

Prevalence of obesity in youth with autism spectrum disorder and potential unique risk factors

Linda G. Bandini, PhD, RD

Professor of Pediatrics

Eunice Kennedy Shriver Center

University of Massachusetts Chan Medical School

USA



Eunice Kennedy
Shriver Center



Healthy Weight
Research Network

Children with
Autism Spectrum Disorder
& Developmental Disabilities

Prevalence of obesity in youth with ASD: Results of 3 meta-analyses

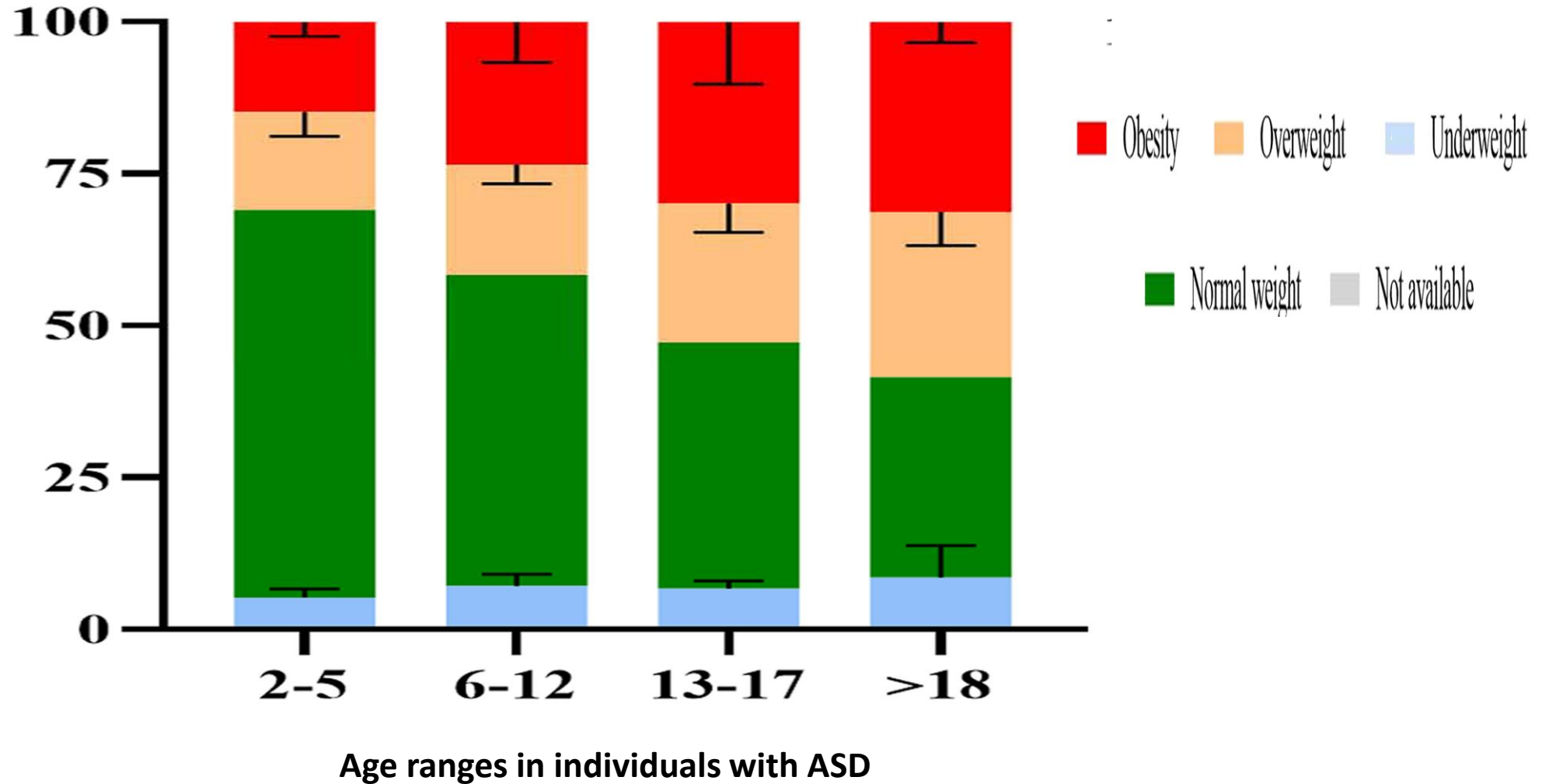
Author, date	Number of studies	Region	Prevalence of obesity	Relative Risk
Kathathuduwa et al., 2019	31	US (17) and other (14)	22.2%	1.41
Li et al., 2020*	48	30 North America, 2 South America, 7 Europe, 8 Asia	21.8%	1.86
Sammels et al., 2022	20	US (17) and other (3)	17%	1.58

