| **Study Description**  **Author/Year:** Chlebowski et al, 2013[1](#_ENREF_1) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Excluded if received an ASD diagnosis before being screened with the M-CHAT * Severe sensory or motor disability (e.g., blindness or deafness) * child’s caregivers not fluent in English or Spanish * Includes children from early intervention and pediatric referrals   Note: See related publications Robins 2008,[2](#_ENREF_2) Kleinman 2008,[3](#_ENREF_3) Pandey 2008,[4](#_ENREF_4) Robins 2001[5](#_ENREF_5) | **Population characteristics**  **Population description:** Screening of 18,989 toddlers at pediatric well-child visits (18-24 month) in 2 US geographic regions  **Race/ethnicity, n (%):**  White, non-Hispanic: 6184 (68.4)  Nonwhite: 1186 (13.1)  **Age at screening, mean ± SD:** 20.4 ± 3.1 months  **Sex, n (%):**  Female: 9388 (49.4)  Male: 9601 (50.6)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Mental age:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  SES: NR  Insurance status: NR  Parental education: NR  Marital status: NR  Primary language spoken in home: NR  Limited English proficiency: NR | **Screening**  **Instrument/method:** M-CHAT+ telephone followup (M-CHAT/F)  **Mode of administration:** Parent-rated, M-CHAT-F by telephone  **Setting:** Primary care  **Administrator:** Research assistants  **Scorer:** Research office  **Study definition of positive screen:** Screening positive on 2 of 6 critical items or on 3 of 23 items overall on both the M-CHAT and M-CHAT/F  **Total number available to screen:** 18,989  **Total number screened:**  With M-CHAT: 18,989  With M-CHAT/F: 1295  M-CHAT:  Number screening positive: 1737  Number screening negative: 17,252  M-CHAT/F:  Number screening positive: 272  Number screening negative: 1023  **% completing screening followup/diagnosis:** 1.1% (207/18,989)  **Diagnosis**  **Diagnostic process:** ADOS, ADI-R, Mullen Scales of Early Learning, Vineland Adaptive Behavior Scales and CARS, DSM-IV; included those who screened positive on M-CHAT/F (n=171) and those flagged by pediatrician despite screen negative (n=36)  **Who diagnosed:** Licensed clinical psychologist or developmental pediatrician and a psychology doctoral student  **Diagnoses, n:**  ASD:  Screening Positive: 92 (autistic disorder= 44, PDD-NOS=48)  Screening Negative: 1  Non-ASD diagnoses, n:  Developmental Delay:  Screening Positive: 37  Screening Negative: 11  Developmental language disorder:  Screening Positive: 18  Screening Negative: 6  Other DSM-IV diagnoses:  Screening Positive: 5  Screening Negative: 1  Developmental concerns:  Screening Positive: 15  Screening Negative: 9  Typical development:  Screening Positive: 4  Screening Negative: 3  **Age at diagnosis, mean ± SD:** 25.75 ± 4.51, n=207 | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  **M-CHAT:**  PPV: 6%  **M-CHAT + M-CHAT/F:**  PPV: 54%    **Other outcomes**  **Intermediate/Process outcomes:** NR  **Time between screening and diagnosis, mean ± SD:** NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:**  NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Kleinman et al, 2008[3](#_ENREF_3) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
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| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Excluded if received an ASD diagnosis before being screened with the M-CHAT * Severe sensory or motor disability   (eg, blindness or deafness)   * child’s caregivers not fluent in English or Spanish * Includes children from early intervention and pediatric referrals   Note: See related publications Robins 2001,[5](#_ENREF_5) Robins 2008,[2](#_ENREF_2) Chlebowski 2013,[1](#_ENREF_1) Pandey 2008[4](#_ENREF_4) | **Population characteristics**  **Population description:**  Initial screen: Screening of toddlers  at pediatric well-child visits or during early intervention intake or after referral from developmental pediatrician or psychologist  Rescreening: Children who passed initial screening or followup interview; also included participants from Robins et al, 2001  **Race/ethnicity, n (%):** NR  **Age at screening, mean months ± SD:** 21.01 ± 3.37  At followup screening: 58.32 ± 8.66  **Sex, n (%):**  Initial screening:  M: 2003 (52.8)  F: 1743 (46.0)  NR: 47 (1.2)  Rescreening:  M: 800 (56.5)  F: 602 (42.5)  NR: 14 (1)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Mental age:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  SES: NR  Insurance status: NR  Parental education: NR  Marital status: NR  Primary language spoken in home: NR  Limited English proficiency: NR | **Screening**  **Instrument/method:** M-CHAT+ telephone followup (M-CHAT/F) at 2 time points  **Mode of administration:** Parent-rated, M-CHAT-F by telephone  **Setting:** Primary care  **Administrator:** Research assistants  **Scorer:** Research office  **Study definition of positive screen:** Screening positive on 2 of 6 critical items or 3 of 23 items overall on both the M-CHAT and M-CHAT/F or physician/parent concerns  **Total number available to screen:**  Initial screen: 3793  Rescreening: 2469  **Total number screened:**  Initial screen: 3793  Rescreening: 1416  **Number screening positive:**  Initial screen: 385  Rescreening:  M-CHAT: 201  M-CHAT/F: 124  **Number screening negative:**  Initial screen: 3408  Re-screening:  M-CHAT: 1215  M-CHAT/F: NR  **% completing screening followup/diagnosis:**  Initial screening: 5.4% (203/3793)  Followup screening: n=131 (denominator unclear)  **Diagnosis**  **Diagnostic process:** ADOS, ADI-R, Mullen Scales of Early Learning, Vineland Adaptive Behavior Scales and CARS, DSM-IV  Rescreening diagnostic pool included those who had received a diagnostic evaluation after initial screening due to screen failure or clinician/parent concern (n=120); failed the rescreener (n=8); or passed the rescreening but indicated they had been referred for possible ASD or other developmental delay in the time between screenings (n=3)  **Who diagnosed:** Licensed clinical psychologist or developmental pediatrician and a psychology  doctoral student  **Diagnoses, n:**  ASD: 60  PDD-NOS:18  Asperger’s: 2  Non-ASD diagnoses, n:  Language delay: 13  Global developmental delay: 12  Other: 14  No diagnosis: 12  **Age at diagnosis, mean months ± SD:**  Non-ASD: 55.87 ± 8.01  ASD: 52.17 ± 8.01 | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR    **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  SES: NR  Insurance status: NR  Parental education: NR  Marital status:NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  Initial screen:  M-CHAT:  PPV: 36 (95% CI, 31-40)  M-CHAT-F: 74 (95% CI, 68-80)  Re-screening:  M-CHAT:  PPV: 38 (31-45)  M-CHAT-F: 59 (50-68)  **Other outcomes**  **Intermediate/Process outcomes:**  ASD diagnoses missed at initial screening and discovered at rescreening: 7  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:**  NR  **Modifiers of screening outcomes/performance:** NR |

| **Study Description Author/Year:**  Pandey et al, 2008[4](#_ENREF_4) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
