

Bringing Data to Life:

Empowering Prevention through Data Visualization

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Data Visualization 1

Research Question

Do gender differences exist in aggression across school grades?

Hypothesis

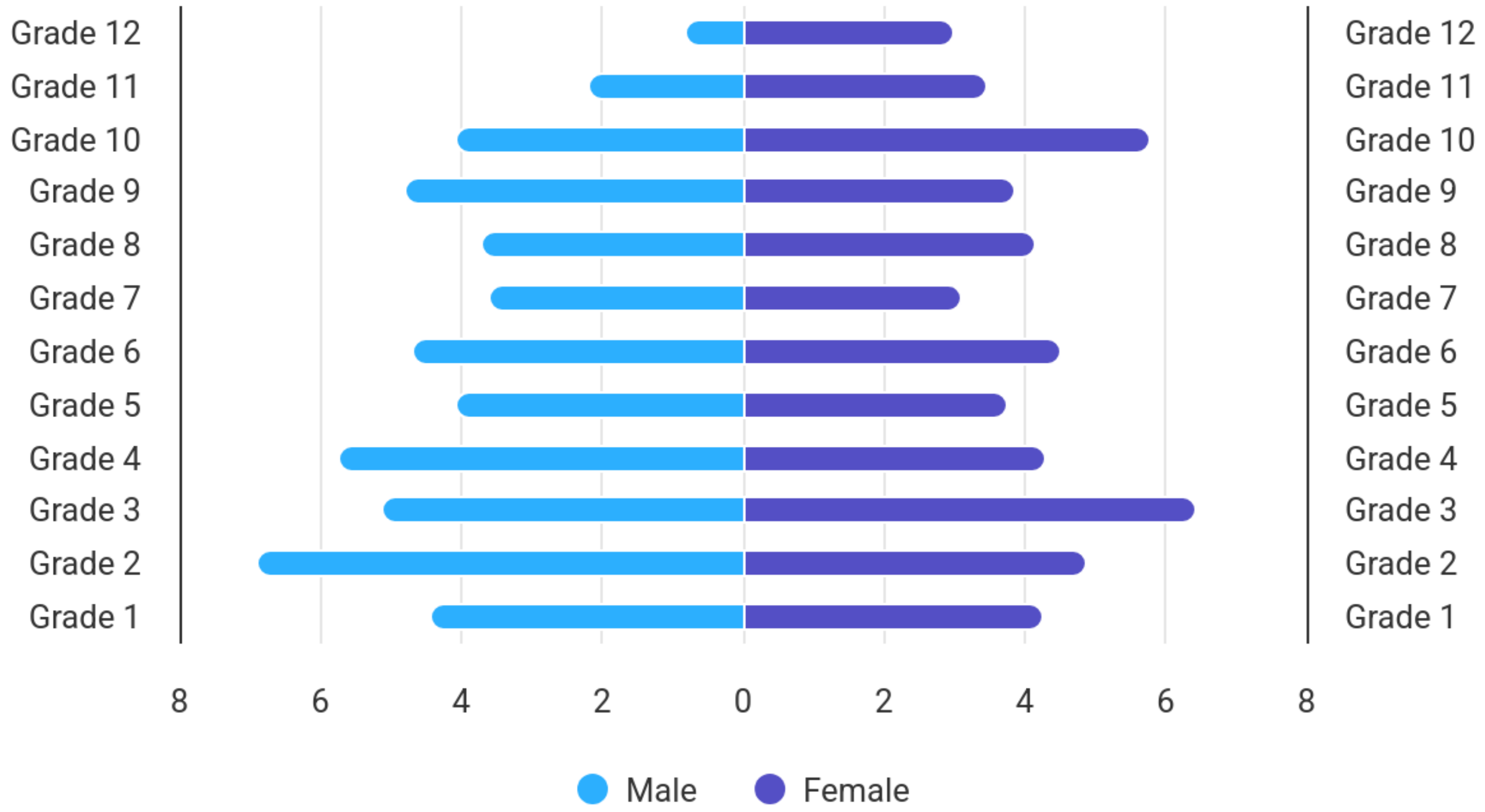
Coercion theory posits that aggressive and antisocial behaviors in children manifest from moment-to-moment social interactions. If antisocial behavior arises from ineffective social responses to problem behaviors, then the level of aggression would not necessarily vary as a function of gender but rather learned social aggression. As such, the data visualizations below display the comparison in ratings between males and females.

