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Vitamin Level Differences Across the ASD Spectrum

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Background

- 2.7% of US children diagnosed with Autism Spectrum Disorder (ASD)^[1]
- 74% of autistic students graduate with diploma, as opposed to 86% of all^[2]
- ASD is characterized by three levels of severity^[3]

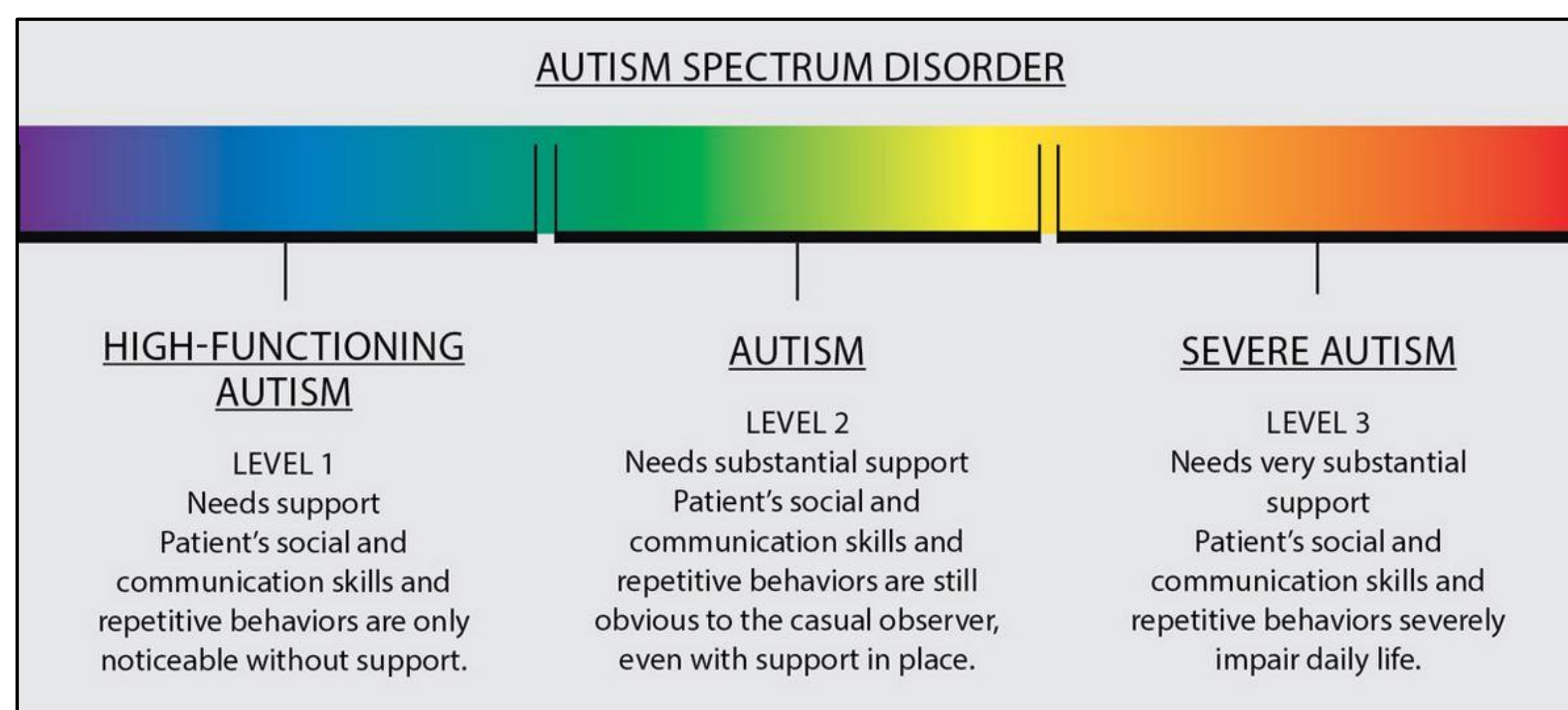


Figure 1a: Reproduced from ASD Assessments^[4]

- Vitamin deficiencies associated with higher risk of ASD notably, Vitamins D, B12 and B9^[5,6,7]