*Includes 4 studies of adults

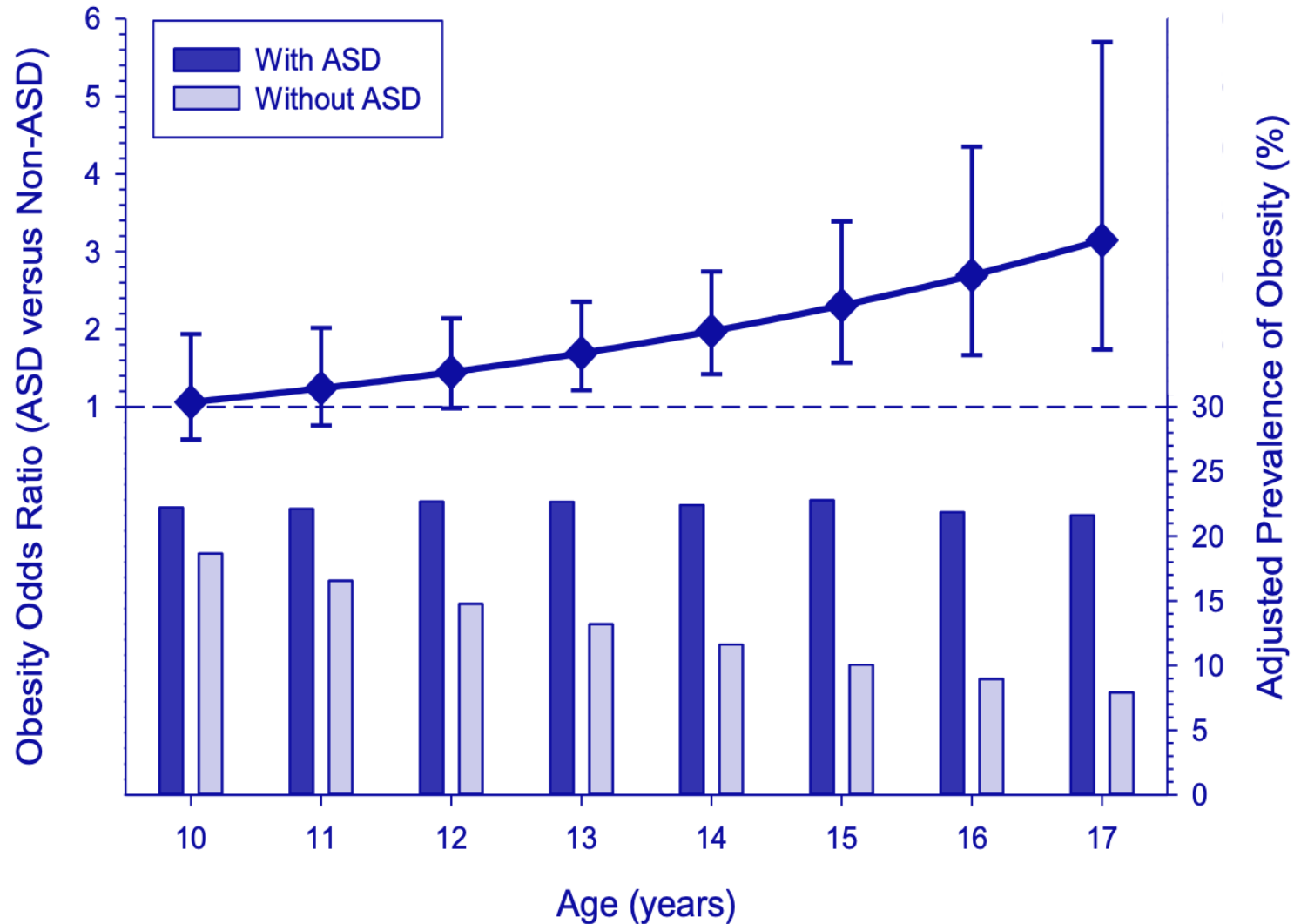
Kathathudawa et al., *Pediatric Obesity*, 2019; Li et al., *Obesity Reviews* 2020; Sammels et al., *Obesity Facts*, 2022

Global prevalence of weight status among children and youth with ASD

(Li et al, *Obesity Reviews*, 2020)



NSCH: Odds of obesity in children with ASD relative to those without ASD (Prevalence estimates below)



