabody is still largely language dependent, and the Seguin is a timed test. It is not stated who assessed the children nor whether those who assessed them had experience in working with children diagnosed as psychotic.
Narita & Koga (1987)	n=45 children with	The 1963 Japanese version of the	67% MR based on	The WISC may not be appropriate for

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	autism in primary school in Tokyo, Japan. All were 10 years old. The children were diagnosed based on Rutter's criteria for autism.	WISC was administered.	total IQ; 75.5% MR based on verbal IQ; and 33.3% MR based on performance IQ. 31% MR on all three indicators of IQ.	individuals with autism given its reliance both on verbal abilities and timed performance tests. Narita & Koga (1987) note that the low verbal IQ was likely due to low language ability, not necessarily low intelligence as it is in MR children. Also, the results indicate that only 31% of the children scored in the MR range on all three indicators of intelligence. It is not stated who assessed the children nor whether those who assessed them had experience in working with children with autism.
Piotrowski (1937)	n=10 children diagnosed with childhood schizophrenia between 6-16 years. Children obtained from either the NY State Psychiatric Institute or the Neurological Institute	Stanford-Binet	30% MR	It is unclear who administered the tests and when and whether those who assessed the children had experience in working with individuals with childhood schizophrenia. The Stanford-Binet is highly verbal and may not be appropriate with this population. It should be noted that this study predates Kanner (1943).
Pollack & Goldfarb (1957)	n=15 children diagnosed with childhood schizophrenia for whom intelligence test results were available. Children ranged in age from 7 years, 2 months, to 9 years, 1 month.	All except one child tested with the Stanford-Binet Form L. It is not stated how the other child was assessed.	40% MR	It is unclear who administered the tests and when and whether those who assessed the children had experience in working with individuals with childhood schizophrenia. The Stanford-Binet is highly verbal and may not be appropriate with this population.
Ritvo, et al. (1989)	n=235 individuals with autism ranging in age from 3-25 years old at beginning of the study	Does not state how intelligence was assessed; states "standardized IQ tests" were used.	66% MR	It is not stated how the individuals with autism were assessed, when they were assessed, who assessed them, and whether those doing the assessments had experience in working with individuals with autism.
Rutter (1966a)	n=63 children diagnosed	Does not state how "mental	Two conflicting	Untestable children were considered to be

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
	with child psychosis, schizophrenic syndrome of childhood, or infantile autism from Maudsley Hospital Children's Department from 1950-1958.	subnormality" was defined on p. 53; states that 34 of the children were tested on the WISC or the WAIS when discussing the findings on p. 71 (see next column). Does not state how the other children were assessed.	reports: 60% (38 out of 63) were "mentally subnormal" (p. 53); and 71% (45 out of 63) were MR (p. 71)	MR. It is not stated how many untestable children there were (26 were untestable or determined to have an IQ of less than 50). It is not known how 29 of the children were tested. In a different chapter in the same publication, Rutter (1966b) states that the Wechsler scales are "usually unsuitable" (p. 91) with psychotic children because of their reliance on verbal tests.
Rutter & Lockyer (1967)	n=63 children diagnosed with child psychosis, schizophrenic syndrome of childhood, or infantile autism from Maudsley Hospital Children's Department from 1950-1958. The children ranged in age from 2-10 years.	Of the children, 25 were assessed on the Merrill-Palmer, 8 on the Binet, 4 on the WISC full scale, 9 on the Vineland, and 10 were untestable (but assumed to be MR). Other scales were used for the remaining children. Tests were given to the children as part of their attendance at the hospital.	71% MR	The 10 untestable children were considered to be MR. In the follow-up paper to this, Lockyer & Rutter (1969) noted that for the 10 children in the study who were untestable, "a score of IQ 25 was arbitrarily assigned" (p. 866; emphasis added). It is not known on which tests the children scoring in the MR range were assessed. It is unknown whether those assessing the children had experience in working with individuals with autism. Rutter & Lockyer (1967) raise some concerns about the IQ scores obtained in their study. They state, "The children's IQs were not converted to standard scores because some of the tests do not have known means and standard deviations and because some of the IQs were extrapolated from scores on only a few subtests from the intelligence scale (as the children had not cooperated on the full tests). Scores on the Vineland Social Maturity Scale were taken as equivalent to scores on intelligence tests. Thus, the IQs must be regarded as rough approximations [emphasis added]. Nevertheless, actual scores were used, and no account was taken of the psychologists's judgment that the child was really more (or less) intelligent than the score suggested." (p. 1170). The best measure used

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
				given the interference of autism on intelligence assessment was the Leiter, and only 3 out of 63 children were assessed on this measure. The overwhelming majority of the children were assessed either on verbal measures, timed measures, or measures which do not assess intelligence.
Schopler, Andrews, & Strupp (1979)	n=208 children with autism who participated in the TEACCH program at the University of North Carolina, Chapel Hill between 1966 and 1976 and for whom IQ scores were obtained. Children ranged in age from 2-22.5 years for the mildly or moderately autistic group (mean age=6 years) and from 1.5-26 years for the severely autistic group (mean age=6.25 years)	Does not state how intelligence was assessed.	93% MR	No information is provided on how the children were assessed, by whom, when they were assessed, and whether those doing the assessment had experience in working with individuals with autism.
Schopler, et al. (1980)	n=194 children with autism for whom intelligence testing was available. Children were identified over a ten year period and most children were 10 years old or less.	WISC, Merrill-Palmer, Bayley Scales, and Leiter International Scales.	88% MR	The WISC is a largely verbal and timed measure of intelligence and therefore not necessarily appropriate for individuals with autism. The Merrill-Palmer also has many timed items which may make it inappropriate. The Bayley Scales is a developmental scale which reports a developmental quotient, not an intelligence quotient. The Leiter is the most appropriate of the measures used, but Schopler, et al. (1980) do not state how many children were assessed using this measure. Also, it is not known when the children were

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
				assessed, by whom, and whether those who assessed them had experience in working with individuals with autism.
Shah & Holmes (1985)	n=10 children with autism for whom intelligence scores on the WISC-R was available and n=16 children for whom intelligence scores on the Leiter were available. Children in the entire sample of 18 children ranged in age from 8 years-14 years, 11 months.	WISC-R and the Leiter.	WISC-R Full Scale: 90% MR Leiter: 50% MR	Shah & Holmes (1985) note that “autistic children are sometimes quite difficult to assess for the following reasons. First, most autistic children have severe communication problems. As these affect both verbal and nonverbal modes, it can be hard to convey to them the sometimes complicated requirements of a test. Second, their impairments in social interaction make it difficult to establish a good rapport and they are often not responsive to the examiner and her demands. Third, problems of motivation and preoccupation with stereotyped activities often interfere with the administration and scoring of timed tests” (pp. 195-6). The authors hypothesize that the children with autism will score better on the Leiter than on the WISC-R for these reasons, an hypothesis which is supported by their results.
Spivack & Levine (1964)	n=17 children diagnosed with schizophrenic reaction of childhood enrolled in the Devereux Schools. The age range was 5-12 years with the median age being 8 years, 8 months.	Does not state how the children were assessed. Notes that they were “given standard individual test of intelligence at the time of the study” (p. 704).	Median IQ=45	No information is provided on how the children were assessed, by whom, and whether the person had experience in working with individuals with autism.
Steffenburg & Gillberg (1986)	n=35 children with autism as defined by DSM-III. Children sampled from entire child population born in	A “majority of the children” had been previously tested using the Griffiths Developmental Scale for Children or the Vineland Social Maturity Scale. The “remaining	89% MR	Reliance on meeting developmental norms or on social ability is not appropriate indicators of intelligence in individuals with autism. Also, assuming untestable children are MR is inappropriate as well (unknown how many

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
	Gothenburg and Bohuslan regions of Sweden from 1975-1984	children” were untestable and judged to be MR.		were untestable and determined to be MR). It is not clear who assessed the children, when they were assessed, and whether those assessing them had experience in working with individuals with autism.
Steinhausen, et al. (1986)	n=52 children with autism who were either assessed or treated at the Free University of Berlin child psychiatry clinic or attended the program provided by a local chapter of the German Society for Autistic Children between 1978 and 1982.	The WISC, Snijders-Oomen Test, or the Columbia Mental Maturity Scale used in 41 cases. For 11 cases, clinical ratings were used to determine intelligence.	44% MR	After Steinhausen, et al. (1986) note that formal tests were used for 41 children, they state “In the remaining cases of exclusively moderately or severely retarded children with no formal speech, clinical ratings were undertaken” (p. 187). How were these children determined to be MR prior to an evaluation? It is also not clear who assessed the children, whether those assessing them had experience in working with individuals with autism, how clinical ratings were made nor by whom.
Viitamaki (1964)	n=23 psychotic children who were treated at the Neurological and Psychiatric Clinics of the University of Helsinki between 1952-1960. The age range of the children was 4-14.8 years with a mean age of 8.7 years.	Tested children with autism using the WISC.	No percentage reported. Notes that “the mean IQ for the group of Early Infantile Autism [represented] the level of feeblemindness” (p. 48).	Viitamaki (1964) acknowledges that systematic assessment of intelligence was not possible because of the interference of autism on the assessment process.
Volkmar, Szatmari, & Sparrow (1993)	n=199 individuals with autism, mean age 10.1 years. The participants were clients at a special developmental disabilities clinic. The total sample included n=488 individuals, and	In 352 of the 488 total cases, full scale IQs were calculated from either the Kaufman--Assessment Battery for Children (K-ABC), the WISC, WAIS, or Stanford-Binet. Volkmar, et al. (1993) note that for 136 participants, it was not possible to obtain full scale IQs using traditional	86% MR	Full scale IQs obtained from tests which are both highly verbally and which have many timed items were used for most individuals. Given the symptoms of autism, these tests may not be appropriate. Additionally, for those individuals who could not complete these tests, full scale IQs were “estimated” based largely on language measures. These