Negative Stacked Horizontal Bar Chart

If we expect there to be no gender gaps, then the distribution would look evenly across the grades.

Teacher Ratings of Aggression in Grades K-12 By Gender

Source: Linking the Interests of Families and Teachers (LIFT)

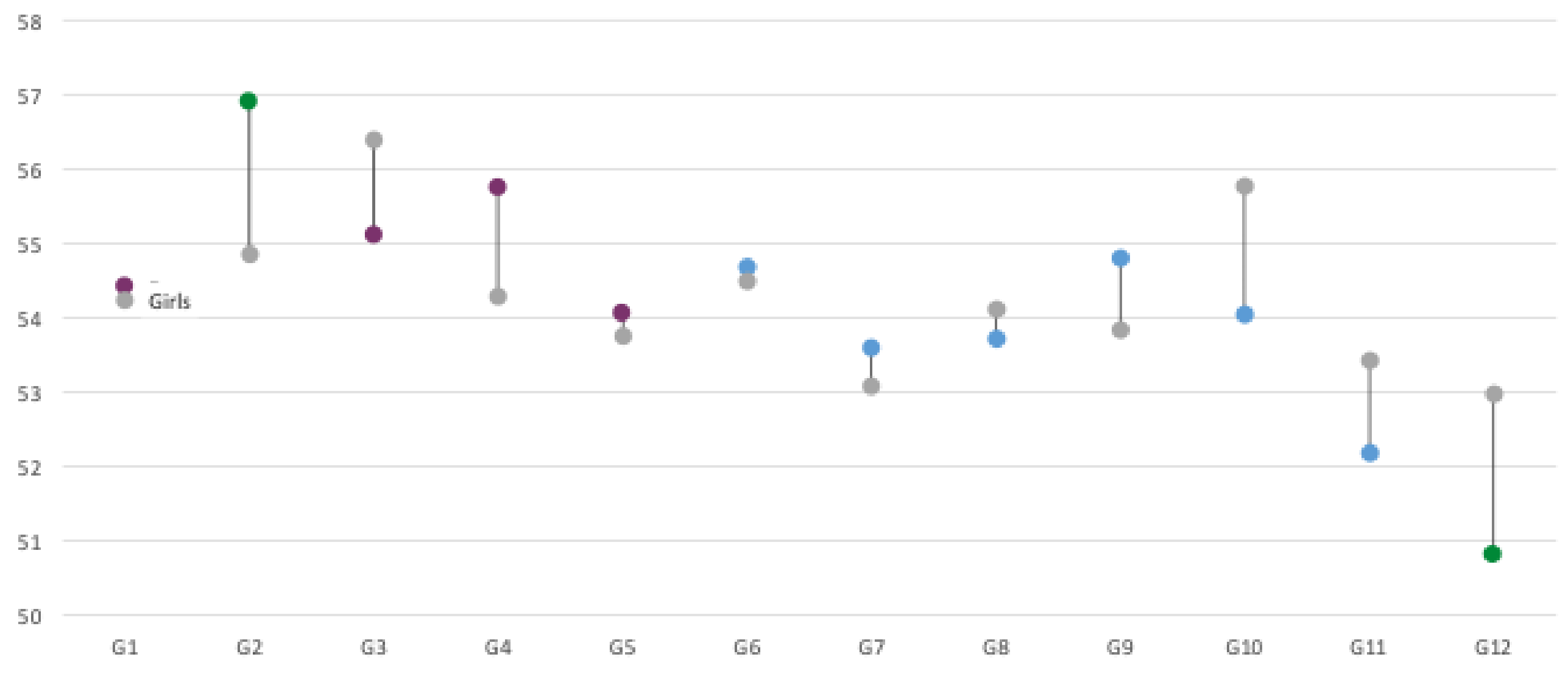


Vertical Dumbbell Chart

If we expect boys to have higher levels of aggression than girls, then the distribution would consistently show boys on top.