*adjusted for sex, racial/ethnic group and household income

Must et al., *Childhood Obesity*, 2017

Potential unique risk factors for obesity in youth with autism

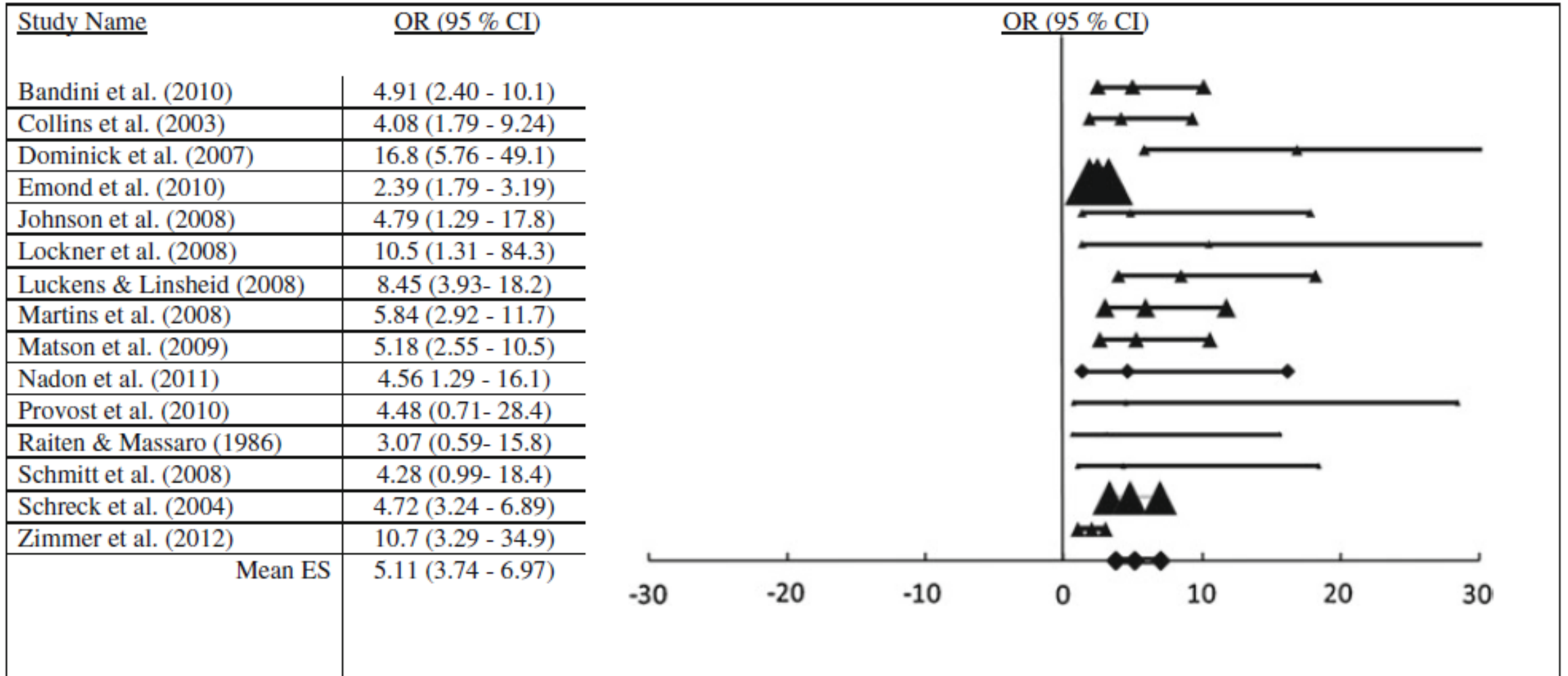
Energy intake

- Food selectivity/sensory sensitivity
- Oral motor problems
- Mealtime behavior problems
- Medication
- Food as a reward

Energy expenditure

- Delayed/ impaired motor skills
- Barriers to physical activity
- Sedentary behavior

Feeding problems in children with ASD



There is a greater level of feeding concern in children with ASD



Food selectivity in children with and without ASD CHAMPS study

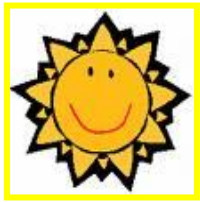
	Autism	Typically Developing	Significance
Food Refusal	N =53	N=58	
Percentage of foods refused*	41.7 %(21.2)	18.9% (15.6)	P<0.0001
Percentage of vegetables refused*	63% (31)	33% (27)	P<0.0001
Food Repertoire	N=48	N= 56	
# of different foods eaten over a 3-day period.	19 (5)	22.5 (4.6)	P<0.0003