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
	the remaining 289 participants were diagnosed with a form of Pervasive Developmental Disorder, not autism.	tests. For these individuals, nonverbal mental age scores were obtained from either the nonverbal scale of the K-ABC, from the Leiter, or from the Uzgiris -Hunt. Full Scale IQ scores for these individuals were estimated by averaging the nonverbal mental age with the scores on measures of receptive and expressive language.		participants would be expected to have the least language abilities (hence the reliance on nonverbal mental age scores) yet the nonverbal scores were averaged with language measures. Also, it is not stated who assessed the participants, when, and whether those doing the assessments had experience in working with individuals with autism.
Waterhouse, et al. (1996)	n=194 children ages 3-7 years old with pervasive developmental disorders; 51% were diagnosed with DSM-III Infantile Autism and 91% with DSM-III-R Autistic Disorder.	Two measures of nonverbal IQ were used: the Stanford-Binet and the Bayley Scales of Infant Development–Mental Scale. Two measures of verbal IQ were used: the Test of Early Language Development and the Sequenced Inventory of Communication Development.	80% MR	The actual data with regard to IQ are not reported. In the discussion section, Waterhouse, et al. (1996) note that 20% of their sample either had nonverbal IQs greater than 70 or a global IQ of 55 or more. The Stanford-Binet has timed performance tests and the Bayley Scales are based on observable milestones reached. Neither may be appropriate given the interference of autism. Depending on the verbal ability of the children (which was not reported), verbal IQ measures may also be inappropriate. The specific procedures regarding testing are reported elsewhere so it is not known how the children were assessed, when, by whom, and whether those who assessed the children had experience in working with children with autism. Also, not all of the children had autism as the criteria for inclusion was a pervasive developmental disorder.
Wignyosumarto, et al. (1992)	n=6 children with autism in Yogyakarta, Indonesia as determined by scores on the Children's Autism Rating Scale > 30.	Nonverbal IQ scores reported from the WISC-R (it is unclear what these scores are because they seem to be developmental quotients, not IQ scores) and Nonverbal mental age scores from the Miller-Palmer (sic)	Does not report a percentage and it is not possible to determine as the results are presented as mental age	No mention made of who assessed the children, when they were assessed and whether they had experience in working with individuals with autism. Also, while no percentage of individuals in their sample who were MR was reported, in the discussion,

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
			equivalents, not IQ scores	Wignyosumarto, et al. note the prevalence rate of MR in general is 1% and that 80% of these individuals are mildly MR. It is possible that other authors such as Fombonne (1998) who cite this study erroneously believed that Wignyosumarto, et al. were reporting this prevalence rate in their sample.
Wing (1969)	n=27 children with autism in study; parents of children who were “suitable” and who were “likely willing to complete the questionnaire” were approached.	Nonverbal items of the Merrill-Palmer test was administered.	75% MR	No mention made of how autism was diagnosed or by whom. Of the 27 children with autism in the study, IQ scores were only available from 4 of these children. As 20 of the 27 children who participated in the study were verbal (and as only nonverbal items were administered), it is not known why only 4 children had IQ scores available. It is not clear who assessed the children and whether those assessing them had experience in working with individuals with autism.
Wing (1993)	Surveyed epidemiological studies of autism, 8 of which reported percentages of individuals with autism scoring in the MR range of intelligence.	Studies surveyed included Lotter (1966a); Wing & Gould (1979); Ritvo, et al. (1989); Fisher, et al. (1987, incorrectly cited as Burd, et al. 1987); Gillberg (1984); Steffenburg & Gillberg (1986); Bryson, et al. (1988); and Gillberg, Steffenburg, & Schaumann (1991).	66-89% MR	All of the studies had methodological shortcomings. See the entries in this Table for the specifics for each study reviewed.
Wing & Gould (1979)	n=132 children selected on one or both of the following: (a) social or language impairments or stereotyped behaviors and (b) level of functioning in the severely retarded range	Does not state how intelligence was assessed. Authors do state, “psychological tests were given to assess nonverbal skills, language development, and social maturity.” (p. 16). Reader is referred to Gould (1976) for details on these measures but no mention is made regarding the assessment of intelligence. Gould	Does not report a percentage, and the numbers of children scoring in each range of nonverbal IQ as reported in the tables exceed 132 making accurate	One of the criteria for inclusion in the study was functioning in the severely retarded range. In fact, “108 of the 132 children selected were known to the preschool or school-age services for children with severe retardation.” (p. 13). Therefore, conclusions regarding the number of MR children with autism are skewed a priori. Also, it is not clear how these children were assessed, with what measures, at what

Article	Sample	Methodology used	Results	Issues or concerns with respect to results given sample and methodology
		(1976) notes that the Bayley Scales, the Merrill-Palmer and the WISC were used, but also notes that this was a study of severely MR children, not a study of children with autism.	percentages impossible to calculate. However, the authors state, “the results upheld the often reported finding that the majority of children with autism and similar conditions score in the mildly or severely retarded ranges on intelligence tests.” (p. 26).	age, and by whom.
Wing, Yeates, et al. (1976)	n=12 children with autism identified from 108 children screened from the Camberwell psychiatric and mental retardation case register who were between 5-14 years old at the time of the survey. The 108 children were identified by contact with mental retardation services, those already diagnosed as autistic and psychotic, or those showing language problems.	Does not state how intelligence was assessed. All that is noted is that “the children were given psychological tests.” (p. 94).	75% MR	Because the original 108 children were identified partly from the mental retardation registry and because one of the criteria for inclusion was mental retardation, the sample of children with autism identified is likely biased toward finding higher rates of MR.

Table 2

Nonempirical articles making claims about individuals with autism who have mental retardation.

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Ameli, Courchesne, Lincoln, Kaufman, & Grillon (1988)	75% MR	None	NA	NA	NA	NA
APA (1980)	DSM-III states, "only 30% [of those with autism] have an IQ of 70 or more" (p. 88).	None	NA	NA	NA	NA
APA (1987)	DSM IIIR states, "In most cases [of autism] there is an associated diagnosis of mental retardation, most commonly in the moderate range" (p. 35).	None	NA	NA	NA	NA
APA (1994)	DSM-IV states, "Approximately 75% of children with Autistic Disorder function at a retarded level" (p. 67).	None	NA	NA	NA	NA
APA (2000)	DSM-IVTR states, "In most cases [of autism] there is an associated diagnosis of mental retardation" (p. 71).	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Asarnow, et al. (1987)	80% MR	Rutter (1983); Prior (1979); DeMyer, Hingtgen, & Jackson (1982) (sic)	Rutter (1983): Nonempirical Prior (1979): Nonempirical DeMyer, Hingtgen & Jackson (1982) is really DeMyer, Hingtgen, & Jackson (1981): Nonempirical	Rutter (1983): 75 % MR Prior (1979): Does not report a percentage but notes that MR autistic children are “a majority of cases” (p. 357). DeMyer, Hingtgen, & Jackson (1981): Does not report a percentage. States “most psychotic children score in the mentally retarded ranges” (p. 402).	Rutter (1983) cites: Rutter & Lockyer (1967); DeMyer, et al. (1974). Prior (1979) does not provide a secondary citation in support of statement. DeMyer, Hingtgen, & Jackson (1981) cites: Hingtgen & Bryson (1972) and DeMyer, et al. (1974).	Yes. See Table 1 regarding Rutter & Lockyer (1967) and DeMyer, et al. (1974).
Baker, et al. (1976)	“A large portion of autistic children are intellectually retarded” (p. 140).	None	NA	NA	NA	NA
Bartak & Rutter (1976)	“It has become clear that the behavioral syndrome or infantile autism can occur at all levels of intelligence and that the syndrome is frequently (but by no means always) associated with some degree of general intellectual impairment” (p. 110)	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Bhatara (1980)	70% MR	Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (APA, 1980)	Nonempirical	DSM-III states “only 30% [of those with autism] have an IQ of 70 or more” (p. 88)	No secondary citation provided in support of this statement.	NA
Bodfish, et al. (2000)	MR occurs “in the majority of individuals with autism” (p. 237)	None	NA	NA	NA	NA
Boutin, et al. (1997)	70% MR	Smalley, Asarnow, & Spence (1988); Folstein & Rutter (1988)	Smalley, Asarnow, & Spence (1988): Nonempirical Folstein & Rutter (1988): Nonempirical	Smalley, Asarnow, & Spence (1988): 66-75% MR Folstein & Rutter (1988): “autism is strongly associated with mental retardation” (p. 4).	Smalley, Asarnow, & Spence (1988): No secondary citation provided in support of this claim Folstein & Rutter (1988): No secondary citation provided in support of this statement.	NA
Bristol, et al. (1996)	“Most, but not all persons with [autism] also have some degree of mental retardation” (p. 124)	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Bryson (1996)	"Most individuals with autism show evidence of cognitive impairment; 20-25% score within the normal or near normal ranges on standard measures of intelligence" (p. 165)	Bryson, Clark, & Smith (1988)	Empirical	Bryson, Clark, & Smith (1988): 76% MR	NA	Bryson (1996) notes that measures of intelligence "are open to criticism, but the point remains that people with autism vary greatly in levels of functioning" (p. 165). This quote directly follows the claim about the percentage of individuals with autism who score in the MR range on tests of intelligence. It speaks to problems with measures of intelligence and variability in test scores but does not address actual prevalence of MR despite Bryson's statement about the fact that "the point remains." See Table 1 for concerns about Bryson, Clark, & Smith (1988).
Burack (1992)	70-85% MR	Volkmar & Cohen (1986)	Nonempirical	Volkmar & Cohen (1986) states "over three-fourths are mentally retarded" (p. 326).	No secondary citation provided in support of this statement.	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Burack (1994)	"As many as 85% of persons with autism function in the mentally retarded range" (p. 536)	Volkmar & Cohen (1986)	Nonempirical	Volkmar & Cohen (1986) states "over three-fourths are mentally retarded" (p. 326).	No secondary citation provided in support of this statement.	NA
Burack & Volkmar (1992)	70-85% MR	APA (1980); Volkmar & Cohen (1986)	Both nonempirical	APA (1980): 70% MR Volkmar & Cohen (1986): 75% MR	Neither APA (1980) nor Volkmar & Cohen (1986) provide secondary citations in support of their claims.	NA
Cantwell & Baker (1988)	"Mental retardation and autism overlap to a large degree" (p. 120).	None	NA	NA	NA	NA
Carpentieri & Morgan (1996)	75% MR	APA (1994)	Nonempirical	APA (1994): 75% MR	No secondary citation is provided in support of this claim.	NA
Carr (1976)	50-67% MR	Lotter (1966a); Rutter & Lockyer (1967); Chess (1971)	Lotter (1966a): Empirical Rutter & Lockyer (1967): Empirical Chess (1971): Empirical	Lotter (1966a): Found approximately 67% of children between 8-10 years had IQs below 55. Rutter & Lockyer (1967): 71% MR; Chess (1971): 90% MR	NA	Yes. See Table 1 regarding all three studies cited.