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| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Excluded if received an ASD diagnosis before being screened with the M-CHAT * Severe sensory or motor disability (e.g., blindness or deafness) * Child’s caregivers not fluent in English or Spanish * Includes children from early intervention and pediatric referrals   Note: See related publications Robins 2001,[5](#_ENREF_5) Kleinman 2008,[3](#_ENREF_3) Chlebowski 2013,[1](#_ENREF_1) Robins 2008[2](#_ENREF_2) | **Population characteristics**  **Population description:** Screening of toddlers at pediatric well-child visits or parent/clinician report of concerns  **Race/ethnicity, n (%):** NR  **Age at screening, mean months ± SD:**  Age 16-23 months: 18.73 ± 1.23  Age 24-30 months: 25.12 ± 1.59  **Sex, n (%):**  Age 16-23 months:  M: 2368 (51)  F: 2140 (47)  NR: 74 (2)  Age 24-30 months:  M: 1216 (56)  F: 949 (43)  NR: 19 (1)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Mental age:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** M-CHAT+ telephone followup (M-CHAT/F) or parent/MD concern  **Mode of administration:** Parent-rated, M-CHAT-F by telephone  **Setting:** Primary care  **Administrator:** Research assistants  **Scorer:** Research office  **Study definition of positive screen:** Screening positive on 2 of 6 critical items or 3 of 23 items overall on both the M-CHAT and M-CHAT/F or physician/parent concerns  **Total number available to screen:** 6776  **Total number screened:** 6776  **Number screening positive:** 322  **Number screening negative:** 6454  **Percent completing screening followup/diagnosis:** 4% (270/6776)  **Diagnosis**  **Diagnostic process:** ADOS, ADI-R, Mullen Scales of Early Learning, Vineland Adaptive Behavior Scales and CARS, DSM-IV; included those who screened positive on M-CHAT/F and those flagged by pediatrician despite screen negative  **Who diagnosed:** Licensed clinical psychologist or developmental pediatrician and a psychology  doctoral student  **Diagnoses, n:**  ASD: 93 PDD-NOS: 91  Non-ASD: 66  No diagnosis: 16  Typical development: 4  **Age at diagnosis, mean ± SD:** NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR    **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  High risk=Parental/MD concerns, but no diagnosis  Low risk=unselected well- child visit sample  Young: age 16-23 months  Old: age 24-30 months  **PPV by age group, %:**  Total young: 66  Total old: 79  **PPV, % (95%CI):**  Young/high risk: 79 (71-87)  Old/high risk:74 (65-83)  Among high risk, younger vs. older subjects: p=NS  Young/low risk: 28 (13-43)  Old/low risk: 61 (44-78)  Among low risk, younger vs. older subjects: p<0.01    **Other outcomes**  **Intermediate/Process outcomes:** NR  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:** NR |

| **Study Description Author/Year:**  Robins, 2008[2](#_ENREF_2) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** March 2005 – October 2007  **Inclusion/exclusion criteria:**   * Excluded if received an ASD diagnosis before being screened with the M-CHAT * Severe sensory or motor disability (e.g., blindness or deafness) * Child’s caregivers not fluent in English or Spanish * Includes children from early intervention and pediatric referrals   Note: See related publications Robins 2001,[5](#_ENREF_5) Kleinman 2008,[3](#_ENREF_3) Chlebowski 2013,[1](#_ENREF_1) Pandey 2008[4](#_ENREF_4) | **Population characteristics**  **Population description:**  Initial screen: Screening of toddlers at pediatric well-child visits or during early intervention intake or after referral from developmental pediatrician or psychologist  Re-screening: children who passed initial screening or followup interview; also included participants from Robins et al, 2001  **Race/ethnicity, n (%):**  N=1177  Caucasian: 779 (66.2)  African American: 246 (20.9)  Hispanic/Latino: 32 (2.7)  Asian: 24 (2.1)  Hawaiian/Pacific Islander: 2 (0.1)  Other: 94  **Age at screening, mean months ± SD:** 20.92 ± 3.10  At followup screening:58.32 ± 8.66  **Sex, n (%):**  Initial screening:  M: 2384 (49.7)  F: 2280 (47.5)  NR: 133 (2.8)  Rescreening:  M: 800 (56.5)  F: 602 (42.5)  NR: 14 (1)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Mental age:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** M-CHAT+ telephone followup (M-CHAT-F) at 2 time points  **Mode of administration:** Parent-rated, M-CHAT-F by telephone  **Setting:** Primary care  **Administrator:** Research assistants  **Scorer:** Research office  **Study definition of positive screen:** Screening positive on 2 of 6 critical items or 3 of 23 items overall on both the M-CHAT and M-CHAT-F or clinician suspicion (negative screens included those who declined phone interview or were excluded for other reasons)  **Total number available to screen:** 4797  **Total number screened:**  M-CHAT: 4797  M-CHAT-F: 362  **Number screening positive:**  M-CHAT: 466  M-CHAT-F: 65  **Number screening negative:**  M-CHAT: 4331  M-CHAT-F: 301  **% completing screening followup/diagnosis:** 1% (41/4797)  **Diagnosis**  **Diagnostic process:** ADOS, ADI-R, Mullen Scales of Early Learning, Vineland Adaptive Behavior Scales and CARS, DSM-IV  **Who diagnosed:** Licensed clinical psychologist or developmental pediatrician, psychology doctoral student, an undergraduate research assistant to videotape the child  **Diagnoses, n:**  ASD: 21  Non-ASD: 20  **Age at diagnosis, mean months ± SD:** 23.56 ± 4.25 | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR    **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR    **Family context:** NR | **Performance characteristics (%)**  **PPV:**  M-CHAT: 5.8%  M-CHAT-F: 57%  **Other outcomes**  **Intermediate/Process outcomes:** NR  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:** NR |

| **Study Description Author/Year:**  Robins et al, 2001[5](#_ENREF_5) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Excluded if received an ASD diagnosis before being screened with the M-CHAT * Severe sensory or motor disability (e.g., blindness or deafness) * child’s caregivers not fluent in English or Spanish * Includes children from early intervention and pediatric referrals   Note: See related publications Robins 2008,[2](#_ENREF_2) Kleinman 2008,[3](#_ENREF_3) Chlebowski 2013,[1](#_ENREF_1) Pandey 2008[4](#_ENREF_4) | **Population characteristics**  **Population description:**  Initial screen: Screening of toddlers at pediatric well-child visits or during early intervention intake  **Race/ethnicity, n (%):** NR  **Age at screening, mean months ± SD:** NR  **Sex, n (%):**  Initial screening:  M: 2003 (52.8)  F: 1743 (46.0)  NR: 47 (1.2)  Rescreening:  M: 800 (56.5)  F: 602 (42.5)  NR: 14 (1)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Mental age:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** M-CHAT+ telephone followup (M-CHAT/F) at 2 time points  **Mode of administration:** Parent-rated, M-CHAT-F by telephone  **Setting:** Primary care  **Administrator:** Research assistants  **Scorer:** Research office  **Study definition of positive screen:** Screening positive on 2 of 8 critical items or any 3 items overall on both the M-CHAT and M-CHAT/F  **Total number available to screen:** 1293  **Total number screened:** 1293  **Number screening positive:** NR  **Number screening negative:**  M-CHAT: 1161  M-CHAT-F: 74  **% completing screening followup/diagnosis:** 4.5% (58/1293)  **Diagnosis**  **Diagnostic process:** ADOS, ADI-R, Mullen Scales of Early Learning, Vineland Adaptive Behavior Scales and CARS, DSM-IV  **Who diagnosed:** Licensed clinical psychologist, graduate student clinician, and student who videotaped the session  **Diagnoses, n:**  ASD or PDD: 39  Non-ASD diagnoses, n:  Language or global delays: 19  **Age at diagnosis, mean months:**  ASD: 27.6  Non-ASD: 26.7  **Time to evaluation after screening, mean months:** 2.12 | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR    **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  **PPV:** 39 of 58 children evaluated due to screen failure were diagnosed with ASD or PDD (67.2%)  **Other outcomes**  **Intermediate/Process outcomes:** ASD diagnoses missed at initial screening and discovered at rescreening: 7  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Nygren et al, 2012[6](#_ENREF_6) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