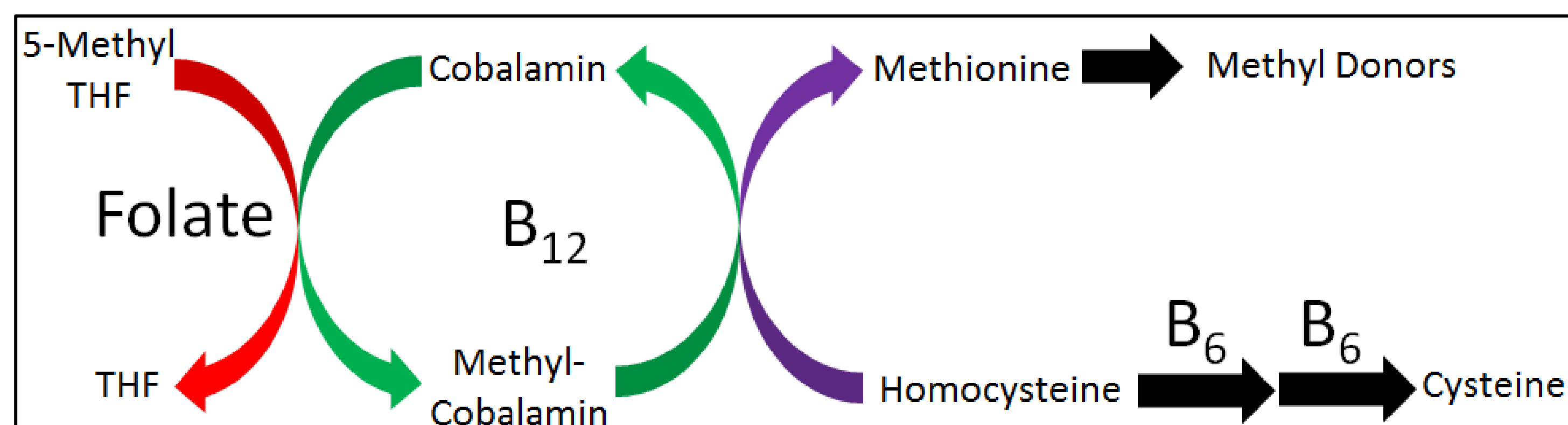


Figure 1b
Depicts the metabolism cycle involving B9 (folate) and B12 (cobalamin), which produce metabolites necessary for maintaining healthy nerve cells and producing DNA and RNA.^[8]

Purpose

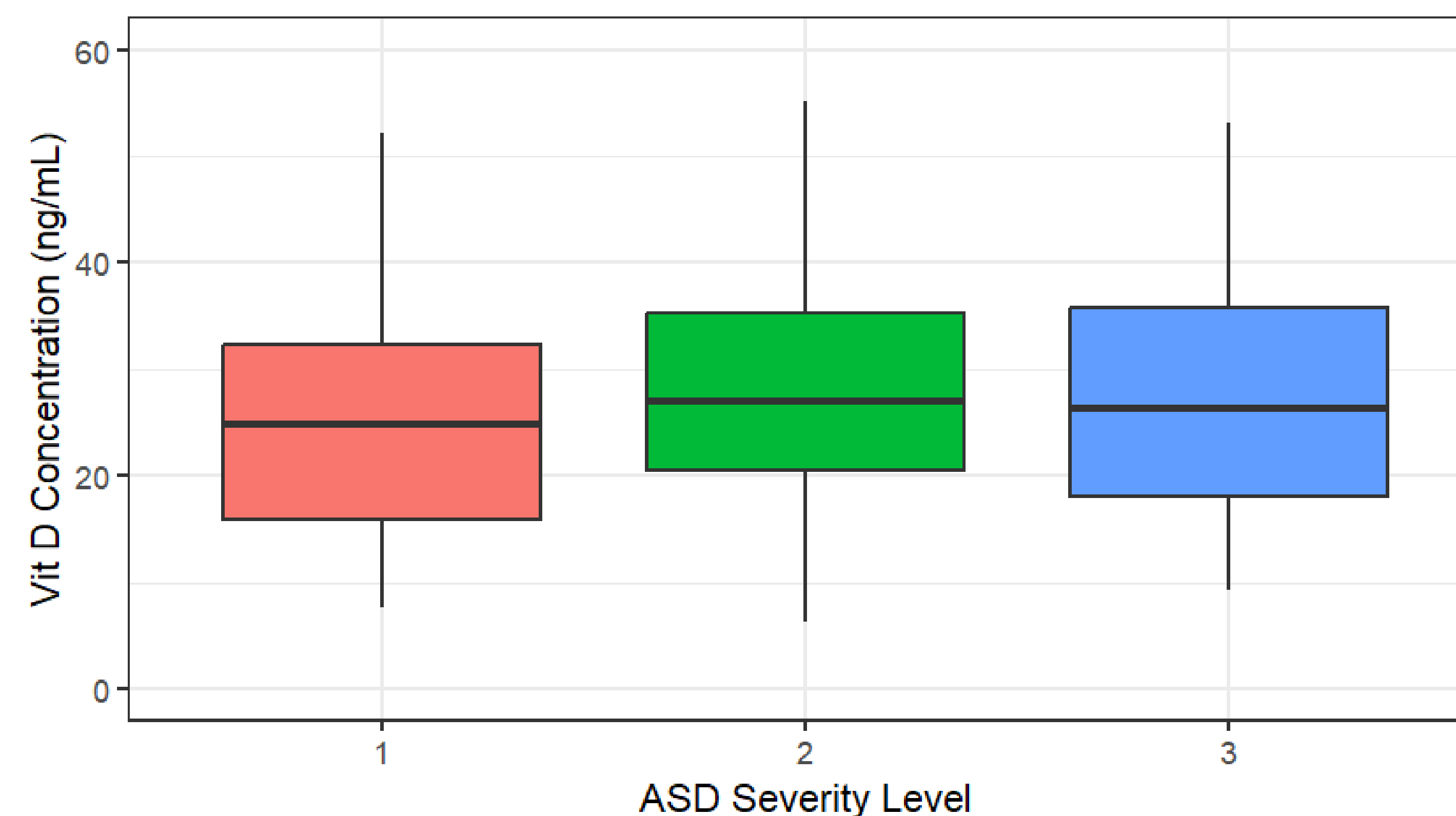
- Assess potential differences in vitamin levels between patients of differing severities of ASD.
- Provide recommendations for how future research can investigate various mechanisms that may indicate how vitamin deficiencies influence ASD.