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Carson, Butcher, & Mineka (1996)	75% MR	APA (1994); Prior & Wherry (sic) (1986)	Both nonempirical	<p>APA (1994): 75% MR;</p> <p>Prior & Werry (1986)cite DeMyer, et al. (1973) and Wing (1981)</p>	<p>APA (1994) provides no secondary citation in support of claim.</p> <p>DeMyer, et al. (1973) is empirical; notes that at initial evaluation, 77% MR; at follow-up, 73% MR</p> <p>Wing (1981): Empirical, yet support comes not from study but from abstract with no secondary citation in support of claim.</p>	Yes. See Table 1 regarding DeMyer, et al. (1973).
Carson, Butcher, & Mineka (2000)	75% MR	Prior & Wherry (sic) (1986)	Nonempirical	Prior & Werry (1986) cite DeMyer, et al. (1973) and Wing (1981)	<p>DeMyer, et al. (1973) is empirical; notes that at initial evaluation, 77% MR; at follow-up, 73% MR</p> <p>Wing (1981): Empirical, yet support comes not from study but from abstract with no secondary citation in support of claim. The study does not speak to the claim.</p>	Yes. See Table 1 regarding DeMyer, et al. (1973).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Charman (1994)	75% MR, 50% have IQs below 50	DeMyer, et al. (1974)	Empirical	DeMyer, et al. (1974): 94% MR	NA	Yes. See Table 1 regarding DeMyer, et al. (1974)
Coleman & Gillberg (1985)	<p>“We need to be aware that a majority of autistic children are also mentally retarded” (p. 17)</p> <p>“A majority (approximately 67 to 81 percent) of all autistic children are definitely mentally retarded ” (p. 26).</p>	No citations are provided in support of the statement made on p. 17. The citations for the statement made on p. 26 are: Lotter (1966a); Rutter (1978a); Wing (1980); Bohman, et al. (1981); Gillberg (1984)	<p>Lotter (1966a): Empirical</p> <p>Rutter (1978a): Nonempirical</p> <p>Wing (1980): This appears to be an incorrect reference. There are two versions of the book by Wing that was cited, one published in 1966, the other in 1976. No 1980 publication could be found for this book. It is unclear to which edition Gillberg & Coleman are referring nor to which chapter in the book as this is an edited book.</p> <p>Bohman, et al. (1981): This is an article in Swedish and therefore not available for review by the author.</p> <p>Gillberg (1984): Empirical</p>	<p>Lotter (1966a): 67% MR</p> <p>Rutter (1978a): States that mental retardation and autism frequently coexist</p> <p>Gillberg (1984): 77% MR</p>	Rutter (1978a) does not provide a secondary citation in support of this statement.	Yes. See Table 1 concerning Lotter (1966a) and Gillberg (1984).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Creak (1961)	One of the nine diagnostic criteria for “schizophrenic syndrome of childhood,” Creak lists is “a background of serious retardation in which islets of normal, near normal, or exceptional functioning or skill may appear” (p. 818).	None	NA	NA	NA	NA
Creak (1963)	“Mental deficiency is the condition most readily confused with childhood psychosis, and indeed they have much in common. The psychotic child while in the early withdrawn stage of his illness is the most ineducable of any” (p. 88)	None	NA	NA	NA	NA
Davison & Neale (2003)	“Approximately 80% of autistic children score below 70 on standardized intelligence tests” (p. 444)	None	NA	NA	NA	NA
DeMyer (1976)	94% MR	DeMyer, et al. (1974)	Empirical	DeMyer, et al. (1974) reports 94% of their sample of 115 children with autism is MR	NA	Yes. See Table 1 regarding DeMyer, et al. (1974).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
DeMyer (1979)	IQs derived from systematic testing were “generally in the retarded range” (p. 125)	Pollack (1958)	Nonempirical	Pollack reports in his review of three prior studies of the intelligence of individuals with autism that 30-40% are MR	Pollack (1958) cites: Bender & Helme (1953); Pollack & Goldfarb (1957); Piotrowski (1937)	See Table 1 regarding the results of Bender & Helme (1953), Pollack & Goldfarb (1957), and Piotrowski (1937).
DeMyer, Barton, & Norton (1972)	95% of children with autism are “not intelligent”	None	NA	NA	NA	NA
DeMyer, Hingtgen, & Jackson (1981)	“Most psychotic children score in the mentally retarded ranges.”(p. 402).	Hingtgen & Bryson (1972); DeMyer, et al. (1974)	Hingtgen & Bryson (1972): Nonempirical; DeMyer, et al. (1974): Empirical	Hingtgen & Bryson (1972) reviews many studies who have tested individuals with autism. They conclude, “relatively few psychotic children obtain IQ scores in the normal range, and most function at a severely retarded level” (p. 18); DeMyer, et al. (1974) reports 94% of their sample of 115 children with autism are MR	Hingtgen & Bryson (1972) cite: Allen & Toomey (1965); Gillies (1965); Alpern (1967); Ruttenger, et al. (1966); DeMyer, et al. (1971); Alpern & Kimberlin (1970); Wenar, et al. (1967); Goldfarb, et al. (1969); Menolascino & Eaton (1967); Hermelin & O’Connor (1964, 1967); Whittam, Simon, & Mittler (1966); Schopler (1966); Gibson (1968); Krall (1967); Spivack & Levine (1964); Alanen, Arajärvi & Viitamäki (1964); Gittelman & Birch (1967); Fish & Shapiro (1965); Rutter (1966)	Yes. See Table 1 regarding DeMyer, et al. (1974). See Hingtgen & Bryson (1972) in Table 2 for results of the articles cited.

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Dennis, et al. (1999)	75% MR	Bryson, et al. (1988); Happé (1994b); Lotter (1966a); Rutter (1979)	<p>Bryson, et al. (1988): Empirical</p> <p>Happé (1994b): Empirical</p> <p>Lotter (1966a): Empirical</p> <p>Rutter (1979): Nonempirical</p>	<p>Bryson, et al. (1988): 76% MR</p> <p>Happé (1994b): Study does not speak to this issue. It looks at intelligence in relation to theory of mind abilities. No percentage of individuals MR in individuals with autism is reported nor can one be calculated given the way the data are presented.</p> <p>Lotter (1966a): 67% MR</p> <p>Rutter (1979): Makes no statements to support claim</p>	NA	Yes. See Table 1 regarding Bryson, et al. (1988) and Lotter (1966a).
Dykens, Volkmar, & Glick (1991)	“The majority of autistic persons show significant communication deficits, including mutism and mental retardation” (p. 292).	Refers reader to Volkmar & Cohen (1988) for a review.	Volkmar & Cohen (1988): Nonempirical	Volkmar & Cohen (1988): 75% MR	Volkmar & Cohen (1988) cites Schopler (1983).	See entry in Table 2 regarding Schopler (1983). See Table 1 regarding the empirical studies cited by Schopler (1983).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Eaves & Ho (1996)	70-85% MR	APA (1987); Ritvo & Freeman (1977); Volkmar & Cohen (1989)	APA (1987): Nonempirical Ritvo & Freeman (1977): Nonempirical Volkmar & Cohen (1989): Empirical	APA (1987): Does not report a percentage. States, "In most cases [of autism] there is an associated diagnosis of mental retardation" (p. 35). Ritvo & Freeman (1977): 80% MR Volkmar & Cohen (1989): Does not report a percentage. Notes that the mean IQ of the early onset group is 42.41 and the mean IQ of the late onset group is 52.78. Also, does not state what intelligence tests were used.	Neither APA (1987) nor Ritvo & Freeman (1977) provide secondary citations in support of their claims.	NA
Erikson (1998)	90% MR	DeMyer, et al. (1974)	Empirical	DeMyer, et al. (1974) reports 94% of their sample of 115 children with autism is MR	NA	Yes. See Table 1 regarding DeMyer, et al. (1974).
Everard (1987)	More than 50% MR	None	NA	NA	NA	NA
Farrant, Boucher, & Blades (1999)	"The majority of children with autism are mentally handicapped to a greater or lesser degree...." (p. 108).	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Fisher, Burd, & Kerbeshian (1987)	75% MR	DeMyer, Hingtgen, & Jackson (1981); Rutter & Lockyer (1967)	DeMyer, Hingtgen, & Jackson (1981): Nonempirical Rutter & Lockyer (1967): Empirical	DeMyer, Hingtgen, & Jackson (1981) does not report a percentage. They state, "most psychotic children score in the mentally retarded ranges" (p. 402). Rutter & Lockyer (1967): 71% MR	DeMyer, Hingtgen, & Jackson (1981) cite: Hingtgen & Bryson (1972) and DeMyer, et al. (1974).	See entry in Table 2 regarding DeMyer, Hingtgen, & Jackson (1981) and Hingtgen & Bryson (1972) See Table 1 regarding Rutter & Lockyer (1967) and DeMyer, et al. (1974).
Folstein & Rutter (1987)	"The majority of individuals with autism are also mentally retarded" (p. 83).	None	NA	NA	NA	NA
Folstein & Rutter (1988)	"Autism is strongly associated with mental retardation" (p. 4).	None	NA	NA	NA	NA
Fombonne & du Mazaubrun (1992)	"Few autistic children score in the normal range on standardized psychometric tests, and about two-thirds of them have moderate to severe mental retardation" (p. 203)	None	NA	NA	NA	NA
Frith (1988)	"The evidence from psychological tests is starkly convincing: mental subnormality afflicts the vast majority of autistic children" (p. 19).	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Frith (1989)	75% MR	Rutter & Lockyer (1967); Freeman, et al. (1985); Goldstein & Lancy (1985)	Rutter & Lockyer (1967): Empirical; Freeman, et al. (1985): Empirical Goldstein & Lancy (1985): Nonempirical	Rutter & Lockyer (1967):71% MR; Freeman, et al. (1985): 77% MR Goldstein & Lancy (1985): Makes no claims, but notes that other researchers have claimed that individuals with autism are severely MR. Cites DeMyer (1966) as an example of one who makes this claim.	DeMyer (1966) is really DeMyer (1976)—published in the second edition of Wing’s book; DeMyer (1976) did indeed report that individuals with autism are severely MR, citing DeMyer, et al. (1974)’s results that 94% were MR	Yes. See Table 1 regarding Rutter & Lockyer (1967), Freeman, et al. (1985) and DeMyer, et al. (1974).
Frith & Frith (1991)	“[Autism] is frequently, but not necessarily, associated with general mental retardation” (pp. 66-7).	Wing & Gould (1979)	Nonempirical	Wing & Gould (1979): Does not report a percentage but states that majority of individuals with autism are MR.	Wing & Gould (1979) cites: DeMyer (1976); Kolvin, Humphrey, & McNay (1971); Lotter (1967); Rutter, Shaffer, & Sturge (1975); Wing, Yeates, Brierley, & Gould (1976).	See entry in Table 2 regarding Wing & Gould (1979); See Table 1 regarding the specific empirical studies Wing & Gould (1979) cites.

