Background
Sensory sensitivity is strongly associated with autism spectrum disorder (ASD). Research suggests 30-90% of people with ASD either over- or under-react to sensory stimuli. Auditory hypersensitivity is most common, affecting 30-50%, and is highly concerning due to the often unpredictable nature of the stimulation, and the potential to lead to avoidant or challenging behaviors.

Objectives
- To describe auditory hypersensitivity in children with ASD
- To identify auditory response subtypes.

Methods
- Parent participants of children with ASD ages 2-17 years in the Interactive Autism Network (IAN)—a large, validated, and verified, internet-mediated, parent-report autism research registry—were invited to complete the Auditory Sensitivity and Child Safety Study during 2015.

- The survey asked about the child’s past and current levels of auditory sensitivity affecting the child’s behavior and impacts the family.

- Exploratory factors were calculated to determine potential subgroups based on sound types and emotional and physical responses to sounds for children who currently have auditory hypersensitivity.

Results

- Surveys were completed for 814 children with ASD
- 631 children had current auditory hypersensitivity.

- Demographic characteristics of children with current auditory hypersensitivity:
  - Median Age (Interquartile Range): 10.4 years (6.1)
  - Gender: 82.9% male
  - Ethnicity: 88.1% non-Hispanic
  - Race: 85.9% white

- Auditory hypersensitivity characteristics by median age:
  - Age of Onset: 2.0 years
  - Age of Worst Symptoms: 4.5 years

- Emotional and Physical Responses and Parental Strategies.

  - Emotional states: Affective changes to sensory stimuli.
  - Physical responses: Perceptual changes to sensory stimuli.

- See Table 1 for emotional and physical responses related to auditory sensitivity and Table 2 for parental methods to manage auditory hypersensitivity response.

- Child’s Emotional State

  - Child’s Physical Response

  | Stressed | Covers ears | 85.5% |
  | Irritable | Yells / screams | 52.2% |
  | Scared | Runs | 42.3% |
  | Nervous | Cries | 36.9% |
  | Frustrated | Tries to stop noise | 33.8% |
  | Annoyed | Hides | 25.2% |

- Table 2: Parental Strategies to Manage Auditory Hypersensitivity

- Methods
  - To identify auditory response subtypes.

- Conclusions
  - Auditory hypersensitivity is associated with safety concerns, challenging behaviors, and loss of opportunities at home, in school, and in the community.

- Response to noise factors fell into two groups: (i) a hostile, aggressive group and (ii) a fearful avoidant group.

- Auditory hypersensitivity may be associated with seizure activity.

- Improved understanding of auditory hypersensitivity may lead to treatments aimed at improving social participation, decreasing behavioral difficulties, decreasing family and community stressors, and decreasing child injury.

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