Teacher Ratings of Aggression in Grades K-12 By Gender

Source: Linking the Interests of Families and Teachers (LIFT)



Data Visualization 2

Research Question

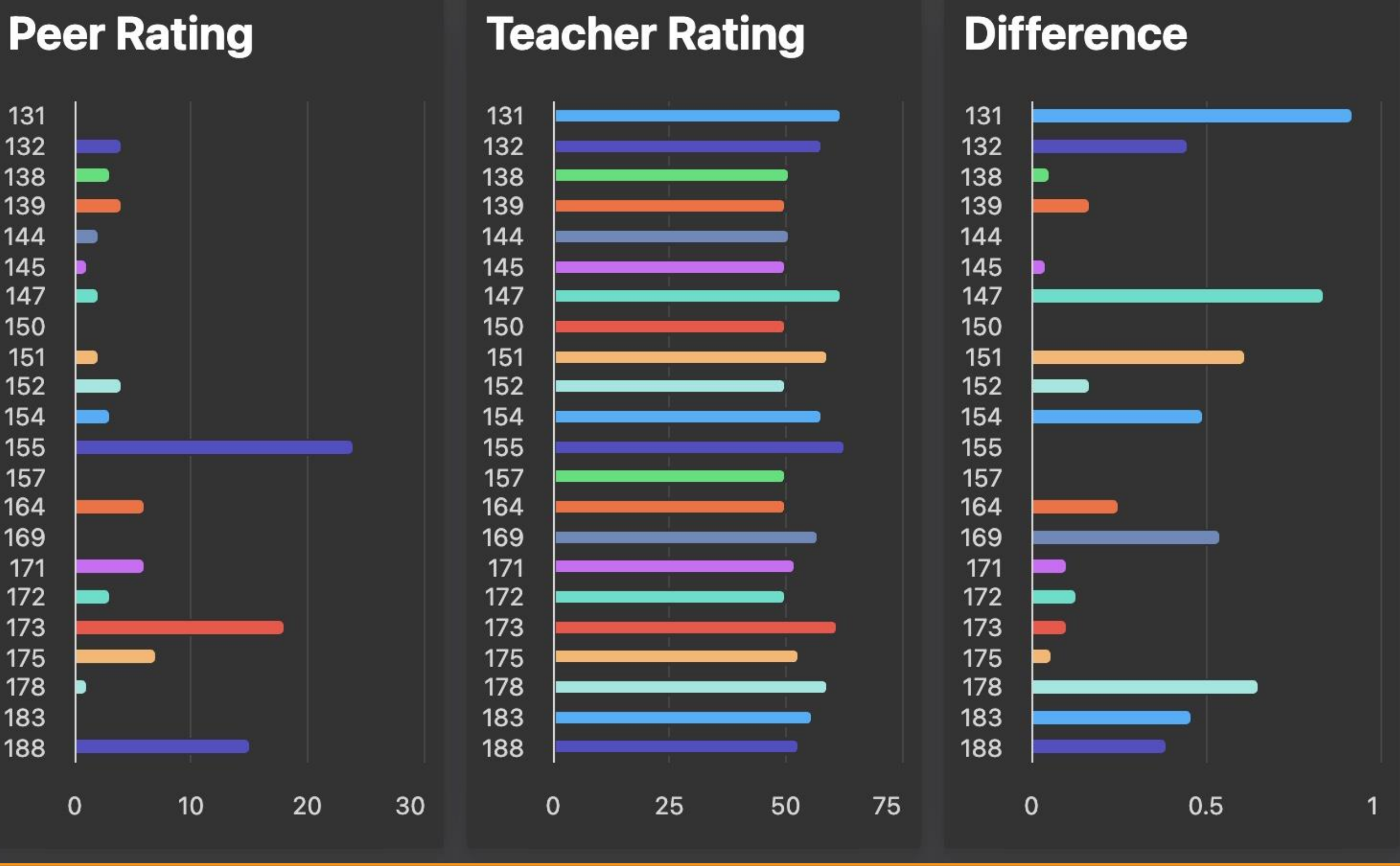
How much do teachers and students agree on which students are the most aggressive?

Hypothesis

Observational contexts, severity of aggression, and differences in social dynamics may influence teachers' and students' perceptions of aggression. Peer-to-peer interactions may be qualitatively different than teacher-peer interactions given the differences in social structure dynamics. For example, peers may be more likely to witness aggressive behaviors during unstructured time. Alternatively, minor acts of aggression may be more likely to be noticed by peers than by teachers. The data visualizations below examine the degree of convergence or disagreement.