Methods

- Analyzed data of 295 RISN patients with ASD, found:
 - 146 patients with recorded Vitamin D levels
 - 93 patients with recorded Folate levels
 - 94 patients with recorded Vitamin B12 levels
- Patients on vitamin supplementation at the time labs were drawn were filtered out
- For each vitamin, patients were categorized based on ASD severity level
- Conducted a one-way ANOVA Kruskal-Wallis test between the groups to determine statistically significant differences^[9]
- Utilized R-Studio for statistical analysis and boxplot graph creation

Results

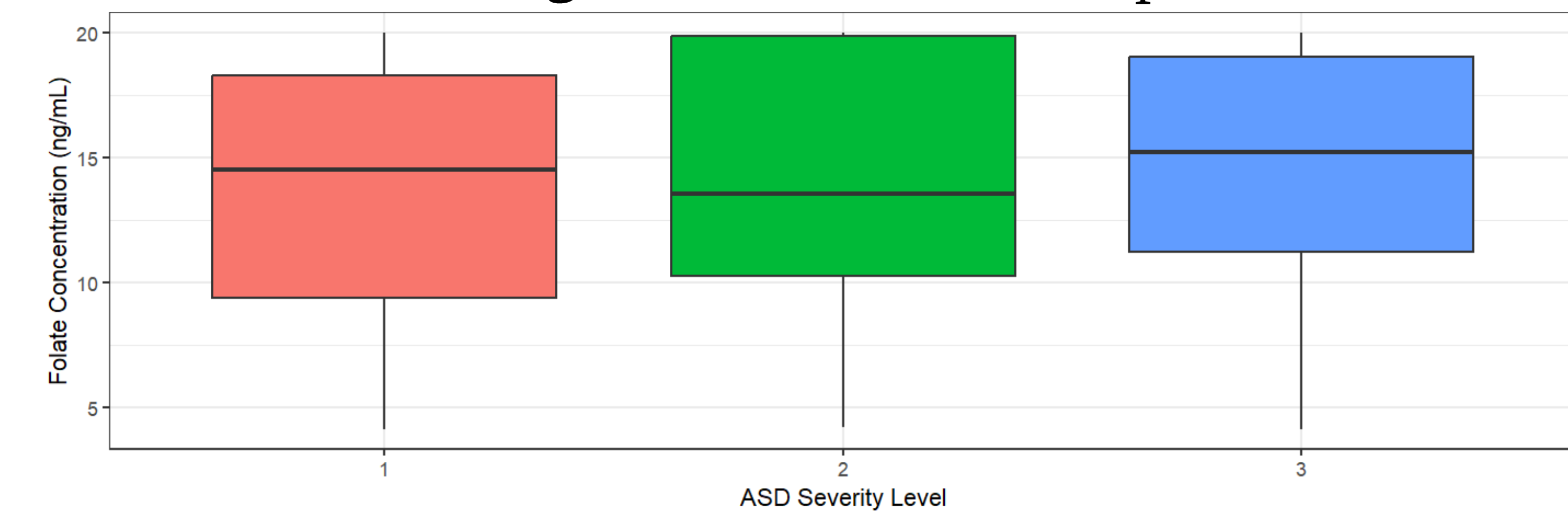
Figure 2a: Vit D Levels: p-value = 0.4309



