

Group Final Project

Team Members:

- Samantha Diaz
- Destiny Riley
- Brandy M. Roane
- Amy Swanson
- Stephanie VanLeishout



How It Started

The initial spark of an idea



With varying interests in education, from instructors to parents who homeschool their children, The Eternals sought out to evaluate the affect, if any, that the COVID-19 pandemic had on learning.

We ran into gaps in data, needed to restructure our group, and had more forks than your average diner in our GitHub.

Not to be defeated, we rebranded and came back stronger, more organized, and ready to handle the challenge of this group project with aplomb.

The Eternals would like to welcome you to The Hot Mess Express.

ALL ABOARD!

Meet Our Team



Samantha Diaz



Dr. Brandy M. Roane



Destiny Riley



Amy Swanson



Stephanie VanLeishout



Destiny Riley

Previous Education:

- B.S. in Sociology
- B.A. in Creative Writing

Employment:

- Elementary Teacher & Freelance Writer

Subject Matter Expertise:

Data-informed decision making,
writing, curriculum design

Fun Fact:

My thesis made history at my alma mater



Amy Swanson

Previous Education:

- Some College

Employment:

- Previously- Project Coordinator at
Blue Shield of California

Subject Matter Expertise:

Scrum Master, Organization

Fun Fact: I love accents and mimicking voices.



Samantha Diaz

Previous Education:

- Professional Pastry and Baking (certification)
- Culinary Arts (certification)

Employment:

- Amazon Warehouse (overnight)

Subject Matter Expertise:

Data Wrangling in Python

Fun Fact:

I love to dance and sing in ASL (American Sign Language) with **LOUD** music!



Dr. Brandy M. Roane

Previous Education:

- BA in Psychology
- MS in Psychology
- PhD in Clinical Health Psychology and Behavioral Medicine

Employment:

- Associate Professor, University of North Texas Health Science Center, Fort Worth, TX

Subject Matter Expertise:

Data wrangling, data analyses, Python and R, organization and record keeping

Fun Fact: I absolutely love glitter.



Stephanie VanLeishout

Previous Education:

- C.N.A (certified Nurse Assistant)
- B.A. in Medical Assistant

Employment:

- C.N.A., and Medical assistant for 12 years

Subject Matter Expertise:

Visualizations in Tableau, Performing operations in Jupyter Notebook

Fun Fact: I love Dark History, and Crime Podcasts





Background Information

How did COVID-19 impact academic learning?

What is team-based learning?



Background

Our project sought out to determine if the COVID-19 pandemic and subsequent quarantine had an impact on the the academic performance of students in our sample. To adhere to persistently updated health standards, many educators had to institute rapid changes to ensure students could still learn without significant downtime throughout this period, for better or worse. Students in our sample contended with transitioning from learning in-person to having academic materials delivered online. In our evaluations, we worked to minimize some of the factors that come along with rapid transitions, focusing on examining the academic performance of students during a period in which many around the globe were affected in various ways, such as mental health and wellness.



What is Team-Based Learning?

Completed in-class (either in-person or during a virtual in-person session)			
Pre-work	Individual Readiness Assurance Test (iRAT)	Team Readiness Assurance Test (tRAT)	Application Activity
Learning materials such as recorded lectures, readings, and other learning activities that are completed prior to the TBL session	<ul style="list-style-type: none">• Multiple-choice quiz consisting of 5 questions worth 1 point each aiming to assess learners' acquisition of materials assigned as pre-work• Learners do not see which of their answers are correct or incorrect	<ul style="list-style-type: none">• The same 5 question quiz taken by individual members (iRAT), taken as a team, each question now worth 3 points each• Teams have the opportunity to challenge items on which they scored fewer than 3 points	<ul style="list-style-type: none">• Team activity applying learning from the pre-work phase and assessed with iRAT and tRAT• At the end, teams rated their performance as a group