Synced Panned Charts

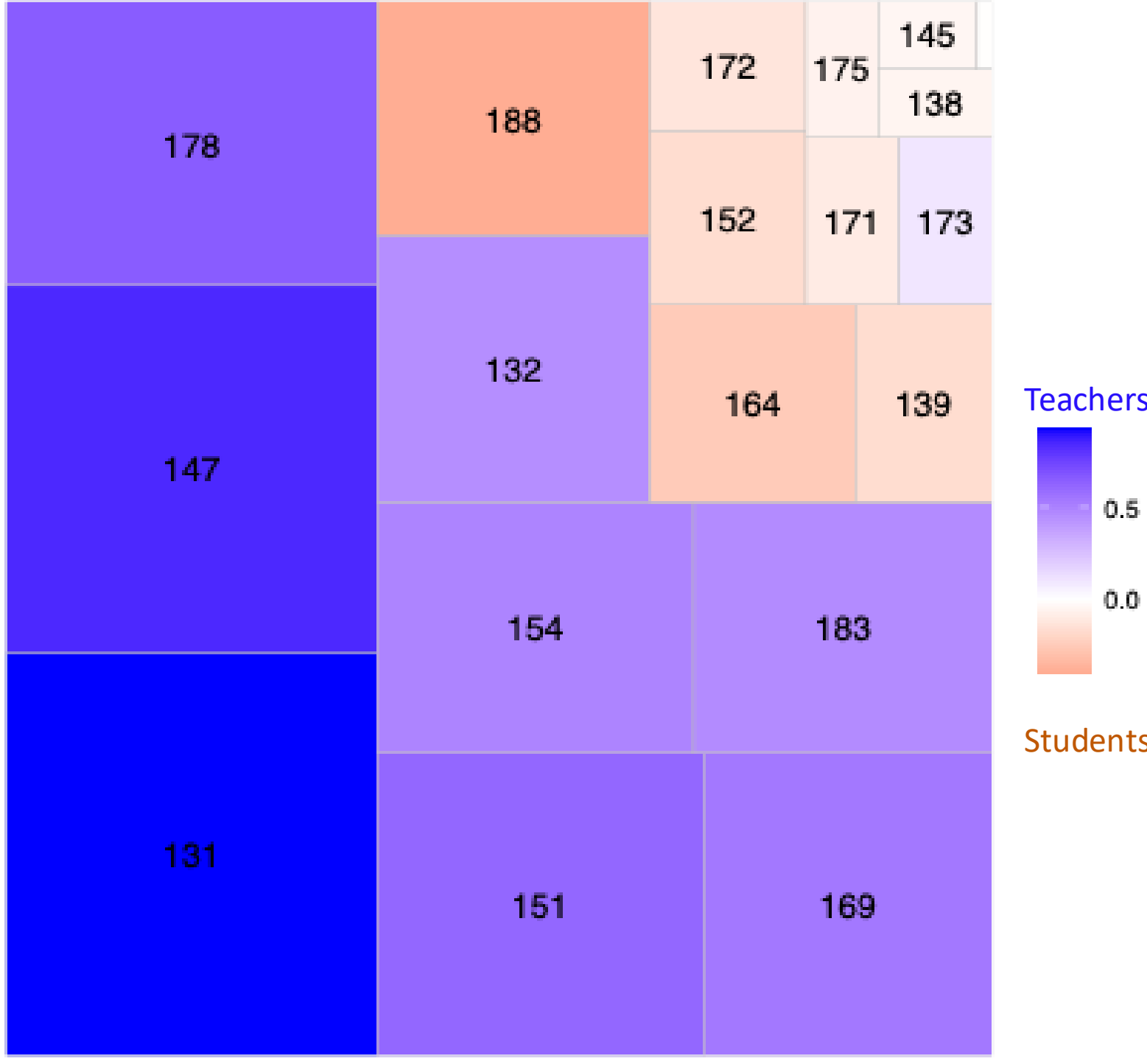
If peers and teachers diverge on perceived aggression, then we would want to identify which students and who rated them higher.



Heated Tree Map

The darker the color, the greater divergence between peer and teacher ratings. If we take a closer look at the legend, we can see broader variation in teacher ratings of aggression as indicated by the longer purple tail.

Notice the contrast in color between peer ratings compared to teacher ratings.