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| **Country:** Sweden  **Study period:** January 2010 – December 2012  **Inclusion/exclusion criteria:**   * Children seen for 2.5- year-old checkup at child health center, any time during 2010 | **Population characteristics**  **Population description:** 3999 Swedish children screened during their 2.5-year well-child visit  **Age at screening, mean ± SD:** 2.5 years  **Sex, n (%):**  Female: 1912 (47.8)  Male: 2087 (52.2)  **Risk factors:**  Family history of ASD: 12/48 (25%)  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  Primary language spoken in home: NR  Limited English proficiency: NR | **Screening**  **Instrument/method:** M-CHAT+ followup interview, JA-OBS  **Mode of administration:** Interview  **Setting:** Child health center  **Administrator:** Nurse  **Scorer:** Nurse  **Study definition of positive screen:** Definitive failure on the M-CHAT or failure on ≥2 items of the JA-OBS or both  **Total number available to screen:** 3999  **Total number screened:** 3999  **Number screening positive:**  Total: 64  M-CHAT+interview: 36  JA-OBS: 40  Both: 48  **Number screening negative:** NR (estimated 3935 based on reported N screening positive)  **% completing diagnostic followup, n:** 1.3 (54/3999)  **Diagnosis**  **Diagnostic process:** DSM-IV (based on all evidence obtained at the assessment and medical records), ADOS, Vineland Adaptive Behavior Scales; only screen-positive children followed for diagnosis  **Who diagnosed:** Clinicians  **Diagnoses, n**  M-Chat+interview  ASD: 33/36  JA-OBS  ASD: 37/40  M-Chat+interview and/or JA-OBS  ASD: 43/48  **Subtypes of ASD among the 48 children diagnosed, n:**  Autistic disorder: 27  PDD-NOS: 21  **Non-ASD diagnoses, n**  M-Chat+interview + JA-OBS  Language Disorder: 3  Typically Developing: 3  **Age at diagnosis, mean ± SD:** 2.5 ± 0.5 years | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Among those diagnosed with ASD**  **Race/ethnicity, n:**  Parents of non-Swedish descent: 24/48 (50)  1 parent not of Swedish descent: 8/48  Both parents of Swedish descent: 16/48  **Age, mean ± SD:** NR  **Sex, n (%):**  Female: NR  Male: NR  **Risk factors:**  Parental concern about child development prior to screening: 35/48  Family history of ASD: 12/48  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  SES: NR  Insurance status: NR  Parental education: NR  Marital status: NR  Primary language spoken in home: NR  Limited English proficiency: NR | **Performance characteristics, % (95%CI)**  **M-CHAT+interview** (n=49):  PPV: 91.7 (77.5-98.2)  **JA-OBS** (n=48):  PPV: 92.5 (79.6-98.4)  **M-CHAT and / or JA-OBS** (n=51):  PPV: 89.6 (77.3-96.5)  **Other outcomes:**  **Intermediate/Process outcomes:** NR  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:**  NR |

| **Study Description Author/year:**  Barbaro et al, 2011[7](#_ENREF_7), [8](#_ENREF_8) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
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| **Country:** Australia  **Study period:** September 2006 – 2008  **Inclusion/exclusion criteria:**   * Children 8 to 24 months of age attending there well visits at a Maternal Child Health center in a 20-km radius of Melbourne University * “At risk” children referred by Maternal and Child Health nurse to the Social Attention and Communication Study (SACS) team * Parental consent given * Attendance at scheduled SACS assessment | **Population characteristics**  **Population description:** From a population of 20,770 children monitored via the Social Attention and Communication Study (SACS) at maternal and child health centers, 216 children referred for further evaluation; consent obtained for 124 children; 110 children completed at least 1 SACS assessment  Included 10 12-month assessments; 46 18-month assessments; and 100 24-month assessments  **Race/ethnicity, n (%):** NR  **Age at screening, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean  ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** SACS protocol  **Mode of administration:** In person  **Setting:** Maternal-child health centers  **Administrator:** Nurses  **Scorer:** Nurses  **Study definition of positive screen:** Items most relevant to ASD and developmentally appropriate for the age being monitored were considered “key” items. Children were considered at risk for an ASD only if they showed a “pattern” of failure on the items of interest (e.g., by failing 3 of the 4 key items).  **Total number available to screen:** 22,168  **Total number screened:** 20,770  **Number screening positive:** 216  **Number screening negative:** 20,554  **% completing screening followup/diagnosis, (n):**  Screen positive:0.5 (110)  **Diagnosis**  **Diagnostic process:**  At 12 and 18 months:  Investigator administered: Mullen Scales of Early Learning, Early Social and Communication Scales; imitation/name call/spontaneous play tasks (+empathy at 18 months only); CHAT-23 (at 18 months only)  Parent questionnaires: Infant Toddler Checklist-CSBS-DP; Early Development Interview; CHAT-23 (18 months only)  At 24 months:  Investigator administered: Mullen Scales of Early Learning; ADOS; imitation/empathy tasks  Parent questionnaires: ADI-R  **Who diagnosed:** SACS investigators  **Diagnoses, n**  ASD: 50  Autistic disorder: 39  Developmental or other language delay: 20  Typically developing:1  **Age at diagnosis, mean ± SD:**  NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean months ± SD:**  12 month assessment:  Autistic disorder: 13.7 ± 1.2  ASD: 12.7 ± 0.5  Developmental/language delay: 15.0  18 month assessment:  Autistic disorder: 19.2 ± 1.0  ASD: 19.1 ± 1.2  Developmental/language delay: 19.9 ± 1.6  24 month assessment:  Autistic disorder: 25.2 ± 1.6  ASD: 25.6 ± 2.2  Developmental/language delay: 25.8 ± 2.7  **Sex, n (%):**  12 month assessment:  Female:  Autistic disorder: 1  ASD: 1  Developmental/language delay: 0  Male:  Autistic disorder: 2  ASD: 5  Developmental/language delay: 1  18 month assessment:  Female:  Autistic disorder: 4  ASD: 1  Developmental/language delay: 3  Male:  Autistic disorder: 12  ASD: 20  Developmental/language delay: 5  24 month assessment:  Female:  Autistic Disorder: 10  ASD: 8  Developmental/language delay: 6  Male:  Autistic disorder: 27  ASD: 34  Developmental/language delay: 8  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Overall mental age, months:**  12 months:  Autistic disorder: 10.6 ± 2.6  ASD: 10.3 ± 2.2  Developmental/language delay: 12.3  18 months:  Autistic disorder: 13.2 ± 1.9  ASD: 14.8 ± 1.8  Developmental/language delay: 15.4 ± 1.5  24 months:  Autistic disorder: 15.1 ± 2.5  ASD: 18.5 ± 2.9  Developmental/language delay: 19.5 ± 3.3  **Nonverbal age, months:**  12 months:  Autistic disorder: 12.0 ± 4.3  ASD: 11.5 ± 2.2  Developmental/language delay: 16.5  18 months:  Autistic disorder: 17.3 ± 2.3  ASD: 17.5 ± 2.9  Developmental/language delay: 17.4 ± 1.9  24 months:  Autistic disorder: 19.1 ± 2.9  ASD: 21.4 ± 2.7  Developmental/language delay: 21.3 ± 3.6  **T score, visual reception**  12 months:  Autistic disorder: 29.7 ± 6.5  ASD: 37.0 ± 9.2  Developmental/language delay: 47.0  18 months:  Autistic disorder: 37.6 ± 8.5  ASD: 39.0 ± 9.1  Developmental/language delay: 37.0 ± 7.5  24 months:  Autistic disorder: 30.9 ± 7.6  ASD: 35.8 ± 8.1  Developmental/language delay: 36.6 ± 9.9  **T score, fine motor:**  12 months:  Autistic Disorder: 43.7 ± 20.1  ASD: 44.7 ± 10.8  Developmental/language delay: 53.0  18 months  Autistic disorder: 44.0 ± 10.9  ASD: 44.9 ± 11.8  Developmental/language delay: 42.1 ± 6.5  24 months  Autistic disorder: 36.0 ± 11.1  ASD: 40.7 ± 9.0  Developmental/language delay: 37.8 ± 11.0  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:**  Verbal age:  12 months:  Autistic disorder: 9.2 ± 2.9  ASD: 9.0 ± 2.5  Developmental/language delay: 8.0  18 months  Autistic disorder: 9.2 ± 2.2  ASD: 12.0 ± 1.5  Developmental/language delay: 13.4 ± 2.0  24 months:  Autistic disorder: 11.0 ± 2.7  ASD: 15.8 ± 4.1  Developmental/language delay: 17.6 ± 3.5  T score, receptive language:  12 months:  Autistic disorder: 28.5 ± 5.2  ASD: 30.8 ± 7.3  Developmental/language delay: 20.0  18 months  Autistic disorder: 20.6 ± 2.5  ASD: 24.4 ± 5.0  Developmental/language delay: 25.5 ± 4.5  24 months  Autistic disorder: 20.3 ± 1.6  ASD: 26.3 ± 9.2  Developmental/language delay: 32.2 ± 10.4  T score, expressive language:  12 months:  Autistic disorder: 31.3 ± 3.8  ASD: 38.2 ± 10.6  Developmental/language delay: 28.0  18 months:  Autistic disorder: 26.3 ± 4.6  ASD: 31.4 ± 4.9  Developmental/language delay: 35.0 ± 4.3  24 months:  Autistic disorder: 23.9 ± 4.1  ASD: 31.7 ± 7.4  Developmental/language delay: 32.5 ± 6.5  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics**  **SACS assessment process:**  **PPV (%):**  At 12 months: 90  At 18 months: 79  At 24 months: 81  **Other outcomes**  **Intermediate/Process outcomes:**  **Time between screening and diagnosis, mean ± SD:** NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Canal-Bedia et al, 2011a[9](#_ENREF_9" \o "Canal-Bedia, 2011 #298) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** |