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Gillberg & Coleman (1992)	<p>“We need to be aware that a majority of children with autism are also mentally retarded” (p. 19).</p> <p>“A majority of children with classical autism (approximately 67-88 percent) are definitely mentally retarded, i.e., they test reliably under IQ 70” (p. 32).</p>	<p>No citations are provided in support of the statement made on p. 19. The citations for the statement made on p. 32 are: Lotter (1966a); Rutter (1978a); Wing (1980); Bohman, et al. (1983); Gillberg (1984); Steffenburg & Gillberg (1986); Gillberg, Steffenburg, & Schaumann (1991)</p>	<p>Lotter (1966a): Empirical</p> <p>Rutter (1978a): Nonempirical</p> <p>Wing (1980): This appears to be an incorrect reference. There are two versions of the book by Wing that was cited, one published in 1966, the other in 1976. No 1980 publication could be found for this book. It is unclear to which edition Gillberg & Coleman are referring nor to which chapter in the book as this is an edited book.</p> <p>Bohman, et al. (1983): Empirical</p> <p>Gillberg (1984): Empirical</p> <p>Steffenburg & Gillberg (1986): Empirical</p> <p>Gillberg, Steffenburg, & Schaumann (1991): Empirical</p>	<p>Lotter (1966a): 67% MR</p> <p>Rutter (1978a): States that mental retardation and autism frequently coexist</p> <p>Bohman, et al. (1983): 79% MR</p> <p>Gillberg (1984): 77% MR</p> <p>Steffenburg & Gillberg (1986): 71% MR</p> <p>Gillberg, Steffenburg, & Schaumann (1991): 80% MR</p>	<p>Rutter (1978a) does not provide a secondary citation in support of this statement.</p>	<p>Gillberg & Coleman (1992) state prevalence rates range from 67-88% MR but only cite studies who report rates ranging from 67-80% MR. See Table 1 regarding Lotter (1966a), Bohman, et al. (1983), Gillberg (1984), Steffenburg & Gillberg (1986), and Gillberg, Steffenburg, & Schaumann (1991).</p>

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Gillberg & Coleman (2000)	<p>“We need to be aware that a majority of children with autism are also mentally retarded” (p. 10).</p> <p>“A majority of children with classic autism (approximately 67-88 percent) are definitely mentally retarded, that is they test reliably under IQ 70” (p. 25).</p>	<p>No citations are provided in support of the statement made on p. 10. The citations for the statement made on p. 25 are: Lotter (1966a); Rutter (1978a); Wing (1980); Bohman, et al. (1983); Gillberg (1984); Steffenburg & Gillberg (1986); Gillberg, Steffenburg, & Schaumann (1991)</p>	<p>Lotter (1966a): Empirical</p> <p>Rutter (1978a): Nonempirical</p> <p>Wing (1980): This appears to be an incorrect reference. There are two versions of the book by Wing that was cited, one published in 1966, the other in 1976. No 1980 publication could be found for this book. It is unclear to which edition Gillberg & Coleman are referring nor to which chapter in the book as this is an edited book.</p>	<p>Lotter (1966a): 67% MR</p> <p>Rutter (1978a): States that mental retardation and autism frequently coexist</p> <p>Bohman, et al. (1983): Empirical</p> <p>Gillberg (1984): Empirical</p> <p>Steffenburg & Gillberg (1986): Empirical</p> <p>Gillberg, Steffenburg, & Schaumann (1991): Empirical</p>	<p>Rutter (1978a) does not provide a secondary citation in support of this statement.</p>	<p>Gillberg & Coleman (2000) state prevalence rates range from 67-88% MR but only cite studies who report rates ranging from 67-80% MR. See Table 1 concerning Lotter (1966a), Bohman, et al. (1983), Gillberg (1984), Steffenburg & Gillberg (1986), and Gillberg, Steffenburg, & Schaumann (1991).</p>

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Goodman (1989)	“Some degree of mental handicap is present in most individuals with infantile autism” (p. 415).	Rutter (1985)	Nonempirical	Rutter (1985): “about three-quarters of autistic children show some degree of impaired general intellectual functioning” (p. 549).	No secondary citation is provided in support of this claim.	NA
Greenspan & Love (1997)	Discusses two major subtypes of Pervasive Developmental Disorder (autism and Asperger’s Syndrome), then notes “approximately 75% of people with PDD [have] low IQ [which] qualifies them for the secondary label of mild or moderate MR” (p. 333).	None	NA	NA	NA	NA
Happé (1995)	75% have “mental handicaps”	Lotter (1967)	Empirical	No—referred to Lotter (1966a)	Lotter (1966a): found approximately 67% of children between 8-10 years had IQs below 55.	Yes. See Table 1 regarding Lotter (1966a).
Happé (1999)	“Most autistic people also have general learning difficulties and low IQ” (p. 216).	None	NA	NA	NA	NA
Harris (1995)	States that autism is often accompanied by MR	None	NA	NA	NA	NA
Hecht (1986)	“They [individuals with autism] typically show significant intellectual impairments” (p. 111).	None	NA	NA	NA	NA

			<p>the prevalence of MR in individuals with autism. Examines the usefulness of an assessment procedure with 'untestable' children with autism. Does not support Hingtgen & Bryson (1972).</p> <p>Ruttenberg, et al. (1966): Empirical, but claim is nonempirical</p> <p>DeMyer, et al. (1971): Empirical</p>	<p>latent IQ was higher."</p>
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			<p>Alpern & Kimberlin (1970): Empirical</p> <p>Wenar, et al. (1967): Empirical</p> <p>Goldfarb, et al. (1969): Empirical</p> <p>Menolascino & Eaton</p>	<p>Alpern & Kimberlin (1970): Does not report any prevalence rates, and selected individuals with autism in their sample who were already determined to be MR. Does not speak to the issue of the prevalence of MR in individuals with autism. Does not support Hingtgen & Bryson (1972).</p> <p>Wenar, et al. (1967): No claims made about the prevalence of MR in individuals with autism, and no data provided about intelligence in individuals with autism. Does not support Hingtgen & Bryson (1972).</p> <p>Goldfarb, et al. (1969): 29% MR at admission to residential treatment program; 19% MR three years later; statistics do not support Hingtgen & Bryson (1972).</p> <p>Menolascino & Eaton (1967): No claims made about the prevalence of MR in</p>		
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			<p>(1967): Empirical</p> <p>Hermelin & O'Connor (1964): Empirical</p> <p>Hermelin & O'Connor (1967): Empirical</p>	<p>individuals with autism. Although all children in their sample scored in the MR range, children in the sample were selected because they were suspected of being MR. Does not support Hingtgen & Bryson (1972).</p> <p>Hermelin & O'Connor (1964): No claims made concerning the prevalence of MR in individuals with autism. Participants with autism were residents of a "mental deficiency institution" and were deliberately matched on mental age with "severely subnormal" children. Does not support Hingtgen & Bryson (1972).</p> <p>Hermelin & O'Connor (1967): No claims made concerning the prevalence of MR in individuals with autism. Children with autism were deliberately matched on mental age and memory span with "severely subnormal"</p>		
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			<p>Whittam, Simon, & Mittler (1966): Empirical</p> <p>Schopler (1966): Empirical</p>	<p>children. Does not support Hingtgen & Bryson (1972).</p> <p>Whittam, et al. (1966): States that psychotic children do better on measures of performance than on verbal measures, but does not report prevalence rates of MR in these children. In fact, Whittam, et al. (1966) do not report IQ scores at all, only developmental quotients. Does not support Hingtgen & Bryson (1972).</p> <p>Schopler (1966): Does not report a prevalence rate of MR in children with autism. Does report mean IQ scores on the WISC or Stanford-Binet for 30 schizophrenic children of five different age groups. The youngest age group had a mean IQ in the MR range, but the other four age groups (accounting for 27 of the 30 children) had mean IQ scores ranging from 84-92. Does not</p>	
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			<p>Gibson (1968): Empirical</p> <p>Krall (1967) not obtainable; it was an unpublished paper presented at a conference</p> <p>Spivack & Levine (1964): Empirical</p> <p>Alanen, Arajarvi & Viitamaki (1964): incorrectly cited. Should be cited as Arajarvi & Alanen (1964) and Viitamaki (1964) separately. Arajarvi & Alanen (1964): Empirical</p> <p>Viitamaki (1964): Empirical</p>	<p>support Hingtgen & Bryson (1972).</p> <p>Gibson (1968): 100% MR</p> <p>Krall (1967): NA</p> <p>Spivack & Levine (1964): Median IQ of 17 children with schizophrenic reaction was 45.</p> <p>Arajarvi & Alanen (1964): Does not address intelligence of individuals with autism in their study. Does not support Hingtgen & Bryson (1972).</p> <p>Viitamaki (1964): Tested children with autism using the WISC. Reported that systematic assessment of intelligence was not possible because of</p>	
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			<p>Gittelman & Birch (1967): Empirical</p> <p>Fish & Shapiro (1965): Empirical</p>	<p>the interference of autism, but then continued to report that “the mean IQ for the group of Early Infantile Autism [represented] the level of feeblemindedness” (p. 48).</p> <p>Gittelman & Birch (1967): Reported 56% MR</p> <p>Fish & Shapiro (1965): Hard to determine prevalence rate of individuals with childhood schizophrenia due to the way results are reported. 86% MR for those in Type I of Fish & Shapiro’s typologies (all 7 of whom had childhood schizophrenia); 0% MR in Typology III (3 of the 14 had childhood schizophrenia). However, there is no way to separate out the children with childhood schizophrenia from other children in Types II & IV. Cannot determine whether Fish & Shapiro (1965)</p>	
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			<p>Rutter (1966b): Nonempirical</p>	<p>supports Hingtgen & Bryson (1972); minimal prevalence rate of MR would be 44% if no other children with childhood schizophrenia had MR.</p> <p>Rutter (1966b): Does not speak to the issue of prevalence rates of MR in individuals with autism. Discusses variability in intellectual functioning and changes in IQ scores in relation to prognosis. Does not support Hingtgen & Bryson (1972).</p>		
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Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Jacobson & Janicki (1983)	70% MR	Janicki, Lubin, & Friedman (1983); Lotter (1966a); Newson & Newson (1975); Ritvo (1977); Rutter (1966a); Webster, (1980); Wing (1976a)	<p>Janicki, Lubin, & Friedman (1983): Empirical</p> <p>Lotter (1966a): Empirical</p> <p>Newson & Newson (1975) is really Newson & Newson (1979): Nonempirical</p> <p>Ritvo (1977) is really Ritvo & Freeman (1977): Nonempirical</p> <p>Rutter (1966a): Empirical</p> <p>Webster (1980) is listed in the references as Webster, Konstantareas, Oxman, & Moek (1980). However, they are the editors of an</p>	<p>Janicki, Lubin, & Friedman (1983): 72% MR</p> <p>Lotter (1966a): 67% MR</p> <p>Newson & Newson (1979): “Autistic children can vary from severely subnormal levels to above average in IQ, though most tend to have mental retardation in at least some areas of functioning, particularly those involving verbal skills” (p. 4).</p> <p>Ritvo & Freeman (1977): 80% MR</p> <p>Rutter (1966a): 60-71% MR</p> <p>Oxman, Webster, & Konstantareas (1980): states there is a “high incidence of mental retardation and brain damage in autistic children” (p. 224).</p>	<p>Oxman, Webster, & Konstantareas (1980) cite Blackstock (1978); Churchill (1972); Hermelin & O’Connor (1970); and Wing (1966).</p> <p>Newson & Newson (1975) cite The National Society for Autistic Children.</p> <p>Ritvo & Freeman (1977) and Wing (1976a) do not provide secondary citations in support of their claims.</p>	<p>It should be noted that three of the references are miscited in the article (Newson & Newson, 1975; Ritvo, 1977; and Webster, 1980).</p> <p>See Table 1 regarding Janicki, Lubin, & Friedman (1983); Lotter (1966a), Rutter (1966a)</p>