* Percent of those offered

Sensory Sensitivity

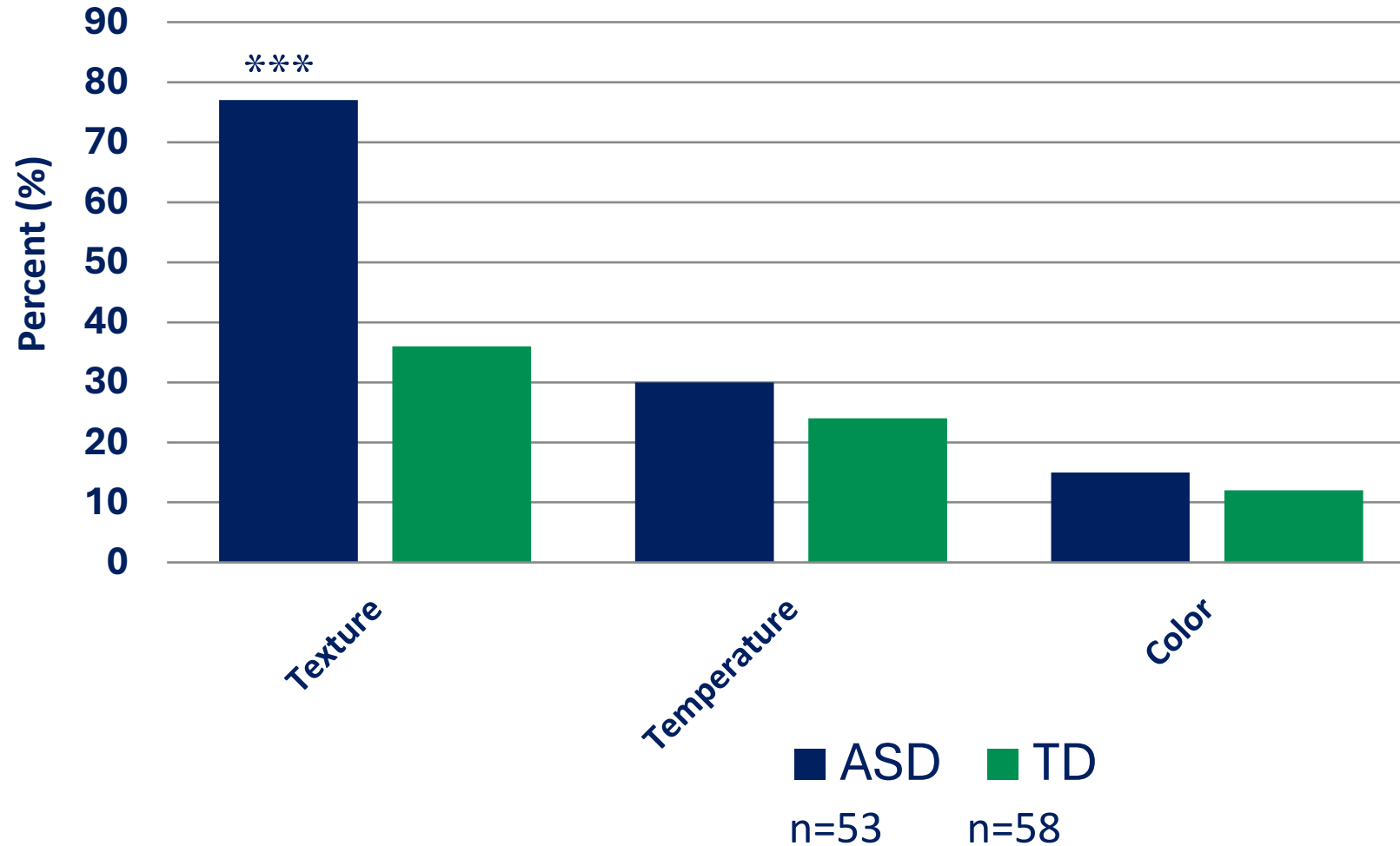
Individuals with sensory sensitivity have heightened responses to sensory stimuli including visual information, sounds, smells, tastes, and textures. These responses are often experienced as uncomfortable or stressful for the individual.

- Extremely common in children with autism
- Seen in very young children and seems to persist
- Seen across a range of severity of autism