Data Visualization 3

Research Question

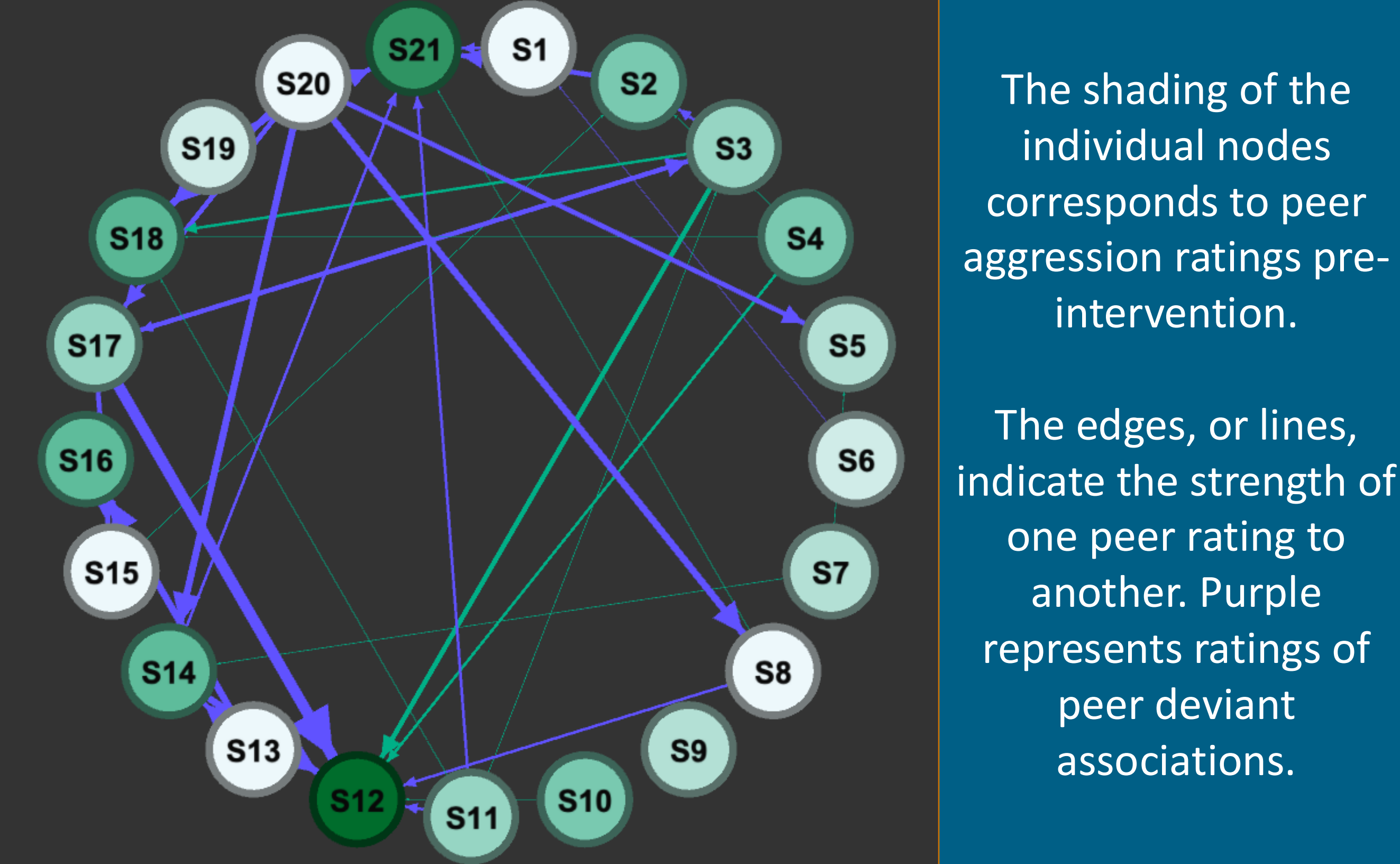
How does the implementation of the good behavior game influence the structure and dynamics of aggression within first grade students?

Hypothesis

The good behavior game (GBG) is an evidence-based classroom management strategy that involves splitting students into teams and setting clear behavioral expectations. Based on group-contingency theory coupled with behavioral science principles, this approach is designed to improve co-regulation and group regulation, leading to positive peer influence and reduced off-task, disruptive, and aggressive behaviors. The data visualizations below compare peer ratings of aggression pre and post intervention.

Social Network Analysis

Pre-intervention peer ratings of aggression.



The shading of the individual nodes corresponds to peer aggression ratings pre-intervention.

The edges, or lines, indicate the strength of one peer rating to another. Purple represents ratings of peer deviant associations.

Post-intervention peer ratings of aggression.

Compared to pre-intervention, fewer nodes are shaded green, indicating a noticeable reduction in peer ratings of aggression.

The strength of the rating is reflected in the thickness and shape of the line between nodes.