			<p>edited volume (although Moek should be Mack), and the reference does not indicate which chapter in the edited volume is referenced. The only reference to the occurrence of MR in individuals with autism occurs in a chapter written by Oxman, Webster, & Konstantareas (1980): Nonempirical</p> <p>Wing (1976a): Nonempirical</p>	<p>Wing (1976a): 80% MR</p>		
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Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Jakab (1993)	<p>Quotes Myers (1989) who states “most children with infantile autism are also mentally retarded and many of those with severe and profound mental retardation show autistic behavior” (p. 174).</p> <p>Also cites Rutter & Lockyer (1969) stating they found approximately 32% MR in a ten year follow-up of autistic-like children and cites DeMyer, Hingtgen, & Jackson (1981) who reported 94% MR.</p>	Myers (1989); Rutter & Lockyer (1969); DeMyer, Hingtgen, & Jackson (1981)	<p>Myers (1989): Nonempirical</p> <p>Rutter & Lockyer (1969): Empirical</p> <p>DeMyer, Hingtgen, & Jackson (1981): Nonempirical</p>	<p>Myers (1989): 70-90% MR</p> <p>Rutter & Lockyer (1969): Does not report a percentage of individuals with autism who were determined to be MR; the study focused on the stability of IQs scores over time.</p> <p>DeMyer, Hingtgen, & Jackson (1981): states, “Most psychotic children score in the mentally retarded ranges” (p. 402).</p>	<p>Myers (1989): No secondary citation is provided in support of claim, but earlier in the article, Myers (1989) cites Rutter (1968) and DeMyer, et al. (1973).</p> <p>DeMyer, Hingtgen, & Jackson (1981) cite: Hingtgen & Bryson (1972) and DeMyer, et al. (1974).</p>	See entry in Table 2 regarding Myers (1989) and Hingtgen & Bryson (1972). See Table 1 regarding DeMyer, et al. (1973), DeMyer, et al. (1974) and the empirical articles cited by Hingtgen & Bryson (1972).
Kasari, Freeman, & Paparella (2001)	75% MR. Also notes that “a percentage of children dramatically change in intellectual performance—from mentally retarded during early childhood to nonretarded ranges of intelligence during the school years” (p. 207).	No citation given for percentage of MR. Kasari, et al. (2001) cite and discuss studies who provide evidence for children moving from MR to non-MR categories as they get older.	NA	NA	NA	NA