| --- | --- | --- | --- |
| **Country:** Spain  **Study period:** October 2005 – April 2008  **Inclusion criteria:**   * Age 18-36 months * Resident in geographic area of interest during study period | **Population characteristics**  **Population description:** Unselected children at well-child visit  **Race/ethnicity, n (%):** NR  **Age at screening, range:**  Unselected population: 18-24 months  **Sex, n (%):**  Female: 949 (46)  Male: 1106 (54)  **Risk factors:** None  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** M-CHAT with followup interview (Spanish translation)  **Mode of administration:** In person during well-child visit, telephone followup for those screening positive  **Setting:** Clinic  **Administrator:**  Initial screening:Primary care pediatricians and nurses  Phone followup: Psychologist with child development training  **Scorer:**  Initial screening:Central research team  Phone followup: Psychologist conducting the phone interview  **Study definition of positive screen:** Failure of 3/23 items or 2/6 critical items  **Total number available to screen:** NR  **Total number screened:** 2055  **Number screening positive:**  Initial screening: 336  Phone followup: 31  **Number screening negative:**  Initial screening: 1719  Phone interview: 305  **% completing screening telephone followup:**  Screen positive:100  Screen negative: 100  **% completing diagnosis:**  Screen positive:100  **Diagnosis**  **Diagnostic process:** Team of clinicians using diagnostic algorithm based on recommendations of American Academy of Neurology and Child Neurology Society plus VABS, Merrill-Palmer revised scales, ADOS-G module 1 with cases classified according to DSM-IV-TR  **Who diagnosed:** Psychologists and neurologists  **Diagnoses, n:**  ASD: 6  Non-ASD: 25  **Age at diagnosis, range:** 18-24 months | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR |

| **Study Description Author/Year:**  Canal-Bedia et al, 2011b[9](#_ENREF_9" \o "Canal-Bedia, 2011 #298) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** Spain  **Study period:** October 2005 – April 2008  **Inclusion criteria:**   * Age 18-36 months or for children at high risk, maximum chronological age of 48 months with developmental age of 18-24 months * Resident in geographic area of interest during study period | **Population characteristics**  **Population description:** Unselected children at well-child visit and children considered at high risk for ASD recruited from early intervention or child psychiatry units  **Race/ethnicity, n (%):** NR  **Age at screening, range:**  Unselected population: 18-24 months  High-risk population: NR  **Sex, n (%):**  Unselected population  Female: 1163 (47)  Male: 1254 (51)  High-risk population  Female: 14 (.56)  Male: 49 (2)  **Risk factors:**  Attending early intervention or child psychiatry units, n=63  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Primary language spoken in home:** NR  **Limited English proficiency:** NR | **Screening**  **Instrument/method:** M-CHAT (with followup interview) (Spanish translation)  **Mode of administration:** In person during well-child visit, telephone followup for those screening positive  **Setting:** Clinic  **Administrator:**  Initial screening:Primary care pediatricians and nurses  Phone followup: Psychologist with child development training  **Scorer:**  Initial screening:Central research team  Phone followup: Psychologist conducting the phone interview  **Study definition of positive screen:** Failure of 3/23 items or 2/6 critical items  **Total number available to screen:** NR  **Total number screened:** 2480  **Number screening positive:**  Initial screening: 429  Phone followup: 86  **Number screening negative:**  Initial screening: 2051  Phone interview: 343  **% completing screening telephone followup:**  Screen positive:100  Screen negative: 100  **% completing diagnostic followup:**  Screen Positive: 100  **Diagnosis**  **Diagnostic process:** Team of clinicians using diagnostic algorithm based on recommendations of American Academy of Neurology and Child Neurology Society plus VABS, Merrill-Palmer revised scales, ADOS-G module 1 with cases classified according to DSM-IV-TR  **Who diagnosed:** Psychologists and neurologists  **Diagnoses, n ASD:**  Unselected population: 4  High-risk population: 19  **Non-ASD diagnoses, n:**  Typical development: 4  Non-ASD developmental disorder: 59  **Age at diagnosis, range:**  Unselected population: 18-24 months  High-risk population: NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context**  SES: NR  Insurance status: NR  Parental education : NR  Marital status: NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics**  **Initial screen + phone followup, % (95% CI)**  PPV: 35 (23-46)  AUC: 99  **Other outcomes**  **Intermediate/Process outcomes:** NR  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:**  NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Inada et al, 2011 [10](#_ENREF_10) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** Japan  **Study period:**  Reliability: NR  Concurrent validity: December 2008 – December 2009  Discriminant validity: April 2005 – March 2007  **Inclusion/exclusion criteria:**   * Validity samples: Discriminant: 18- month-olds attending health checkup in Munakata City, Japan between April 2005 and March 2007 | **Population characteristics**  **Population description:**  *Discriminant Validity Sample*  Collected from children at free health checkup visits for 18-month-olds  **Race/ethnicity, n (%):** NR  **Age at screening, mean ± SD:**  *Discriminant Validity Sample: NR* (but collected at 18-month well-baby visit)  **Sex, n (%):**  *Discriminant Validity Sample*  Female: 575 (48.4)  Male: 612 (51.6)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  Primary language spoken in home: NR  Limited English proficiency:NA | **Screening**  **Instrument/method:** JapaneseM-CHAT 23-item version, M-CHAT 9-item version (short)  **Mode of administration:** Parent-rated  **Setting:** Clinic  **Administrator:** NR  **Scorer:** Research team  **Study definition of positive screen:**  23-item M-CHAT: Failing 2/23 items  9-item M-CHAT: Failing 1/9 items  **Total number available to screen:**  Discriminant Validity: 1187  **Total number screened:**  Discriminant Validity: 1187  **Number screening positive**  **Cutoff value ≥2:**  23 items: 148  9 items: 60  **Number screening negative**  **Cutoff value ≥2:**  23 items: 1039  9 items: 1127  **% completing screening followup/ diagnosis:**  Screen positive+screen negative:100  **Diagnosis**  **Diagnostic process:**  ***Discriminant Validity Sample***  Children were diagnosed based on