

Background

Medical and behavioral problems are common in autism spectrum disorder (ASD); however, prevalence may vary by child's age and cognitive and verbal functioning.

Objective

To compare select medical and behavioral problems recently experienced by young children and adolescents with ASD in a large national registry, as reported by their parents.

Methods

Sample

Parent participants in the Interactive Autism Network (IAN)—a large, validated (Lee et al., 2010; Marvin et al., 2014) and verified (Daniels et al., 2012), internet-mediated parent-report research registry—completed the Birth and Diagnosis Questionnaire (BDQ) on their children with ASD. Children all had a professional diagnosis of ASD and a confirmatory score on the Social Communication Questionnaire ≥ 12 .

The Birth and Diagnosis Questionnaire

The BDQ collects baseline data relating to each child's birth, ASD diagnosis, and development. In addition, the BDQ asks about the degree to which the child has experienced 15 common medical & behavioral conditions associated with ASD during the past 30 days ("None", "Mild", "Moderate", or "Severe"). See Table 1 for list of conditions.

Parents were also asked to characterize their child's current level of functioning, including cognitive and verbal ability. A rating of "significantly below age level" on the cognitive functioning question was used as a proxy for intellectual disability (ID). A rating of "meaningful, fluent speech" was used to determine whether the child had normal verbal ability.

Age Groupings

Respondents were grouped into young children (6 to 10) and adolescents (ages 13 to 17). Children under age 6 were excluded from the study because of the importance of establishing fluent vs. non-fluent verbal ability. Children ages 11 and 12 were excluded from the analysis in order to more clearly differentiate between the younger and older age groups.

Statistical Analysis

Ordered Logistic Regression was performed on responses to the 15 condition questions by age group and degree of condition severity ("None", "Mild", "Moderate", or "Severe"). Control predictor variables included in the models were: Intellectual Disability; Normal Verbal Ability; Gender; Race; and Ethnicity.

Results

Demographics: Young Children (6-10 years): n=680; 80.4% male; 83.1% white; 10.3% Hispanic; mean (SD) age 8.6 (1.45) years;; Adolescents (13-17 years): n=641; 81.6% male; 85.3% white; 11.2% Hispanic; mean (SD) age 15.1 (1.38) years. There was no statistically significant different in gender, race, or ethnicity.

Table 1: Responses to Question

"Please indicate the degree to which |Subject First Name| has experienced the following conditions or difficulties during the past 30 days" By Age Category, and Results of Ordered Logistic Regression By Age Group and Degree of Condition Severity ("None", "Mild", "Moderate", or "Severe")

Item	Young Children Ages 6-10 Years						Adolescents Ages 13-17 Years						Comparison Between Age Groups		
	N	None %	Total Any %	Mild %	Moderate %	Severe %	N	None %	Total Any %	Mild %	Moderate %	Severe %	OR [95% CI]	Higher-Risk Group	Risk Factors
Irritability or aggression	680	8.24	91.77	29.56	40.00	22.21	639	12.36	87.64	33.96	37.09	16.59	.63 [0.52-.78]	Young Children	ID+
Difficulty controlling emotions	680	5.15	94.85	23.97	42.94	27.94	636	12.26	87.74	32.23	36.64	18.87	.50 [0.41-.62]	Young Children	ID+
Injuring self	679	58.47	41.54	25.92	12.67	2.95	635	67.24	32.76	18.43	9.92	4.41	.71 [0.56-.89]	Young Children	ID+; Verbal-
Hyperactivity and impulsivity	678	10.18	89.82	22.12	36.14	31.56	638	26.02	73.98	28.37	29.94	15.67	.36 [0.29-.44]	Young Children	ID+; Male
Anxiety	660	13.03	86.97	27.12	41.52	18.33	629	9.06	90.94	27.82	41.02	22.10	1.14 [0.93-1.41]	NS	ID+; Female
Depression	593	65.09	34.91	21.25	12.48	1.18	575	51.65	48.35	26.09	17.74	4.52	1.72 [1.36-2.18]	Adolescents	Verbal+; Female
Sleep problems	680	34.85	65.15	28.24	26.03	10.88	635	38.27	61.73	26.46	22.20	13.07	.90 [0.73-1.10]	NS	ID+
Difficulties with movement and coordination	676	37.72	62.27	39.64	18.93	3.70	638	45.45	54.54	36.05	16.30	2.19	.70 [0.57-.86]	Young Children	ID+
Feeding problems	676	52.22	47.78	28.25	12.87	6.66	641	69.89	30.11	19.66	8.27	2.18	.48 [0.38-.61]	Young Children	Verbal-
Difficulties with bowel movements	665	52.33	47.68	26.77	14.89	6.02	620	58.55	41.45	21.77	14.84	4.84	.77 [0.62-.96]	Young Children	ID+
Placing himself/herself in danger	676	38.31	61.69	34.91	18.64	8.14	622	57.40	42.60	24.92	13.34	4.34	.45 [0.35-.55]	Young Children	ID+; Verbal-
Placing others in danger	669	69.96	30.14	19.83	8.52	1.79	625	76.32	23.68	15.68	5.60	2.40	.66 [0.52-.86]	Young Children	ID+; Verbal-
Wandering/running away (eloping)	677	47.12	52.88	31.76	14.03	7.09	637	71.90	28.10	18.52	6.91	2.67	.33 [0.26-.42]	Young Children	ID+; Verbal-
Sensitivity to sounds	678	13.27	86.73	38.35	36.14	12.24	632	16.93	83.07	37.97	35.13	9.97	.85 [0.69-1.04]	NS	Verbal-
Sensitivity to textures or touch	678	13.27	86.73	38.35	36.14	12.24	632	16.93	83.07	37.97	35.13	9.97	1.06 [0.86-1.31]	NS	None

Predictors Included in the Model: Intellectual Disability (ID+ vs. ID-); Normal Verbal Ability (Verbal+ vs. Verbal-); Gender (Male vs. Female); Race (White vs. Non-White); Ethnicity (Hispanic vs. Non-Hispanic).

"Total Any" equals sum of "Mild", "Moderate", and "Severe" ratings.

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Results (Continued)

See Table 1 for responses for each condition and the results of the Ordered Logistic Regression.

Areas of difficulty with the highest prevalence for both age-groups:

- ❖ controlling emotions
- ❖ irritability/aggression
- ❖ hyperactively and impulsivity
- ❖ anxiety
- ❖ sensitivity to sounds
- ❖ sensitivity to textures/touch

Young children experience more difficulties with:

- ❖ irritability/aggression
- ❖ difficulty controlling emotions
- ❖ self-injurious behavior
- ❖ hyperactivity and impulsivity
- ❖ movement/coordination
- ❖ feeding
- ❖ bowel movements
- ❖ placing self in danger
- ❖ placing others in danger
- ❖ elopement

Adolescents experienced a higher rate of depression.

No age-related difference for:

- ❖ anxiety
- ❖ sleep problems
- ❖ sensitivity to sounds
- ❖ sensitivity to touch

Intellectual Disability and/or abnormal verbal development were associated with 13 of the 15 factors.

Gender in combination with cognitive and verbal functioning was associated with:

- ❖ depression (female + normal verbal development)
- ❖ anxiety (female + ID)
- ❖ hyperactively and impulsivity (male + ID)

Conclusions

- ❖ Parents of young children report more challenges than reported for adolescents in behavior, coordination, GI concerns, and safety, while adolescents had greater problems with depression.
- ❖ Professionals should provide age-based anticipatory guidance and health and behavior surveillance for early identification and treatment of these conditions.