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Kessler (1988)	Majority are retarded	DeMyer, et al. (1974); Schopler (1983); Gillberg (1984)	DeMyer, et al. (1974): Empirical Schopler (1983): Nonempirical Gillberg (1984): Empirical	DeMyer, et al. (1974) reports 94% of their sample of 115 children with autism are MR; Schopler (1983): cites studies who report more than 50% of individuals with autism score below 55 on IQ tests and also cites 67% of individuals with autism score in the MR range (from his prior work) Gillberg (1984): 77% were MR	Schopler (1983) cites Ando & Yoshimura (1979); Barry & James (1978); Campell, Hardesty, & Burdock (1978); DeMyer, et al. (1974); Hartin & Barry (1979); Lockyer & Rutter (1970); Schopler, Andrews, & Strupp (1979).	Yes. See Table 1 regarding DeMyer, et al. (1974) and Gillberg (1984). See specific entries in Table 1 for empirical studies cited by Schopler (1983).
Kilman & Negri-Shoultz (1987)	75-90% MR	Newson, Dawson, & Everard (1982)	Newson et al.(1982) is an unpublished manuscript and therefore not available for review.	NA	NA	NA
Klin, Carter, & Sparrow (1997)	There is “an overwhelming body of literature documenting the intellectual deficits in the majority of autistic children” (p. 419).	Lockyer & Rutter (1969)	Empirical	Lockyer & Rutter (1969): Does not report a percentage of individuals with autism who were determined to be MR; the study focused on the stability of IQs scores over time.	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Klinger & Dawson (1999)	76-89% MR	Bryson, Clark, & Smith (1988); Steffenburg & Gillberg (1986)	Both Empirical	Bryson, et al. (1988): 76% MR; Steffenburg & Gillberg (1986): 89% MR	NA	Yes. See Table 1 regarding both studies cited.
Kobayashi, Murata, & Yoshinaga (1992)	75% MR	Frith (1989)	Nonempirical	Frith (1989): 75% MR	Frith (1989) cites: Rutter & Lockyer (1967); Freeman, et al. (1985); Goldstein & Lancy (1985)	See Entry in Table 2 regarding Frith (1989). See Table 1 regarding Rutter & Lockyer (1967) and Freeman, et al. (1985).
Konstantareas (1986)	“Differentiating autism from retardation seems particularly relevant in view of the fact that, contrary to Kanner’s original view, an overwhelming majority of autistic children, for some writers, up to 90 percent, have been shown to be mentally retarded” (p. 671).	Coleman & Gillberg (1985)	Nonempirical	Coleman & Gillberg (1985): 67-81% MR	Coleman & Gillberg (1985) cite Lotter (1966a); Rutter (1978a); Wing (1980); Bohman, et al. (1981); Gillberg (1984).	It should be noted that Wing (1980) is not a valid reference and Bohman, et al. (1981) is published in Swedish and therefore not available for review by the author. See Table 1 concerning Lotter (1966a) and Gillberg (1984).
LeCouteur, et al. (1989)	“Autism is frequently associated with mental retardation” (p. 364).	Rutter (1979)	Nonempirical	Rutter (1979): No evidence to support claim	No secondary citation provided.	NA
Lerea (1987)	70% MR	APA (1980)	Nonempirical	APA (1980): 70% MR	No secondary citation is offered in support of this claim.	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Lincoln, et al. (1988)	"Three-fourths of the individuals with autism score in a retarded range on standardized IQ tests." (p. 506).	None	NA	NA	NA	NA
Lockyer & Rutter (1970)	"Mental retardation, accompanied by 'islets of normal intelligence' has come to be regarded as a key feature of child psychosis." (p. 152).	Creak (1961)	Nonempirical	Creak (1961) lists nine diagnostic criteria for "schizophrenic syndrome of childhood" one of which is "a background of serious retardation in which islets of normal, near normal, or exceptional function or skill may appear." (p. 818).	No secondary citation is provided in support of this statement.	NA
Lord, Malloy, Wendelboe, & Schopler (1991)	"In line with the general association of autism and MR, autistic samples have tended to be composed of many severely retarded youngsters, with fewer than 20% of the autistic subjects scoring above the range of MR in previous studies" (p. 199).	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Lord & Rutter (1994)	"Fewer than one-third of autistic children were found to have general cognitive abilities in the normal range of intelligence, even when language handicaps were taken into account" (p. 570).	Lockyer & Rutter (1970); Kolvin (1971); Asarnow, Tanguay, Bott, & Freeman (1987)	Lockyer & Rutter (1970): Nonempirical Kolvin (1971): Empirical Asarnow, et al. (1987): Nonempirical	Lockyer & Rutter (1970): states, "Mental retardation...has come to be regarded as a key feature of child psychosis" (p. 152). Kolvin (1971): 78% MR Asarnow, et al. (1987): 80% MR	Lockyer & Rutter (1970) cite Creak (1961) which is a nonempirical citation. Asarnow, et al. (1987) cite: Rutter (1983); Prior (1979); and DeMyer, Hingtgen, & Jackson (1981).	See entry in Table 2 for Creak (1961); Rutter (1983); DeMyer, Hingtgen, & Jackson (1981). See Table 1 regarding Kolvin (1971).
Marcus & Schopler (1993)	70-75% MR	DeMyer (1979); Schopler (1983)	Both are nonempirical	DeMyer (1979) states: IQs derived from systematic testing were "generally in the retarded range" (p. 125). Schopler (1983): 60-67% MR	DeMyer (1979) cites Pollack (1958) who reviews three studies and reports that 30-40% are MR Schopler (1983) cites a number of studies who report prevalence rates of MR in individuals with autism ranging from 71-97% MR.	See entry in Table 2 for Pollack (1958) and for Schopler (1983). See Table 1 for the specific entries of the studies Schopler cites.
Mash & Wolfe (1999)	80% MR	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Mash & Wolfe (2002)	80% MR	Fombonne (1998)	Empirical	Compared results from 10 epidemiological studies in which intellectual impairments were reported. Found that the median proportion of individuals with autism who did not have intellectual impairments was 19.2%	NA	Methodology is sound, yet not all studies agreed on the prevalence rates. Fombonne raises some caveats. See Fombonne (1998) in Table 1.
Menyuk (1978)	“Previous studies had indicated that one quarter to one third of autistic children in a sample population score in the normal range on standard intelligence tests” (p. 108).	Rutter (1968)	Nonempirical	Rutter (1968): 50-75% MR	Rutter & Lockyer (1967): 71% MR	Yes. See Table 1 regarding Rutter & Lockyer (1967).
Mesibov, Adams, & Klinger (1997)	77% MR	Gillberg (1984)	Empirical	Gillberg (1984): 77% MR	NA	Yes. See Table 1 regarding Gillberg (1984)
Minshew, Johnson, & Luna (2001)	Notes there is a “high rate of co-occurrence of autism and MR” (p. 129) which is “not explained by chance co-occurrence of two separate disorders” (p. 130).	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Morgan (1986)	80% MR	Ritvo & Freeman (1977)	Nonempirical	Ritvo & Freeman (1977): 80% MR	No secondary citation is provided in support of this claim.	NA
Myers (1989)	“The status of infantile autism in the current literature suggests that 70-90% of children presenting with autistic behavior are also mentally retarded” (p. 89)	None, but earlier in the article Myers cites Rutter (1968) and DeMyer, et al. (1973); and it is likely that these are the citations to which Myers is referring.	Rutter (1968): Nonempirical DeMyer, et al. (1973): Empirical	Rutter (1968): 50-75% MR DeMyer, et al. (1973): 58-80% MR	Rutter (1968) cites Rutter & Lockyer (1967) which states 71% MR	Yes. See Table 1 regarding DeMyer, et al. (1973) and Rutter & Lockyer (1967).
Newsom (1998)	“Most autistic children are found to be mentally retarded when assessed with intelligence tests and adaptive behavior scales” (p. 416)	None	NA	NA	NA	NA
Newson & Newson (1975)	“Autistic children can vary from severely subnormal levels to above average in IQ, though most tend to have mental retardation in at least some areas of functioning, particularly those involving verbal skills” (p. 4).	The National Society for Autistic Children.	Nonempirical	The source cited is not a published document.	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Ornitz (1978)	“Approximately 75% of autistic children can be expected to perform throughout life at a retarded level” (p. 244).	Rutter (1970)	Nonempirical	Rutter (1970) does not report a percentage but states, “in many autistic children there is a global retardation of intellectual functioning” (p. 441).	No secondary citation is provided in support of this statement.	NA
Ornitz & Ritvo (1976)	“Accumulating clinical experience indicates that two-thirds to three-fourths of all autistic patients will perform throughout life at retarded levels” (p. 16).	Rutter (1970)	Nonempirical	Rutter (1970) does not report a particular statistic. He states, “In many autistic children there is a global retardation of intellectual functioning” (p. 441).	No secondary citation is provided in support of this statement.	NA
Oxman, Webster, & Konstantareas (1980)	States there is a “high incidence of mental retardation and brain damage in autistic children” (p. 224).	Blackstock (1978); Churchill (1972); Hermelin & O’Connor (1970); and Wing (1966).	Blackstock (1978) is an internally published university document and not available for review Churchill (1972): Nonempirical Hermelin & O’Connor (1970): Nonempirical	Churchill (1972): States that children with autism have deficits that resemble brain-damaged children. Does not speak to the incidence of MR in individuals with autism. Hermelin & O’Connor (1970): does not report a	Hermelin & O’Connor (1970):	Yes. See Table 1 regarding Lotter (1966a) and Gillies (1965).

			<p>Wing (1966): Nonempirical</p>	<p>percentage but states, "autism can occur at any intelligence level. Nonetheless, most surveys show that there is a strong bias towards the lower levels of intellectual functioning, i.e. below IQ 60" (p. 7).</p> <p>Wing (1966) does not report a particular statistic. She states, "some autistic children have an intellectual level which appears to be in the severely subnormal range" (p. 21).</p>	<p>cite Lotter (1966a) and Gillies (1965).</p> <p>Wing (1966) does not provide a secondary citation in support of her statement.</p>	
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Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Paul (1987)	Quotes Rutter (1970), ““There is every reason to believe that the mental handicap in autistic children is just as ‘real’ as in any other group of mentally retarded children.’ (p. 441).” (p. 126).	Rutter (1970)	Nonempirical	Rutter (1970) does not provide a secondary citation provided in support of this statement.	NA	NA
Pennington & Bennetto (1998)	67-75% MR	None	NA	NA	NA	NA
Perry & Factor (1989)	“Most autistic persons are also mentally retarded” (p. 42)	None	NA	NA	NA	NA
Pollack (1958)	30-40% MR	Bender & Helme (1953); Pollack & Goldfarb (1957); Piotrowski (1937)	All empirical	Bender & Helme (1953): 33% MR Pollack & Goldfarb (1957): 40% MR Piotrowski (1937): 30% MR	NA	Pollack (1958) notes that at the time of publication, only three studies had reported the results of a systematic assessment of intelligence in individuals diagnosed with childhood schizophrenia. He presents the results of all three studies but is careful to report the results only for children who were testable. See Table 1 regarding the studies cited.