developmental history, clinical assessment, and based on DSM-IV-TR criteria  **Who diagnosed:** Research team including 2 psychiatrists and psychologist  **Diagnoses, n**  ***Discriminant Validity Sample***  **Among those screening positive:**  (cutoff value ≥2)  Using 23 items:  ASD: 15  Non-ASD: 133  Using 9 items:  ASD: 11  Non-ASD: 49  **Among those screening negative:**  (cutoff value ≥2)  Using 23 items:  ASD: 5  Non-ASD: 1034  Using 9 items:  ASD: 9  Non-ASD: 1118  **Age at diagnosis, mean ± SD:** 24 months ± 0.7 months | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** 24 months ± 0.7 months  **Sex, n (%):**  Female  ASD: 4 Non-ASD: 571  Male  ASD: 16  Non-ASD: 596  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:**  NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics**  ***23-item M-CHAT***  ***Cutoff Score ≥1***  Sensitivity: 80  Specificity: 60.9  PPV: 3.4  NPV: 99.4  ***Cutoff Score ≥2***  Sensitivity: 75  Specificity: 89.3  PPV: 10.7  NPV:99.5  ***Cutoff Score ≥3***  Sensitivity: 55  Specificity: 96.1  PPV: 19.3  NPV:99.2  ***Cutoff Score ≥4***  Sensitivity: 35  Specificity: 97.8  PPV: 21.2  NPV:98.9  ***9-item M-CHAT***  ***Cutoff Score ≥1***  Sensitivity: 65  Specificity: 88.5  PPV: 8.8  NPV:99.3  ***Cutoff Score ≥2***  Sensitivity: 55  Specificity: 95.8  PPV: 18.3  NPV: 99.2  ***Cutoff Score ≥3***  Sensitivity: 40  Specificity: 98.1  PPV: 26.7  NPV:99.0  ***Cutoff Score ≥4***  Sensitivity: 20  Specificity: 99.0  PPV: 25.0  NPV:98.6  **Other outcomes**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:** NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Miller et al, 2011[11](#_ENREF_11) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Toddlers aged 14-30 months presenting to the community based pediatric practice during the 6 month screening period | **Population characteristics**  **Population description:** Children attending any visit during the study period (well-child, sick, followup or injection visit).  **Race/ethnicity, n (%):**  N=524  Black: 17 (3.2)  Pacific Islander: 21 (4.0)  Asian: 22 (4.2)  Native American: 11 (2.0)  White, Non- Hispanic: 287 (55)  Other: 1 (0.2)  Hispanic: 167 (32)  **Age at screening, mean ± SD:**  Range:14-24 months  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Primary language spoken in home, n (%):**  English: 721 (91)  Spanish: 75 (9)  **Limited English proficiency:** NR | **Screening**  **Instrument/method:** M-CHAT + followup interview or Infant Toddler Checklist (ITC) + followup interview  **Mode of administration:** Parent-rated  **Setting:** Primary Care  **Administrator:** Self-administered by caregiver; followup phone call be research staff  **Scorer:** Research Staff  **Study definition of positive screen:** ITC: Score below 10th percentile on Social, Symbolic, or Total Score  M-CHAT: Failure of ≥2 critical items or ≥3 of any item  **Total number available to screen:** 990  **Total number screened:** 796  **Number screening positive:**  At initial questionnaire: 192  At followup phone call: 47  **Number screening negative:**  At initial questionnaire: 544  At follow-p phone call: 98  **% completing screening followup/ diagnosis:**  Overall: 30/796 (4%)  Screening positive: 28/192 (14.6%)  Screening negative: 2/544 (0.4%)  **Diagnosis**  **Diagnostic process:** Parents of children who screened positive on either screener or were referred by a clinician due to concerns (regardless of screen outcome) were called. If positive M-CHAT, M-CHAT followup interview was completed by a graduate student. If positive ITC, unspecified relevant items were repeated and discussed over the phone. If clinician referral, M-CHAT and ITC were repeated over the phone. Children who had a confirmed positive screen over the phone were invited for diagnostic evaluation, including ADOS-T, Mullen, and Vineland.  **Who diagnosed:** Research reliable clinician  **Diagnoses, n**  Among screen positives (n=25):  ASD: 8  Non-ASD diagnoses, n:  Developmental delay: 16  Typically developing: 1  Among screen negatives (n=2):  ASD: 2  Non-ASD:0  **Age at diagnosis:** NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%): ASD** Black: 1 (8)  Hispanic: 4 (30.7)  White, non-Hispanic: 8 (61.5)  **Non-ASD**  Black: 0 (0)  Hispanic: 4 (23.5)  White, non-Hispanic: 11 (64.7)  Pacific Islander: 2 (11.8)  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  M-CHAT/ITC:  Sensitivity: NR  PPV: 32 (8/25)  **Other outcomes:**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  Pierce et al, 2011[12](#_ENREF_12) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** NR  **Inclusion/exclusion criteria:**   * Infants attending 1-year checkup at various pediatrician offices in San Diego County, California | **Population characteristics**  **Population description:** Children at well-child checkup visits; 184 children who screened positive at 12-month well-baby visits; 41 control children  **Race/ethnicity, n (%):** NR  **Age at screening, mean ± SD:**  Mean=12.54 months  Range=10.08 to 15.97 months  **Sex, n (%):** NR  **Risk factors:** NR.  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Primary language spoken in home:** NR | **Screening**  **Instrument/method:** CSBS-DP-IT  **Mode of administration:** Parent-rated  **Setting:** Primary care  **Administrator:** Checklist is given to parents by receptionist at primary care office; parent self-administers  **Scorer:** Medical staff  **Total number available to screen:** 10,479  **Total number screened:** 10,479  **Number completing screening followup/diagnosis:**  Screen positive: 184  Screen negative: 41  **Number screening positive:** 1318 (12.5%)  **Number screening negative:** 9179 (87.5%)  **Diagnosis**  **Diagnostic process:** Developmental evaluation including ADOS-T and Mullen. Children were followed every 6 months until 3 years of age.  **Who diagnosed:** Psychologist  **Diagnoses, n**  ASD: 32  Initial ASD diagnosis, removed at followup: 5  Language Delay: 56  Developmental Delay: 9  Other Diagnosis: 36  False Positive: 46  Typically Developing: 41  **Age at diagnosis (latest), mean ± SD months:**  ASD: 34.7 ± 8.8  Initial ASD, removed at followup: 32.0 ± 8.9  Language Delay: 25.9 ± 9.2  Developmental Delay: 33.4 ± 9.8  Other: 25.7 ± 8.6  False-Positive Screen: 25.4 ± 8.7  Typically Developing: 25.5 ± 10.3  **Number of Visits, mean ± SD**  ASD: 6.0 ± 2.5  Initial ASD, removed at follow-up: 4.8 ± 2.2  Language Delay: 4.4 ± 2.4  Developmental Delay: 5.8 ± 2.9  Other: 4.3 ± 2.1  False-Positive Screen: 4.6 ± 2.3  Typically Developing: 4.3 ± 2.7  **% of sample tracked until 24 months old or older:**  ASD: 97%  Initial ASD, removed at followup: 80%  Language Delay: 54%  Developmental Delay: 78%  Other: 61%  False-Positive Screen: 61%  Typically Developing: 56%  **% of sample tracked until 32 months old or older:**  ASD: 72%  Initial ASD, removed at followup: 60%  Language Delay: 30%  Developmental Delay: 67%  Other: 26%  False-Positive Screen: 28%  Typically Developing: 42% | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR:  **Risk factors:** NR  **IQ, mean ± SD:**  Screen positive: NR  Screen negative: 111.2 ± 11.7  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis** *At Earliest Age*  **Race/ethnicity, n (%):** NR  **Sex, n (%):** NR  **Risk factors:** NR  **Age at IQ Testing, mean ± SD:**  ASD: 17.8 ± 3.9  Language Delay: 15.3 ± 3.1  Developmental Delay: 17.0 ± 3.9  Other: 14.5 ± 2.5 Initial ASD, removed at followup: 15.9 ± 4.4  False-Positive Screen: 13.7 ± 1.4  Typically Developing: 14.5 ± 2.4  **IQ (Early Learning Composite), mean ± SD:** MSEL; Standard ScoreASD: 75.5 ± 15.4  Language Delay: 90.4 ± 11.6  Developmental Delay: 63.3 ± 11.1  Other: 96.3 ± 12.0  Initial ASD, removed at followup: 92.6 ± 9.1  False-Positive Screen: 106.1 ± 11.9  Typically Developing: 111.2 ± 11.7  **IQ (Visual