CHAMPS Study

Food Refusal Based on Sensory Characteristics of Food

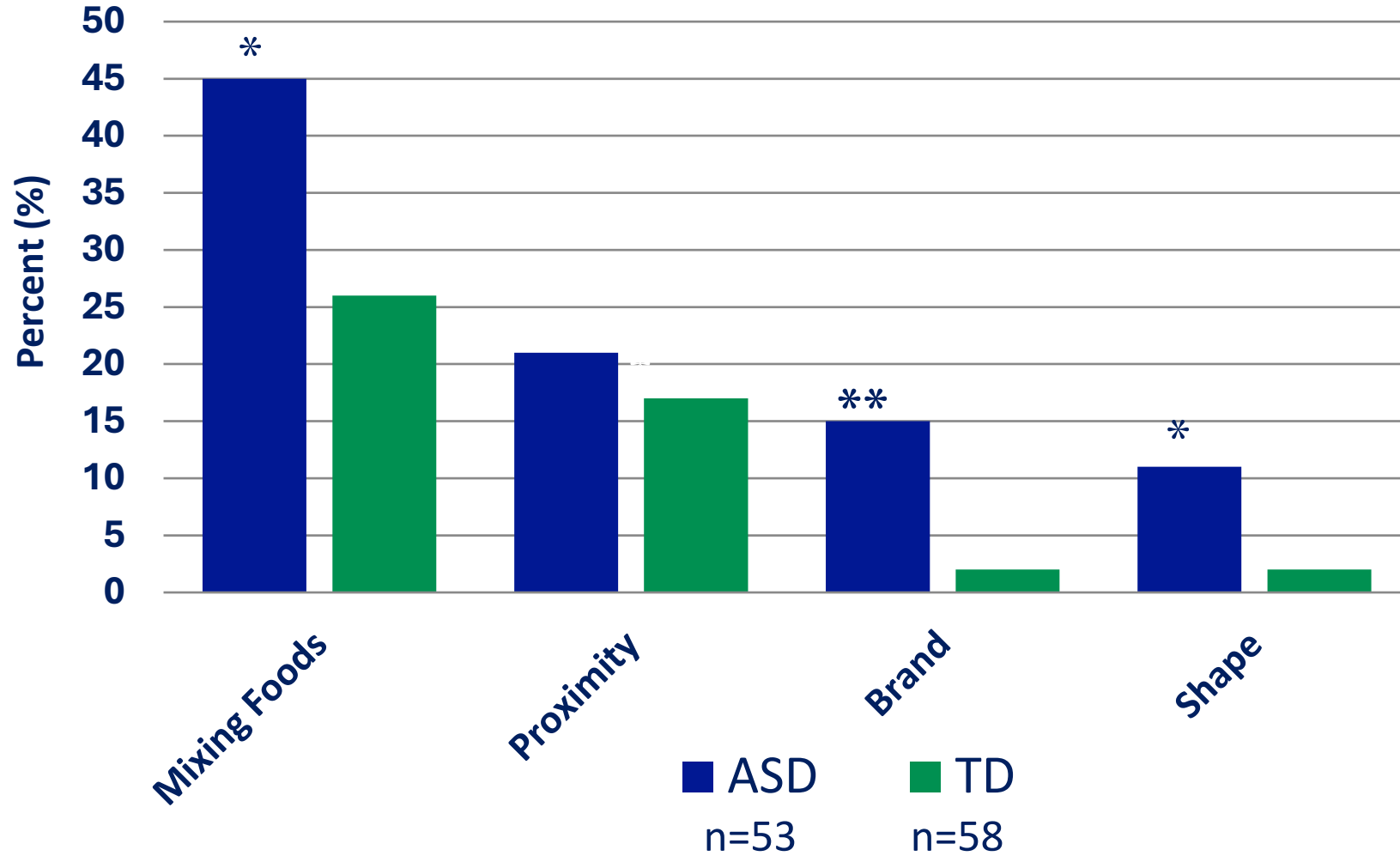


***p<0.001



CHAMPS Study

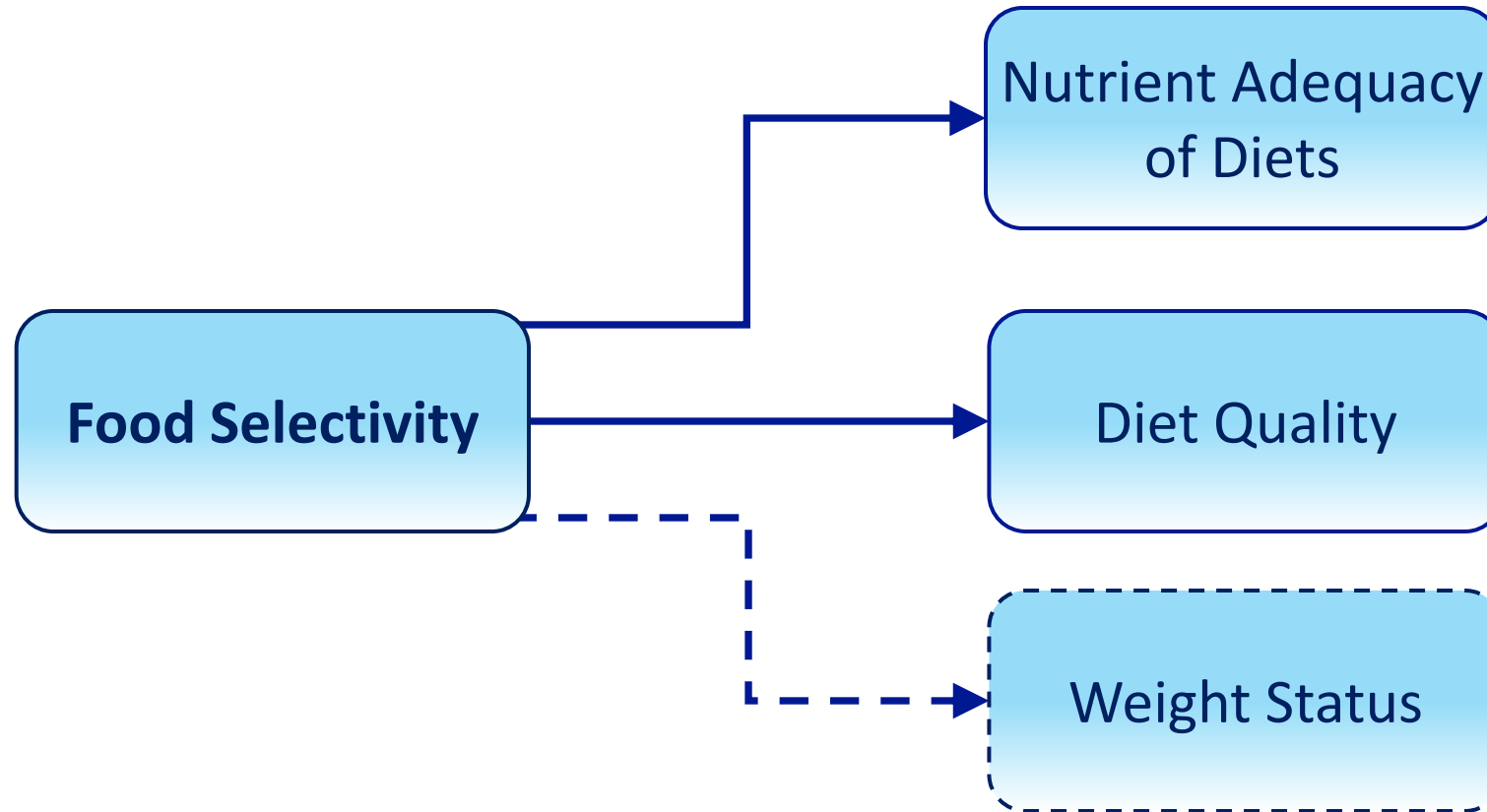
Food Refusal Based on Presentation of Food