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Prior (1979)	Notes that “it is possible to distinguish between mentally retarded autistic children, who are a majority of cases, and children of borderline or normal tested intelligence who are in the minority....” (p. 357-8).	None	NA	NA	NA	NA
Prior & Ozonoff (1998)	“The majority of children with autism function intellectually in the mentally handicapped range.” (p. 70).	DeMyer, et al. (1974); Lord & Schopler (1988)	DeMyer, et al. (1974): Empirical; Lord & Schopler (1988): Empirical	DeMyer, et al. (1974): 94% MR; Lord & Schopler (1988): 77% MR at time 1, 63% MR at time 2	NA	Yes. See Table 1 regarding both studies.
Prior & Werry (1986)	75-80% MR	DeMyer, et al. (1973); Wing (1981)	DeMyer, et al. (1973): Empirical Wing (1981): Empirical, yet support comes not from study but from abstract. There is no citation in support of claim.	DeMyer, et al. (1973): at initial evaluation, 77% MR; at follow-up, 73% MR Wing (1981): Study does not speak to this issue; Wing examined how many individuals with MR displayed autistic impairments, not the other way around.	NA	Yes. See Table 1 regarding DeMyer, et al. (1973).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Reed (1994)	70-80% MR	Ungerer (1989)	Nonempirical	Ungerer (1989): 70-80% MR	No secondary citation is provided in support of this claim.	NA
Richer (1978)	“Rutter (1974) has found that nearly all autistic children show language peculiarities and retardation” (p. 47).	Rutter (1974)	Nonempirical	Rutter (1974): 75% MR	Rutter (1974) cites Rutter & Lockyer (1967).	See entry in Table 2 for Rutter (1974). See Table 2 regarding Rutter & Lockyer (1967).
Ricks & Wing (1975)	“The label” [autism] “is therefore here extended to cover children with known organic neurological lesions, or general mental retardation in addition to their autistic behavior.” (p. 192)	DeMyer, Barton, & Norton (1972); Rutter, Bartak, & Newman (1971); Wing (1969); Wing (1974)	DeMyer, Barton, & Norton (1972): Conducted an empirical study, but claim is nonempirical; Rutter, Bartak, & Newman (1971): Nonempirical; Wing (1969): Empirical; Wing (1974): Conducted an empirical study but claim is nonempirical	DeMyer, et al. (1972) states that 95% of children with autism are “not intelligent.” Rutter, et al. (1971): 75% MR; Wing (1969): 75% MR; Wing (1974): 80% MR	DeMyer, et al. (1972) does not cite a secondary citation in support of claim; Rutter, et al. (1971) cites Rutter & Lockyer (1967) Wing (1974): cites Lotter (1966a)	Wing (1974) looked at autistic behavior in MR children, not the other way around. Her claim about prevalence rates is nonempirical. See Table 1 regarding Rutter & Lockyer (1967), Wing (1969), and Lotter (1966a).
Ricks & Wing (1976)	“General mental retardation is a frequent, though not an invariable, accompaniment of early childhood autism” (p. 132).	Wing (1976c)	Nonempirical	Wing (1976c) states that 81% of autistic children are MR; recalculates data from Lotter’s (1966a) study but does not provide an example of how this was done.	Lotter (1966a): found approximately 67% of children between 8-10 years had IQs below 55.	Yes. See Table 1 regarding Lotter (1966a).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Ritvo & Freeman (1977)	80% MR	None	NA	NA	NA	NA
Ritvo & Freeman (1978)	80% MR	None	NA	NA	NA	NA
Romanczyk, Lockshin, & Harrison (1993)	70-90% MR	Rutter & Lockyer (1967); Schopler, et al. (1980); Shah & Holmes (1985); Ritvo, et al. (1989)	Rutter & Lockyer (1967): Empirical Schopler, et al. (1980): Empirical Shah & Holmes (1985): Empirical Ritvo, et al. (1989): Empirical	Rutter & Lockyer (1967): 71% MR Schopler, et al. (1980): 88% MR Shah & Holmes (1985): 90% MR on the WISC-R; 50% MR on the Leiter Ritvo, et al. (1989): 66% MR	NA	Yes. See Table 1s regarding Rutter & Lockyer (1967); Schopler, et al. (1980); Shah & Holmes (1985); and Ritvo, et al. (1989).
Rutter (1968)	50-75% MR	Rutter & Lockyer (1967)	Empirical	Rutter & Lockyer (1967): 71% MR	NA	Yes. See Table 1 regarding Rutter & Lockyer (1967).
Rutter (1970)	“In many autistic children there is a global retardation of intellectual functioning” (p. 441).	None	NA	NA	NA	NA
Rutter (1974)	75% MR	None, but given the context, it seems that this statistic comes from Rutter & Lockyer (1967)	Empirical	Rutter & Lockyer (1967): 71% MR	NA	Yes. See Table 1 regarding Rutter & Lockyer (1967).
Rutter (1978a)	“Autism and mental retardation frequently coexist” (p. 6)	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Rutter (1978b)	“Autism and mental retardation frequently coexist” (p. 143).	None	NA	NA	NA	NA
Rutter (1978c)	States that since Kanner first identified autism in 1943, “Perhaps the most striking shift of all has been the move from seeing autism as a condition involving social and emotional withdrawal to a view of autism as a disorder of development involving severe cognitive deficits...” (p. 85).	Rutter (1974)	Nonempirical	Rutter (1974): 75% MR	Rutter (1974) does not provide a secondary citation in support of this claim, but given the context, it seems the statistic comes from Rutter & Lockyer (1967).	Yes. See Table 1 regarding Rutter & Lockyer (1967).
Rutter (1983)	75% MR	Rutter & Lockyer (1967); DeMyer, et al. (1974)	Both empirical	Rutter & Lockyer (1967): 71% MR DeMyer, et al. (1974): 94% MR	NA	Yes. See Table 1 regarding both studies.
Rutter (1985)	“About three-quarters of autistic children show some degree of impaired general intellectual functioning” (p. 549).	None	NA	NA	NA	NA
Rutter (1996)	75% MR	None	NA	NA	NA	NA
Rutter, Bartak, & Newman (1971)	75% MR	Rutter & Lockyer (1967)	Empirical	Rutter & Lockyer (1967): 71% MR	NA	Yes. See Table 1 regarding Rutter & Lockyer (1967).
Rutter & Schopler (1987)	75% MR	Rutter (1979)	Nonempirical	No evidence to support claim	No secondary citation provided	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Rutter & Schopler (1988)	75% MR	Rutter (1979)	Nonempirical	No evidence to support claim	No secondary citation provided.	NA
Rutter & Schopler (1992)	75% MR	None	NA	NA	NA	NA
Schopler (1983)	50-67% MR	Ando & Yoshimura (1979); Barry & James (1978); Campbell, Hardesty, & Burdock (1978); DeMyer, et al. (1974); Hartin & Barry (1979); Lockyer & Rutter (1970); Schopler, Andrews, & Strupp (1979).	All Empirical	Ando & Yoshimura : 96% MR; Barry & James (1978): 97% MR; Campbell, Hardesty, & Burdock (1978): Not able to determine percentage of individuals with autism who scored in MR range. All the authors state is "IQs ranged from profoundly retarded to bright normal" (p. 37). DeMyer, et al. (1974): 94% MR Hartin & Barry (1979): Not able to determine percentage of individuals with autism who scored in the MR range. The authors state, "IQs ranged from 30-80 with a mean of 47.0 and a standard deviation of 10.8" (pp. 235-6). Lockyer & Rutter (1970): 71% MR Schopler, Andrews, & Strupp (1979): 93% MR	NA	Campbell, Hardesty, & Burdock (1978) do not report what test(s) were used to assess IQ nor did Hartin & Barry (1979). Hartin & Barry (1979) wanted to match the children in their sample who had autism to an IQ-matched sample of children with mental retardation; therefore, it is likely that their sample of children with autism was deliberately chosen because their IQs would be in the MR range. See Table 1 regarding Ando & Yoshimura (1979), Barry & James (1978), DeMyer, et al. (1974), Lockyer & Rutter (1970), and Schopler, Andrews, & Strupp (1979).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Schreibman (1988)	"The data acquired to date indicate that the majority of autistic children are mentally retarded" (p. 25).	Ritvo & Freeman (1978)	Nonempirical	Ritvo & Freeman (1978): 80% MR	No secondary citation is provided in support of this claim.	NA
Seligman, Walker, & Rosenhan (2001)	60-75% MR	Ritvo, et al. (1989)	Empirical	Ritvo, et al. (1989): 66% MR	NA	Yes. See Table 1 regarding Ritvo, et al. (1989)
Shulman, Yirmiya, & Greenbaum (1995)	"Most individuals with autism are also mentally retarded" (p. 601).	Freeman, Schroth, Ritvo, Guthrie, & Wake (1980)	Empirical	Freeman, et al. (1980) do not speak to the issue of prevalence at all nor do they provide data which allow for an assessment of how many individuals with autism have MR.	NA	NA
Siegel, Minshew, & Goldstein (1996)	75% MR	Smalley, Asarnow, & Spence (1988)	Nonempirical	Smalley, Asarnow, & Spence (1988): 66-75% MR	No secondary citation is provided in support of this claim.	NA
Sigman (1998)	75-80% MR	None	NA	NA	NA	NA
Sigman & Capps (1997)	75% MR	None	NA	NA	NA	NA
Sigman, et al. (1997)	70-80% MR	DeMyer, et al. (1974); Wing & Gould (1979)	DeMyer, et al. (1974): Empirical Wing & Gould (1979): Nonempirical	DeMyer, et al. (1974): 94% MR Wing & Gould (1979): Majority MR	Wing & Gould (1979) cite: DeMyer (1976); Kolvin, et al. (1971); Lotter (1967); Rutter & Lockyer (1967); Rutter, Shaffer, & Sturge (1975); Wing, Yeates, Brierley, & Gould (1976)	See entry in Table 2 regarding Wing & Gould (1979). See Table 1 regarding DeMyer, et al. (1974) and the empirical articles cited by Wing & Gould (1979).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Sigman & Ungerer (1984)	“The majority of autistic children are also MR” (p. 293).	None	NA	NA	NA	NA
Sigman, et al. (1987)	70-80% MR	DeMyer, et al. (1974); Wing & Gould (1979)	DeMyer, et al. (1974): Empirical Wing & Gould (1979): Nonempirical	DeMyer, et al. (1974): 94% MR Wing & Gould (1979): Majority MR	Wing & Gould (1979) cite: DeMyer (1976); Kolvin, et al. (1971); Lotter (1967); Rutter & Lockyer (1967); Rutter, Shaffer, & Sturge (1975); Wing, Yeates, Brierley, & Gould (1976)	See entry in Table 2 regarding Wing & Gould (1979). See Table 1 regarding DeMyer, et al. (1974) and the empirical articles cited by Wing & Gould (1979).
Smalley, Asarnow, & Spence (1988)	66-75% MR	None	NA	NA	NA	NA
Stone, MacLean, Jr., & Hogan (1995)	“The cognitive capabilities of individuals with autism can vary greatly, though the majority (i.e., 70-80%) function intellectually within the range of mental retardation” (p. 655).	Bryson, Clark, & Smith (1988); Gillberg, Steffenburg, & Schaumann (1991)	Both empirical	Bryson, Clark, & Smith (1988): 76% MR Gillberg, Steffenburg, & Schaumann (1991): 80% MR	NA	Yes. See Table 1 regarding Bryson, Clark, & Smith (1988) and Gillberg, Steffenburg, & Schaumann (1991).
Tassé, Aman, Rojahn, & Kern (1998)	75% MR	None	NA	NA	NA	NA
Ungerer (1989)	70-80% MR	None	NA	NA	NA	NA
Van Krevelen (1973)	“The intelligence of autistic children does not surpass that of mentally retarded children.” (p. 202)	None	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Vig & Jedrysek (1999)	75% MR	Lord & Rutter (1994)	Nonempirical	Lord & Rutter (1994): 67% MR	Lord & Rutter (1994) cites Lockyer & Rutter (1970); Kolvin (1971); and Asarnow, Tanguay, Bott, & Freeman (1987)	See Table 1 regarding Kolvin (1971); and Asarnow, et al. (1987)
Volkmar & Cohen (1983)	Autism is “typically associated with mental retardation.” (p. 73).	DeMyer, Hingtgen, & Jackson (1981)	Nonempirical	DeMyer, et al. (1981) states, “Most psychotic children score in the mentally retarded ranges.”(p. 402).	DeMyer, et al. (1981) cites 20 studies as support for this.	See entry in Table 2 for DeMyer, et al. (1981). See Table 1 regarding the empirical studies cited by DeMyer, et al. (1981).
Volkmar & Cohen (1986)	“over three-fourths [of individuals with autism] are mentally retarded” (p. 326)	None	NA	NA	NA	NA
Volkmar & Cohen (1988)	75% MR	Schopler (1983)	Nonempirical	Schopler (1983): 50-67% MR	Schopler (1983) cites Ando & Yoshimura (1979); Barry & James (1978); Campbell, Hardesty, & Burdock (1978); DeMyer, et al. (1974); Hartin & Barry (1979); Lockyer & Rutter (1970); and Schopler, Andrews, & Strupp (1979).	See entry in Table 2 regarding Schopler (1983). See Table 1 regarding the empirical studies cited by Schopler (1983).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Volkmar & Klin (2001)	75-80% MR	Rutter, et al. (1994)	Nonempirical	Rutter, et al. (1994) does not address prevalence of MR in those with autism. Focus of review is on associated medical conditions with autism.	NA	Volmar & Klin (2001) note “when developmentally appropriate tests are given” this statistic is found. The tests used in the literature do not support this claim.
Volkmar, Klin, & Cohen (1997)	“Considerable research has now shown that when developmentally appropriate tests are given in their entirety, full-scale intelligence (IQ) and developmental (DQ) scores are in the mentally retarded range for the majority of individuals with autism” (p. 12)	Rutter, et al. (1994)	Nonempirical	Rutter, et al. (1994) does not address prevalence of MR in those with autism. Focus of review is on associated medical conditions with autism.	NA	NA
Volkmar & Lord (1998)	75% MR (if nonverbal intelligence tests used), otherwise higher	None	NA	NA	NA	NA
Volkmar, Szatmari, & Sparrow (1993)	States that there are a small number of cases of autism observed in the higher IQ range.	Lord & Schopler (1987)	Nonempirical	Lord & Schopler (1987) do not note the prevalence of MR in individuals with autism; they comment on sex differences in IQ between males and females with autism (they do imply that most individuals with autism have MR).	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Waterhouse, Wing, & Fein (1989)	“A variety of reports indicates that about one-half of individuals diagnosed as autistic have IQs below 50, and only about one-third or fewer are in the normal range (IQs of 70 or above)” (p. 267).	None	NA	NA	NA	NA
Watson & Gross (1997)	80% MR	Schreibman (1988)	Nonempirical	Schreibman (1988) notes, “the data acquired to date indicate that the majority of autistic children are mentally retarded” (p. 25).	Ritvo & Freeman (1978): 80% MR	NA
Watson & Marcus (1988)	Watson & Marcus (1988) describes skills seen in individuals with autism and then state, “these apparently normal skills do not necessarily reflect underlying normal intelligence, but more typically a circumscribed set of isolated abilities” (pp. 287-8). Continues to note behaviors individuals with autism can perform and then notes, “none of these necessarily indicates potential for average cognitive functioning” (p. 288).	No reference provided to support statement. Watson & Marcus (1988) cite DeMyer (1979) for examples of behaviors individuals with autism can perform.	NA	NA	NA	NA