Reception), mean ± SD:**  MSEL; T-ScoresASD: 43.0 ± 10.2  Language Delay: 51.0 ± 10.2  Developmental Delay: 30.5 ± 7.3  Other: 52.8 ± 9.5  Initial ASD, removed at followup: 51.6 ± 7.2  False-Positive Screen: 55.0 ± 8.5  Typically Developing:56.5 ± 8.2  **Language development (Receptive Language), mean ± SD:**  MSEL; T-ScoreASD: 29.1 ± 11.4  Language Delay: 39.6 ± 8.9  Developmental Delay: 23.4 ± 3.1  Other:40.7 ± 8.4  Initial ASD, removed at followup: 34.8 ± 5.5  False-Positive Screen: 46.7 ± 8.3  Typically Developing: 53.4 ± 11.0  **Language development (Expressive Language), mean ± SD:**  MSEL; T-ScoreASD: 32.2 ± 11.7  Language Delay: 37.0 ± 7.3  Developmental Delay: 26.7 ± 8.0  Other: 45.3 ± 8.0  Initial ASD, removed at followup: 41.6 ± 8.1  False-Positive Screen: 51.6 ± 9.6  Typically Developing:53.3 ± 7.4  **Age at Earliest ADOS, mean ± SD:**  ASD: 17.9 ± 3.8  Language Delay: 15.6 ± 3.1  Developmental Delay: 16.2 ± 3.1  Other: 14.7 ± 2.5 Initial ASD, removed at followup: 16.2 ± 4.8  False-Positive Screen: 14.0 ± 1.5  Typically Developing:15.0 ± 2.3  **ASD severity, mean ± SD:**  ADOS Total Score ASD: 16.8 ± 6.0  Language Delay: 6.5 ± 4.3  Developmental Delay: 12 ± 7.2  Other: 6.2 ± 4.1  Initial ASD, removed at followup: 11.6 ± 5.0  False-Positive Screen: 3.3 ± 3.0  Typically Developing: 2.5 ± 2.1  **ASD severity, mean ± SD:**  ADOS Social Affect Score ASD: 13.8 ± 4.8  Language Delay: 5.3 ± 3.3  Developmental Delay: 9.6 ± 6.4  Other: 4.3 ± 3.2  Initial ASD, removed at followup: 9.8 ± 4.1  False-Positive Screen: 3.0 ± 2.9  Typical: 2.1 ± 1.8  **ASD severity, mean ± SD:**  ADOS RR Score ASD: 2.9 ± 1.8  Language Delay: 1.2 ± 1.4  Developmental Delay: 2.3 ± 2  Other: 1.8 ± 2.1  Initial ASD, removed at followup: 1.8 ± 1.6  False-Positive Screen: 0.3 ± 0.6  Typically Developing:0.5 ± 1.0  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  *At Latest Age*  **Race/ethnicity, n (%):** NR  **Sex, n (%):** NR  **Risk factors:** NR  **Age at Latest IQ Testing, mean months ± SD:**  ASD: 34.1 ± 8.9  Language Delay: 25.1 ± 9.0  Developmental Delay: 32.4 ± 11.2  Other: 24.9 ± 8.8 Initial ASD, removed at followup: 31.7 ± 9.3  False-Positive Screen: 24.6 ± 8.9  Typically Developing: 23.8 ± 10.2  **IQ (Early Learning Composite), mean ± SD:** MSEL; Standard ScoreASD: 78.6 ± 17.5  Language Delay: 98.8 ± 17.4  Developmental Delay: 58.8 ± 22.1  Other: 98.6 ± 18.1  Initial ASD, removed at followup: 99.8 ± 8.1  False-Positive Screen: 110.9 ± 13.3  Typically Developing: 111.8 ± 13.6  **IQ (Visual Reception), mean ± SD:**  MSEL; T-ScoresASD: 41.0 ± 11.6  Language Delay: 54.7 ± 12.6  Developmental Delay: 31.8 ± 12.2  Other: 51.8 ± 12.3  Initial ASD, removed at followup: 50.6 ± 3.9  False-Positive Screen: 57.3 ± 8.7  Typically Developing: 56.9 ± 11.1  **Language development (Receptive Language), mean ± SD:**  MSEL; T-ScoreASD: 35.5 ± 12.1  Language Delay: 45.7 ± 11.3  Developmental Delay: 30.4 ± 9.4  Other: 46.1 ± 11.1  Initial ASD, removed at followup: 46.8 ± 10.7  False-Positive Screen: 51.8 ± 9.2  Typically Developing: 54.3 ± 11.7  **Language development (Expressive Language), mean ± SD:**  MSEL; T-ScoreASD: 37.6 ± 14.6  Language Delay: 43.2 ± 11.2  Developmental Delay: 30.9 ± 8.3  Other: 47.6 ± 10.0  Initial ASD, removed at followup: 54.0 ± 6.2  False-Positive Screen: 51.8 ± 10.4  Typically Developing: 53.1 ± 8.3  **Age at Latest ADOS, mean ± SD:**  ASD: 34.2 ± 8.8  Language Delay: 25.1 ± 8.8  Developmental Delay: 32.6 ± 11.2  Other: 24.7 ± 9.1 Initial ASD, removed at followup: 32.1 ± 10.3  False-Positive Screen: 24.9 ± 8.7  Typically Developing:24.6 ± 9.9  **ASD severity, mean ± SD:**  ADOS Total Score ASD: 16.9 ± 5.2  Language Delay: 4.1 ± 3.5  Developmental Delay: 6.9 ± 4.8  Other: 4.8 ± 3.0  Initial ASD, removed at followup: 5.3 ± 1.0  False-Positive Screen: 2.6 ± 2.5  Typically Developing: 1.9 ± 2.1  **ASD severity, mean ± SD:**  ADOS Social Affect Score ASD: 13.4 ± 4.6  Language Delay: 3.6 ± 2.9  Developmental Delay: 4.6 ± 3.4  Other: 4.0 ± 2.4  Initial ASD, removed at followup: 4.8 ± 1.9  False-Positive Screen: 2.3 ± 2.3  Typically Developing: 1.7 ± 1.8  **ASD severity, mean ± SD:**  ADOS RR Score ASD: 3.5 ± 1.6  Language Delay: 0.6 ± 1.0  Developmental Delay: 2.3 ± 1.8  Other: 0.8 ± 1.6  Initial ASD, removed at followup: 0.5 ± 1.0  False-Positive Screen: 0.3 ± 0.7  Typically Developing:0.2 ± 0.5  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  Sensitivity: 100  Specificity: 47  PPV: 75  NPV: 100  **Other outcomes**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:** NR  **Time between screening and intervention, mean ± SD:** Children began treatment on average at 17 months  **Mean amount of intervention (hours/week):**  ASD: 11.5  Language Delay: 1.9  Developmental Delay:8.5  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:** NR |

| **Study Description Author/year:**  Honda et al, 2009[13](#_ENREF_13) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** Japan  **Study period:** 1989- 1992  **Inclusion/exclusion criteria:**   * Children undergoing 18-month checkup in Yokohama | **Population characteristics**  **Population description:** Children undergoing 18-month check-up  **Race/ethnicity, n (%):** NR  **Age at screening, mean ± SD:** NR (18 month well child visit)  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** YACHT 18  (Young Autism and other developmental disorders checkup tool) used at 18 month routine health check-up  **Mode of administration:** In person  **Setting:** Pediatric well-baby visits  **Administrator:** Nursing staff  **Scorer:** Nursing staff  **Study definition of positive screen:** NR (Public health nurse assessment of all screening data)  **Total number available to screen:** 3036  **Total number screened:** 2,814  **Number screening positive:** 402  **Number screening negative:** 2412  **Percent completing screening followup/diagnosis:** 0.82% (23/2814)  **Diagnosis**  **Diagnostic process:** NR  **Who diagnosed:** NR  **Diagnoses, n**  Among all participants:  ASD: 5  PDD-NOS: 10  Learning disorders:1  ADHD: 6  Mental retardation: 4  Cerebral palsy: 1  Erb’s palsy: 1  **Among those screening positive:**  Total: 19  ASD: 3  PDD-NOS: 8  Learning disorders: 1  ADHD: 5  Mental retardation: 2  Cerebral palsy: 0  Erb’s palsy:0  **Among those screening negative**  Total: 4  ASD: 2  PDD-NOS: 1  Learning disorders: 0  ADHD: 1  Mental retardation: 0  Cerebral palsy: 0  Erb’s palsy: 0  **Age at diagnosis, mean ± SD:**  NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  YACHT (18 months, autistic disorder and PDD)  Sensitivity: 79  Specificity: 11  PPV: 58  NPV: 25  For any developmental disorder:  Specificity: 86.3 (extraction stage: 2408/2791); 100 (refinement stage)  Among IQ ≥70:  Sensitivity: 86.7 (13/15)  Among IQ ≤69:  Sensitivity: 75 (6/8)  **Other outcomes:**  **Intermediate/Process outcomes**  **Age at diagnosis, mean ± SD:** NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/year:**  Wetherby et al, 2008[14](#_ENREF_14) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** US  **Study period:** June 1997 – November 2003  **Inclusion/exclusion criteria:**   * Between 4-10 years old * Born between June 1997 and November 2003 | **Population characteristics**  **Population description:** General population recruited from childcare and healthcare agencies  **Race/ethnicity, n (%):**  Caucasian: 3193 (59.3)  African American: 1626 (30.2)  Hispanic: 167 (3.1)  Asian: 124 (2.3)  Other: 275 (5.1)  **Age at screening, mean ± SD:** 13.5 months ± 4.7 (at first screen)  **Sex, n (%):**  Female: 2633 (48.9)  Male: 2752 (51.1)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:**  **Parental education**  Years of Education Completed  Mothers: 14.3 ± 2.4 Fathers: 14.3 ± 2.7  **Parental age at birth of child**  Mothers: 28.2 ± 6.2  Fathers: 30.9 ± 7.0  **Primary language