*p<0.05

**p<0.01

Food Selectivity



Potential unique risk factors for obesity in youth with autism

Energy intake

- Food selectivity/sensory sensitivity
- Oral motor problems
- Mealtime behavior problems
- Medication
- Food as a reward

Energy expenditure

- Delayed/ impaired motor skills
- Barriers to physical activity
- Sedentary behavior

Problematic mealtime behaviors in children with autism and severe food selectivity

Behavior	N (%)
Pushing away	54 (77.1)
Head turn	51 (72.8)
Crying	49 (70.0)
Leaving the table	41 (58.5)
Screaming	32 (45.7)
Negative statements	31 (44.2)
Throwing things	29 (41.4)
Disruptive behaviors	20 (28.5)
Aggression	16 (22.8)

Potential unique risk factors for obesity in youth with autism

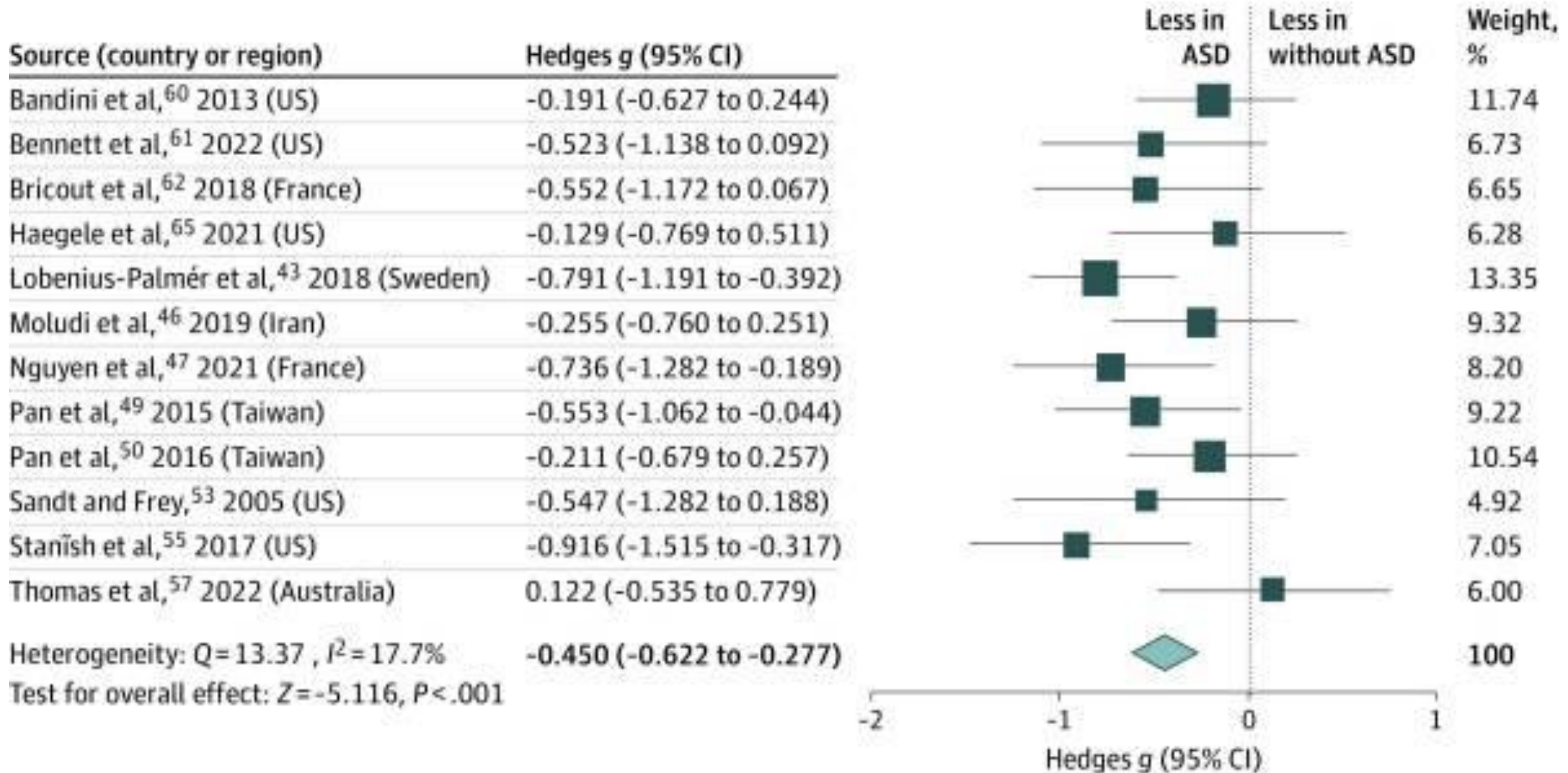
Energy intake

- Food selectivity/sensory sensitivity
- Oral motor problems
- Mealtime behavior problems
- Medication
- Food as a reward

Energy expenditure

- Delayed/ impaired motor skills
- Barriers to physical activity
- Sedentary behavior