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Wenar (1994)	75-80% MR	Prior & Werry (1986)	Nonempirical	States “between one-quarter and one-fifth of autistic children have a measured IQ in the normal-to-borderline range with the majority being moderately to severely retarded (DeMyer, et al., 1973; Wing, 1981).” (p. 162).	DeMyer, et al. (1973): at initial evaluation, 77% MR; at follow-up, 73% MR Wing (1981): The study conducted by Wing does not speak to the issue of how many children with autism are MR. She is actually looking at how many individuals with MR show the “triad of impairments” associated with autism. However, in the abstract, Wing (1981) claims that “most, but not all, children with this triad of impairments are severely mentally retarded.” (p. 31). This claim is made with no supporting citation.	Yes. See Table 1 concerning DeMyer, et al. (1973).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Wicks-Nelson & Israel (2000)	75% MR with most exhibiting moderate or severe deficiency	Newsom (1998) Sigman (1998)	Newsom (1998): Nonempirical; Sigman (1998): Nonempirical	Newsom (1998): “Most autistic children are found to be mentally retarded when assessed with intelligence tests and adaptive behavior scales” (p. 416). Sigman (1998): “About 75-80% of individuals with autism are mentally retarded so that they score more than 2 SDs below the mean on general intelligence tests that assess verbal and performance skills” (p. 820).	Neither Newsom (1998) nor Sigman (1998) provide secondary citations in support of their statements.	NA
Wing (1966)	“Some autistic children have an intellectual level which appears to be in the severely subnormal range.” (p. 21)	None	NA	NA	NA	Wing (1966) notes, “It is, of course, important to remember that autistic children are not necessarily subnormal at all.” (p. 21)

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Wing (1972)	"Most are below average in intelligence and many are severely retarded" (p. 41).	None	NA	NA	NA	NA
Wing (1974)	80% MR	Lotter (1966a)	Empirical	Lotter (1966a): 67% MR	NA	Wing (1974) cites Lotter (1966a), yet Lotter reports 67% MR, not 80% MR. See Table 1 regarding Lotter (1966a).
Wing (1976a)	80% MR	None	NA	NA	NA	NA
Wing (1976b)	"Many autistic children have scores on intelligence tests which indicate that they are mildly, moderately, or severely mentally retarded." (p. 40).	None	NA	NA	NA	NA
Wing (1976c)	81% MR	Lotter (1966a)	Empirical	Lotter (1966a): 67% MR	NA	Wing (1976c) recalculates data from Lotter's (1966a) study to obtain this prevalence rate but does not say how this was done. See Table 1 regarding Lotter (1966a).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Wing (1981)	“Most, but not all, children with this triad of impairments [autism] are severely mentally retarded” (p. 31–abstract)	None	NA	NA	NA	NA
Wing (1988a)	“Mental retardation (IQ below 70) was closely associated with the triad of social impairments [in those with autism]” (p. 4).	Wing & Gould (1979); Lotter (1966a); Lockyer & Rutter (1969); Kolvin, et al. (1971); DeMyer, et al. (1974); DeMyer (1976)	<p>Wing & Gould (1979): Empirical</p> <p>Lotter (1966a): Empirical Lockyer & Rutter (1969): Empirical</p> <p>Kolvin, et al. (1971): Empirical DeMyer, et al. (1974): Empirical DeMyer (1976): Nonempirical</p>	<p>Wing & Gould (1979): Reports data from Wing & Gould (1979) citing 94% were MR. (Interestingly, Wing & Gould (1979) did not report the numbers cited by Wing (1988a) in their article).</p> <p>Lotter (1966a): 67% MR Lockyer & Rutter (1969): Does not report a percentage of individuals with autism who were determined to be MR; the study focused on the stability of IQs scores over time.</p> <p>Kolvin, et al. (1971): 78% MR DeMyer, et al. (1974): 94% MR DeMyer (1976): 94% MR</p>	DeMyer (1976) cites DeMyer, et al. (1974) who state 94% MR	Yes. See Table 1 regarding Wing & Gould (1979), Lotter (1966a), Lockyer & Rutter (1969), Kolvin, et al. (1971), and DeMyer, et al. (1974).

Article Author(s) and Year of publication	Claim	Citation(s) in support of claim	Empirical or Nonempirical citation	Support Provided by primary citation	Support provided by secondary citation	Concerns about claim given sample and methodology
Wing (1988b)	"Most people with the [autistic] triad are mentally retarded, and all or most of their cognitive skills are impaired to varying degrees." (p. 97)	Wing (1981)	Article is empirical but doesn't speak to claim. Wing (1981) makes a nonempirical statement in support of claim in her abstract.	Wing (1981) states, "Most, but not all, children with this triad of impairments [autism] are severely mentally retarded" (p. 31–abstract)	No secondary citation is provided in support of this statement.	NA
Wing (1991)	80-90% MR	DeMyer (1976); Lotter (1966a); Rutter (1970); Wing & Gould (1979)	DeMyer (1976): Nonempirical Lotter (1966a): Empirical Rutter (1970): Nonempirical Wing & Gould (1979): Nonempirical	DeMyer (1976): 94% MR Lotter (1966a): 67% MR Rutter (1970): Does not report a percentage but states, "In many autistic children there is a global retardation of intellectual functioning" (p. 441). Wing & Gould (1979): Does not report a percentage but states that the majority perform as retarded.	DeMyer (1976) cites DeMyer, et al. (1974); Rutter (1970) does not provide a secondary citation in support of his statement. Wing & Gould (1979) cites DeMyer (1976); Kolvin, Humphrey, & McNay (1971); Lotter (1967); Rutter & Lockyer (1967); Rutter, Shaffer, & Sturge (1975); and Wing, Yeates, Brierley, & Gould (1975).	See entry in Table 2 regarding Wing & Gould (1979); See Table 1 regarding Lotter (1966a); DeMyer, et al. (1974); and the specific empirical studies cited by Wing & Gould (1979).

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Wing (1994)	“[Autism’s] very frequent association with all degrees of mental retardation has been recognised” (p. 109)	Gillberg, Steffenburg, & Schaumann (1991); Rutter (1970); Wing & Gould (1979)	Gillberg, Steffenburg, & Schaumann (1991): Empirical Rutter (1970): Nonempirical Wing & Gould (1979): Empirical	Gillberg, Steffenburg, & Schaumann (1991): 80% MR Rutter (1970): No percentage reported but states there is a “global retardation of intellectual functioning” (p. 441) Wing & Gould (1979): Does not report a percentage, but states results support that majority of individuals with autism are MR.	Rutter (1970) provides no secondary citation in support of statement.	Yes. See Table 1 regarding Gillberg, Steffenburg, & Schaumann (1991) and Wing & Gould (1979)
Wing & Gould (1979)	Majority perform as mildly or severely retarded even on tests not involving language.	DeMyer (1976); Kolvin, Humphrey, & McNay (1971); Lotter (1967); Rutter & Lockyer (1967); Rutter, Shaffer, & Sturge (1975); Wing, Yeates, Brierley, & Gould (1976)	DeMyer (1976): Nonempirical Kolvin, Humphrey, & McNay (1971): Empirical Rutter & Lockyer (1967): Empirical Rutter, Shaffer, & Sturge (1975): Nonempirical Wing, et al. (1976): Empirical	DeMyer (1976): 94% MR; Kolvin, Humphrey, & McNay (1971): 78% MR; Rutter & Lockyer (1967): 71% MR; Rutter, Shaffer, & Sturge (1975): “Intelligence ranges from severely subnormal to normal or above” (p. 16). Wing, et al. (1976): 75% MR	DeMyer (1976): cites DeMyer, et al. (1974) who state 94% MR; Rutter, et al. (1975): no secondary citation is provided in support of this statement.	Yes. See Table 1 regarding DeMyer, et al. (1974), Kolvin, et al. (1971), Rutter & Lockyer (1967), and Wing, et al. (1976). Rutter, et al. (1975): statement does not support claim by Wing and Gould (1979)