spoken in home:** NR  **Limited English proficiency:** NR | **Screening**  **Instrument/method:** Infant Toddler Checklist  **Mode of administration:** Parent-rated, independently  **Setting:** Home, clinic  **Administrator:** NR  **Scorer:** NR  **Study definition of positive screen:** Score in the bottom 10th percentile on Social Composite, Symbolic composite or Total score on ITC *OR* bottom 10th percentile on speech composite on 2 consecutive ITCs  **Total number available to screen:** 5385  **Total number screened:** 5385  **Number screening positive:** 969 (18%)  **Number screening negative:**  4416 (82%)  **Percent completing screening followup/diagnosis:**  Among those screening positive: NR  Among those screening negative: NR  **Diagnosis**  **Diagnostic process:**  Behavior Profile (CSBS), Mullen  Vineland, ADOS, Social Communication Questionnaire  **Who diagnosed:** NR  **Diagnoses, n**  ASD: 60 (56 of these had screened positive)  Non-ASD diagnoses:NR  **Age at diagnosis, range:** 4–10 years | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR    **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics**  **Sensitivity:** 93.3  **Other outcomes**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:**  NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description**  **Author/Year:**  Dietz et al, 2007[15](#_ENREF_15) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** Netherlands  **Study period:** October 1999-April 2002  **Inclusion criteria:**   * Children screened at well-baby visit at age 14-15 months   **Exclusion criteria:**   * Parents did not cooperate (n=52) * Screening lists incomplete or physician unable to pre-screen child usually due to language barrier (n=399)   Note: Population may overlap with Dietz et al[16](#_ENREF_16) | **Population characteristics**  **Population description:** Children screened at well-baby visit at age 14-15 months  **Race/ethnicity, n (%):** NR  **Age at screening:**  Screen 1:14-15 months  Screen 2: 16 ± 2months (from population screening)  27 ± 6 months (from surveillance)  **Sex, %: (n=173)**  Female: 25  Male: 75  **Risk factors:** NR  **DQ, n:**  By compliance status:  Early: 69.94 ± 17.96  Late: 72.54 ± 18.88  Noncompliance: 89.19 ± 14.95  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** 2-stage screening: 4- & 14-item ESAT + developmental surveillance  Children initially prescreened with 4-item ESAT by their doctor; parents of those who screened positive or those identified by surveillance were invited to have a 1.5 hr home visit with a child psychologist who conducted the 14-item ESAT  **Mode of administration:** In person  **Setting:** clinic; home  **Administrator:** Trained child psychologist  **Scorer:** Administrator  **Study definition of positive screen:** Prescreen: negative answer by parent on 1/4 ESAT items; screening: >3 negative answers in 14-item ESAT by both parent and child psychologist  **Total number available to screen:** 31,724  Screen 1 (4-item ESAT):  Total screened: 31,724  Number screening positive: 370  Number screening negative: 31,354  Screen 2 (14-item ESAT)  Total screened: 364 (255 of screen 1 positives & 109 through surveillance)  Number screening positive: 173  Number screening negative: 191  **% completing screening followup/diagnosis:**  17.8% (66/370) of screen 1 positives  81.5 % (141/173) of screen 2 positives  **Diagnosis**  **Diagnostic process:** 5 tests over 5 weeks including standardized parent interview, developmental history, cognitive testing (Bayley Scales, Mullen Scales of Early Learning, Psychoeducational Profile-Revised), Vineland Social-Emotional Early Childhood Scales, standardized behavior observation using ADOS or ADOS-G, pediatric examination and medical workup  Subset of patients undergoing screening with SCQ had diagnostic workup including ADI-R  **Who diagnosed:** Experienced child psychiatrist made a clinical judgment about whether the child would meet DSM-IV criteria of different diagnoses by age 3.5 years  **Diagnoses, n**  Screen 1:  Total diagnosed: 66/255 complied (ASD=19, non-ASD=47)  Screen 2:  Total diagnosed: 141/173 (ASD=58; non-ASD=83)  **Age at diagnosis, mean ± SD:** 3.5 years | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):**NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics** (%):  4-item ESAT + developmental surveillance:  PPV: 29  14-item ESAT:  PPV: 41.1  **Other outcomes**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| **Study Description Author/Year:**  VanDenHeuvel et al, 2007[17](#_ENREF_17) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** UK  **Study period:** NR  **Inclusion/exclusion criteria:**   * 18 month olds * Attending well check visit | **Population characteristics**  **Population description:** 2117 infants attending the routine 18-month developmental assessment  **Race/ethnicity, n (%):** NR  **Age at screening, mean ± SD:** 18 months  **Sex, n (%):**  Female: 1029 (49%)  Male: 1088 (51%)  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context**  **SES:** Representative of the area social class distribution based on 2002 census data  **Primary language spoken in home:** NR  **Limited English proficiency:** NR | **Screening**  **Instrument/method:** Checklist for Autism in Toddlers (CHAT), 14- item interviewer-administered instrument divided into 2 sections: Section A includes 9 items administered to the parent and Section B includes 5 items based on interviewer observations of the infant  **Mode of administration:** Interview/observation  **Setting:** Clinic  **Administrator:** Public health nurses  **Scorer:** Public health nurses  **Study definition of positive screen:** Each completed CHAT was scored into 1 of 3 categories: high, medium, or low risk for autism, based on a standard scoring system. If an infant scored medium or high risk for autism at the first administration, a second screening was administered approximately 1 month later.  **Total number available to screen:** 2684  **Total number screened:** 2117  **Number screening positive:** 29  **Number screening negative:** 2088  **% completing screening followup:** 24.1 (7/29)  **% completing diagnosis:**  Overall: 0.57 (12/2117)  Screen Positive: 41.4 (12/29)  Screen Negative: 0  **Diagnosis**  **Diagnostic process:** Diagnostic assessment by experienced psychologist  **Who diagnosed:** Clinical psychologist  **Diagnoses, n**  **Among those screening positive**  ASD: 7 (high risk)  **Non-ASD diagnoses, n**  Learning disability: 2  Low risk autism: 3  **Among those screening negative:** NR  **Age at diagnosis, mean ± SD:**  NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics (%)**  PPV:58.3 (7/12)  **Other outcomes:**  **Intermediate/Process outcomes**  **Time between screening and diagnosis:** NR  **Time between screening and intervention:** NR  **Health-related outcomes:** NR |