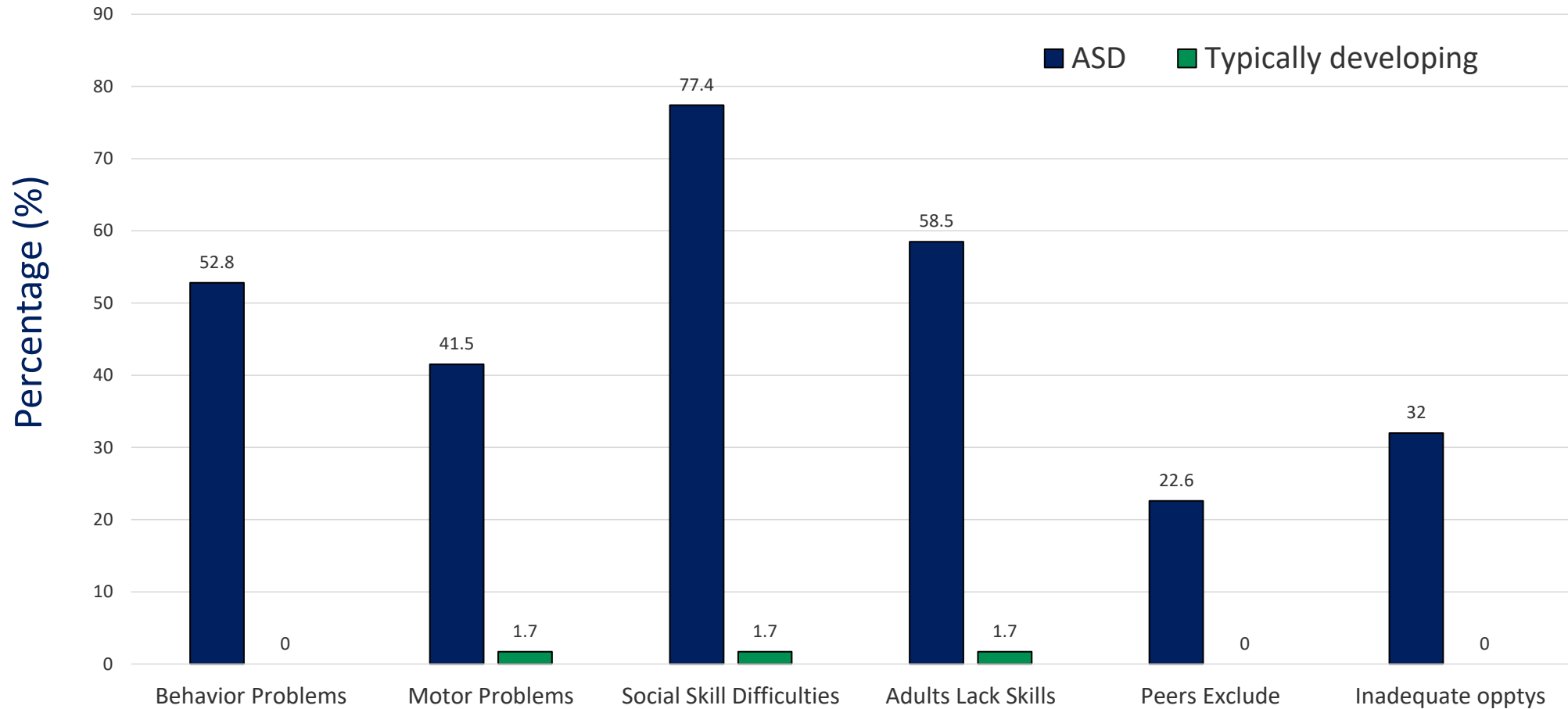
Meta-Analysis of Accelerometer-Assessed Moderate-to-Vigorous Activity in Youth with and without Autism





CHAMPS Study

Parent-reported barriers to physical activity in children with ASD and typically developing children ages 3-11y