I. Vitamin D Levels Across Severities:

- **Sample sizes** – ASD Level 1 – 58; ASD Level 2 – 45; ASD Level 3 – 43
- There was **no statistically significant difference** in vitamin levels between the three groups.

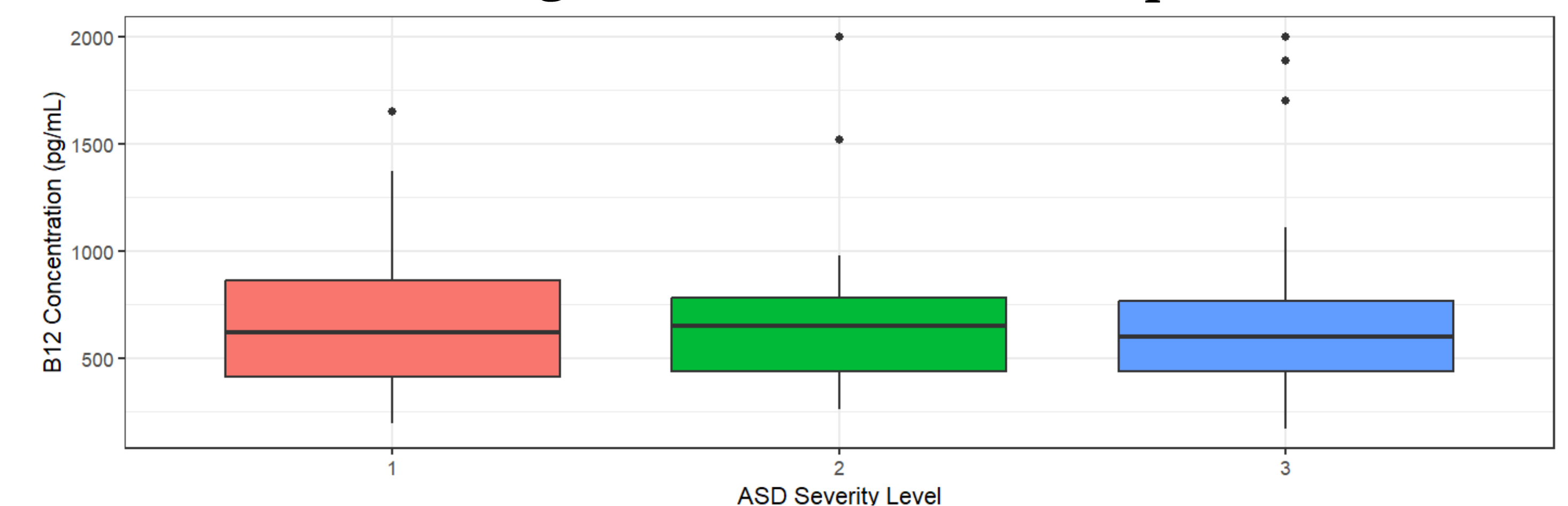
Figure 2b: Folate Levels: p-value = 0.8801



II. Folate Levels Across Severities:

- **Sample sizes** – ASD Level 1 – 32; ASD Level 2 – 32; ASD Level 3 – 29
- There was **no statistically significant difference** in vitamin levels between the three groups.

Figure 2c: Vit B12 Levels: p-value = 0.9744



III. Vit B12 Levels Across Severities:

- **Sample sizes** – ASD Level 1 – 32; ASD Level 2 – 33; ASD Level 3 – 29
- There was **no statistically significant difference** in vitamin levels between the three groups.

Conclusions

- The lack of notable difference in vitamin level between severities may indicate:
 - Severity is **unrelated** to vitamin level
 - Severity influenced by vitamins in **concentration-independent way**, such as processing and receptor sensitivity

Acknowledgement

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References