| **Study Description**  **Author/Year:**  Dietz et al, 2006[16](#_ENREF_16) | **Baseline/Prescreening Characteristics** | **Screening and Diagnosis** | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| **Country:** Netherlands  **Study period:** October 1999-April 2002  **Inclusion criteria:**   * Children screened at well-baby visit at age 14-15 months   **Exclusion criteria:**   * Parents did not cooperate (n=52) * Screening lists incomplete or physician unable to pre-screen child usually due to language barrier (n=399)   Note: Population may overlap with Dietz et al[15](#_ENREF_15) | **Population characteristics**  **Population description:** Children screened at well-baby visit at age 14-15 months  **Race/ethnicity, n (%):** NR  **Age at screening, mean months ± SD:** 14.91 ± 1.37  **Sex, %:**  Female: 37%  Male: 63%  **Risk factors:** NR  **IQ, n:**  Mullen Scales of Early Learning  Low (<70)  Screen Positive: 26  Screen Negative: 5  Below average (70-85)  Screen Positive: 30  Screen Negative: 22  Average (>85)  Screen Positive: 44  Screen Negative: 128  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Screening**  **Instrument/method:** Children initially prescreened with 4-item ESAT by their doctor; parents of those who screened positive were invited to have a 1.5 hr home visit with a child psychologist who conducted the 14-item ESAT  **Mode of administration:** In person  **Setting:** Clinic; home  **Administrator:** Trained child psychologist  **Scorer:** Administrator  **Study definition of positive screen:** Prescreen: negative answer by parent on 1/4 ESAT items; screening: >3 negative answers in 14-item ESAT by both parent and child psychologist  **Total number available to pre-screen:** 31,724  **Total number pre-screened:** 31,273  **Total number available to screen (test positives from prescreen):** 370  **Total number screened:** 255 (69%)  **Number screening positive:** 100  **Number screening negative:** 155  **% completing screening followup/diagnosis**:  Screen positive: 73 (29% of screened population)  Screen negative: None  **Diagnosis**  **Diagnostic process:** 5 tests over 5 weeks including observation of child behavior in small group of very young children and their parents, standardized parent interview, developmental history, Vineland Social-Emotional Early Childhood Scales, standardized behavior observation using ADOS or ADOS-G, pediatric examination and medical workup  **Who diagnosed:** Experienced child psychiatrist made a clinical judgment about whether the child would meet DSM-IV criteria of different diagnoses by age 3.5 years  **Diagnoses, n**  ASD: 18  Non-ASD diagnoses, n  Mental retardation: 13  Language disorder: 22  Other DSM-IV: 7  Other developmental disorder/ classification:13  **Age at diagnosis, mean ± SD:**  NR | **Screening**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR  **Diagnosis**  **Race/ethnicity, n (%):** NR  **Age, mean ± SD:** NR  **Sex, n (%):** NR  **Risk factors:** NR  **IQ, mean ± SD:** NR  **ASD severity, mean ± SD:** NR  **Language development, mean ± SD:** NR  **Adaptive behavior, mean ± SD:** NR  **Family context:** NR | **Performance characteristics: ESAT (%)**  PPV:25  **Other outcomes**  **Intermediate/Process outcomes**  **Time between screening and diagnosis, mean ± SD:**  NR  **Time between screening and intervention, mean ± SD:** NR  **Health-related outcomes:** NR  **Modifiers of screening outcomes/performance:**  NR |

| Study Description Author/Year:  Baird et al, 2000[18](#_ENREF_18) | **Baseline/Prescreening Characteristics** | Screening and Diagnosis | **Characteristics of Population Screened and/or Diagnosed** | **Screening Outcomes** |
| --- | --- | --- | --- | --- |
| Country: UK  Study period: NR  **Inclusion/exclusion criteria:**   * Children with profound developmental delay excluded | Population characteristics  Population description: 12-month birth cohort of children in the south- east Thames region  Race/ethnicity, n (%)  Caucasian  ASD: 101 (100)  Other: 95 (100)  Typically Developing: 117 (100)  Age at screening, mean ± SD: 18.7 months ± 1.1 months  Sex, n (%): NR  Risk factors: NR  IQ, mean ±SD: NR  Language development, mean ± SD: NR  Adaptive behavior, mean ± SD: NR  Family context: NR | Screening  Instrument/method: CHAT  Mode of administration:  Stage 1: Mail (n=2541) and in person (n=13,694) Stage 2: re-administration of the CHAT 1 month later  Setting: Primary care clinic  Administrator:  Stage 1: Primary health care providers (n=13,694) and via mail (n=2541) Stage 2: Research team  Scorer:  Stage 1: Primary health care provider Stage 2: Research team  Study definition of positive screen: High Risk: Failure of all 5 critical items  Medium Risk: Failure of item A7 and Biv or only A7  Total number available to screen: 40,818  Total number screened:  Stage 1: 16,235 Stage 2: 60  Number screening positive:  CHAT–Stage 1  High Risk: 38  Medium Risk: 369 CHAT–Stage 2  High Risk: 12  Medium Risk: 22  Number screening negative:  Stage 1: 15,828 Stage 2: 26/60  % completing screening followup/diagnosis:  CHAT-1: 100  CHAT-2: 0.37 (60/16,235)  Diagnosis  Diagnostic process: Autism Diagnostic Interview–Revised, Leiter International Performance Scale *or* Kaufman Assessment Battery for Children, Reynell Developmental Language Scales *or* Clinical Evaluation of Language Fundamentals–Preschool *or* Clinical Evaluation of Language Fundamentals–Revised; structured interactive assessment  Who diagnosed: 3 clinicians experienced in diagnosing autism and related disorders  Diagnoses, n  CHAT-1:  Among screen positives:  Autism: 19  PDD: 14 Other diagnosis: 44  Clinically normal: 330  Among screen negatives:  Autism: 31  PDD: 30  No risk: 15,767  CHAT-2:  Among screen positives:  Autism: 10  PDD: 10 Other diagnosis: 11  Clinically normal: 3  Among screen negatives: NR  Age at diagnosis, mean ± SD: NR | Screening  Race/ethnicity, n (%): NR  Age, mean ± SD: NR  Sex, n (%): NR  Risk factors: NR  IQ, mean ±SD: NR  Language development, mean ± SD: NR  Adaptive behavior, mean ± SD: NR  Family context: NR  Diagnosis  Race/ethnicity, n (%): NR  Age, mean ± SD: NR  Sex, n (%):  Female  ASD: 3 (3)  Aspergers: 0 (0)  PDD-NOS: 8 (9)  Male  ASD: 42 (45) Aspergers: 5 (5) PDD-NOS: 36 (38)  Risk factors: NR  IQ, mean ±SD: NR  ASD severity, mean ± SD: NR  Language development, mean ± SD: NR  Adaptive behavior, mean ± SD: NR  Family context: NR | Performance characteristics (%)  Stage 1 screening, high risk threshold  *ASD (including Asperger’s)*  Sensitivity: 20  Specificity: 99.8  PPV: 26.3  *PDD* Sensitivity: 2.3  Specificity: 99.8  PPV: 2.6  *All PDDs* Sensitivity: 11.7  Specificity: 99.8  PPV: 28.9  Stage 1 screening, combined high and medium risk  *ASD*  Sensitivity: 38  Specificity: 97.6  PPV: 4.7  *PDD*  Sensitivity: 31.8  Specificity: 97.6  PPV: 3.4  *All PDDs* Sensitivity: 35.1  Specificity: 97.7  PPV: 8.1  Stage 2 screening,\*\* combined high and medium risk  *All PDDs* PPV: 58.8  Other outcomes\*  Comparison of TP and FN at initial screen  *Gender (n)*  ASD  TP Female: 2  TP Male: 11  FN Female: 1  FN Male: 12  PDD  TP Female: 1  TP Male: 19  FN Female: 1  FN Male: 5  Age at Diagnosis mean ± SD  *ASD:* TP=13, FN=13  TP: 47.5 ± 14.3 months  FN: 61.5 ± 12.2 months  *PDD:* TP=11, FN=6  TP: 46.4 ± 7.5 months  FN: 65 ± 13.8 months  IQ mean ± SD  *ASD*  TP: 65.7 ± 21.8  FN: 88.7 ± 16.9  *PDD*  TP: 99.5 ± 15  FN: 83.2 ± 10.9  Intermediate/Process outcomes  Time between screening and diagnosis, mean ± SD: NR  Time between screening and intervention, mean ± SD: NR  Health-related outcomes: NR |

ADHD=attention deficit hyperactivity disorder; ADI-R=Autism Diagnostic Interview-Revised; ADOS=Autism Diagnostic Observation Schedule; ADOS-G=Autism Diagnostic Observation Schedule-Generic; ADOS-T=Autism Diagnostic Observation Schedule–Toddler Module; ASD=Autism Spectrum Disorder; CARS=Childhood Autism Rating Scale; CHAT=Checklist for Autism in Toddlers; CSBS-DP=Communication and Symbolic Behavior Scales–Developmental Profile; CSBS-DP-T=Communication and Symbolic Behavior Scales–Developmental Profile-Toddlers; DSM-IV=Diagnostic and Statistical Manual of Mental Disorders–Fourth Edition; ESAT=Early Screening for Autistic Traits; IQ=Intelligence Quotient; ITC=Infant Toddler Checklist; JA-OBS=Joint Attention Observation Schedule; M-CHAT=Modified Checklist for Autism in Toddlers; M-CHAT-F=Modified Checklist for Autism in Toddlers-Followup Interview; MSEL=Mullen Scales of Early Learning; NR=not reported; PDD-NOS=Pervasive Developmental Disorder-Not Otherwise Specified; SACS=Social Attention and Communication Study; SCQ=Social Communication Questionnaire; SD=standard deviation; SES=socioeconomic status; VABS=Vineland Adaptive Behavior Scales; YACHT=Young Autism and other developmental disorders Checkup Tool.