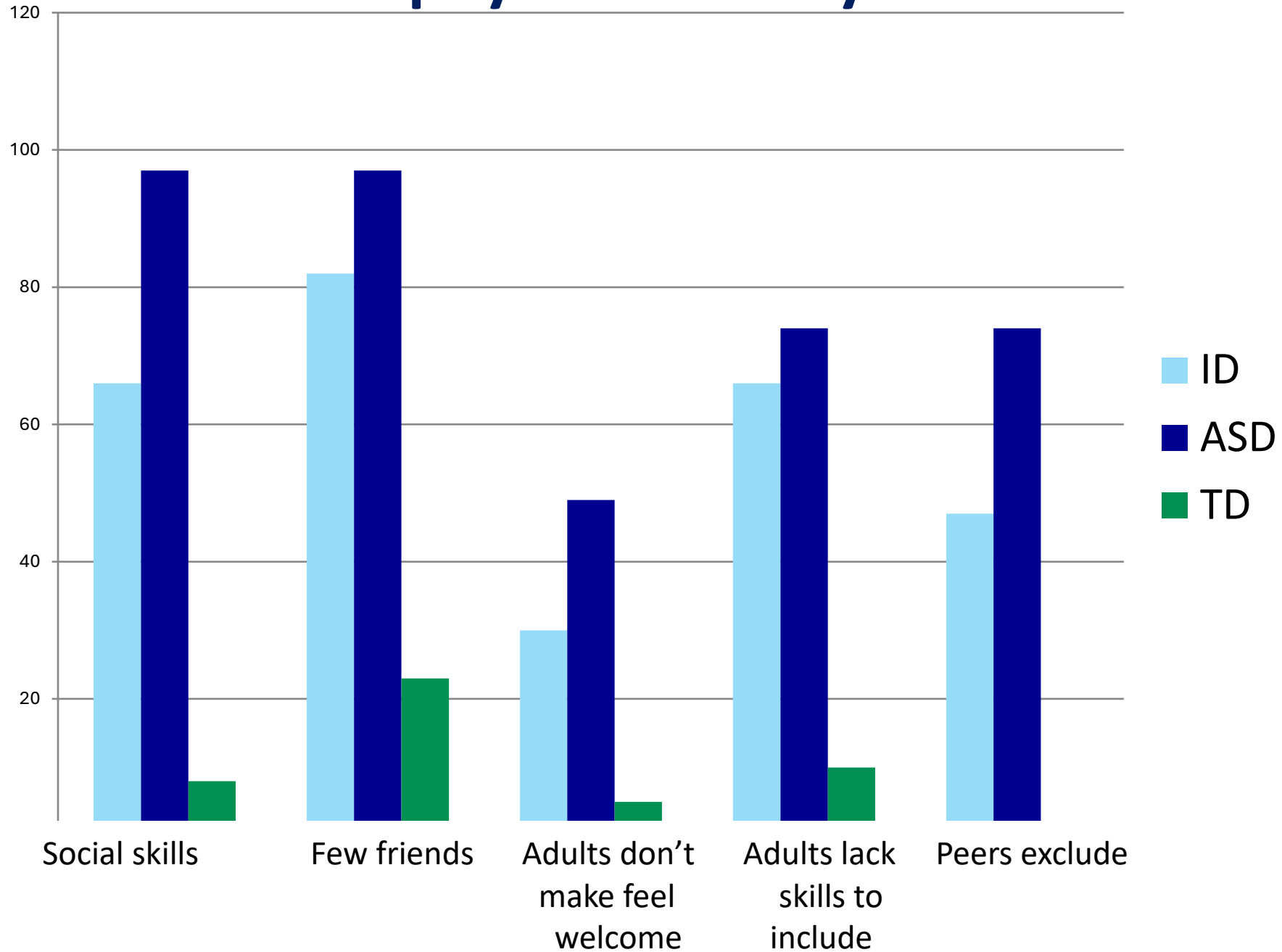
All $p < .001$

Must et al, *J PA and Health*, 2015



TRAC Study
Bandini et al.

Barriers to physical activity in adolescents



Sedentary Behavior

Screen time: Balancing benefits and risks

- can promote learning
- can be calming
- can promote social engagement
- can result in more sedentary time and less physical activity

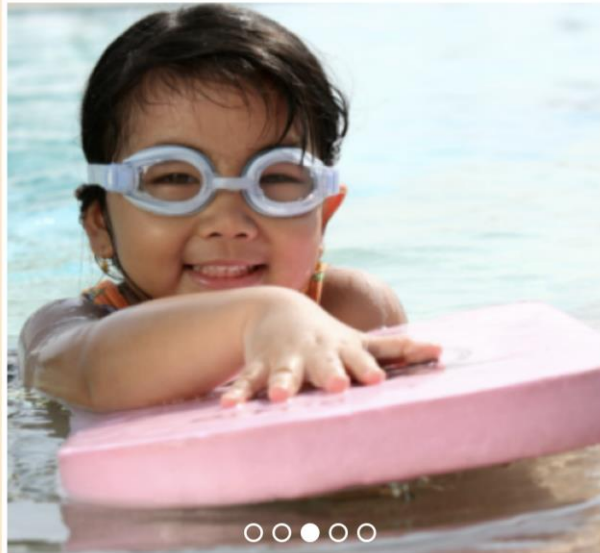
Summary

- Youth with ASD are at increased risk for obesity
- Further research is needed to shed more light on how feeding problems, eating behaviors, screen time, and low physical activity increase the risk for obesity in this population.



All children have a right to good health, including children with Autism Spectrum Disorder (ASD) and other developmental disabilities (DD).

Obesity is strongly associated with increased risk for chronic disease in the general population. Evidence exists that people with ASD/DD are at similar, if not increased, risk of obesity and its health outcomes. Underweight and/or inadequate nutrient intake in youth with ASD/DD may also have a negative impact on growth, overall health, and well-being. The HWRN strives to combine the knowledge and talents of an interdisciplinary group of researchers to understand and address the biopsychosocial dimensions of obesity in ASD/DD, to promote the development of evidence-based solutions to achieve a healthy weight in this population, and to disseminate research findings to broad and diverse audiences.



Webinars

UPCOMING HWRN WEBINAR

Our next Webinar will be taking place in January.

Registration information will be posted at the end of November.



Pilot & Feasibility Program

Projects Funded by the HWRN Pilot & Feasibility Program

PROJECT SUMMARIES ▶

HWRN News

The HWRN curated a collection of papers for the journal *Frontiers in Pediatrics*

Weight-Related Behaviors and Outcomes in Children and Youth with Intellectual and Developmental Disabilities

FREE DOWNLOADABLE E-BOOK OF THIS COLLECTION ▶

<https://HWRN.org>