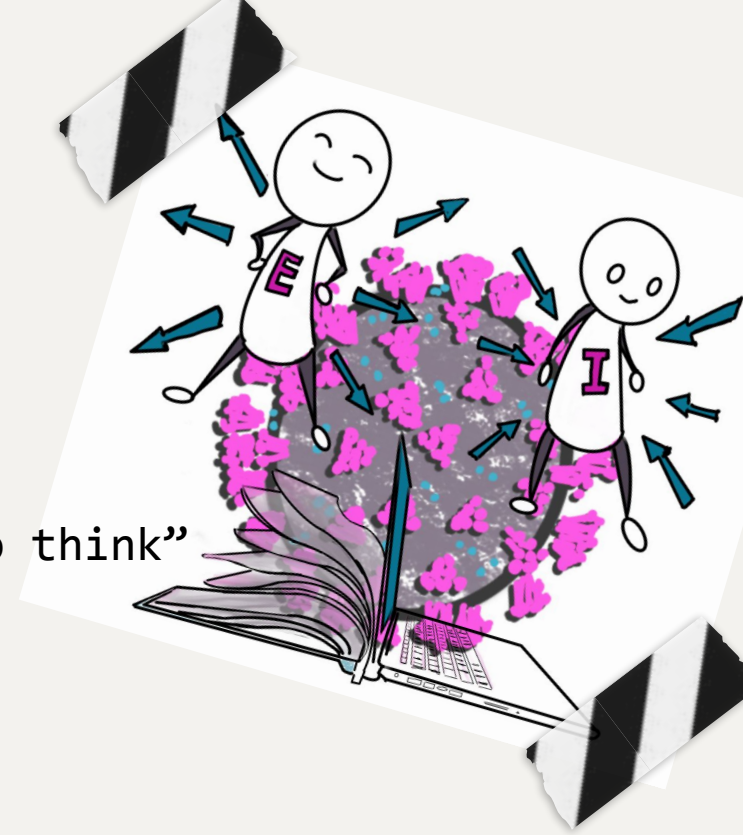
Considerations

Introversion and Extroversion

- How we mentally recharge (individually versus in a group)
- How we process information (“think to talk” versus “talk to think”)

Educational factors that impact academic performance

- Instructor continuity
- Method of delivery (in-person, online, hybrid) and school routines
- Curriculum content changes



Questions To Be Answered

Overall objective

Determine if the pandemic and subsequent quarantine impacted the academic performance of medical science students.

Question 1

Did the pandemic and subsequent quarantine impact **individual academic performance** for medical science students?

Question 2

Did the pandemic and subsequent quarantine impact **team academic performance** for medical science students?

Question 3

Did the pandemic and subsequent quarantine impact **team dynamics** during academic activities for medical science students?




Resource for Project Information

Complete details regarding data wrangling, variable definitions, and all other project related inquiries are provided in our Team's GitHub README.md document

☰ README.md

The Hot Mess Express

Group Final Project Repo








Team Members

- Samantha Diaz
- Destiny Riley
- Brandy M. Roane
- Amy Swanson
- Stephanie VanLeishout

Publish your first package

Contributors 5



Languages

Jupyter Notebook 96.0%

R 4.0%



Methods

How did we gather and wrangle data? What was our sample size?



Methodology

Data were from students enrolled in an accelerated master's degree medical science program during their first semester.

3 cohorts of students comprised of 25-26 teams:

- 2019 (pre COVID19)
- 2020 (during COVID19)
- 2021 (post COVID19)

Changes from 2019-2020

All in-person class activities transitioned to a virtual in-person synchronous format

Changes from 2020-2021

No changes in delivery of class activities

Note: There were no changes to content or methods of assessment. Only system of delivery for the iRAT/tRAT and Application Session activities

Independent Variable

- Cohort (2019, 2020, 2021)

Covariates

- Self-rated Introversion Scores (Individual, mean by Team)
- Self-rated Extroversion Scores (individual, mean by Team)

Dependent Variables

- iRAT scores on TBLs 1-3
- tRAT scores on TBLs 1-3
- iRAT-tRAT difference scores on TBLs 1-3
- Team Ratings for TBLs 1 and 3



Data Analysis Plan

Analysis of Covariance (ANCOVA) was used to answer the three questions our team had.

Question 1

Individual Readiness Assurance Test (iRAT) scores for TBLs 1, 2, and 3 were compared by cohort (2019, 2020, 2021) with self-rated introversion and extroversion scores included as covariates.

Question 2

Team Readiness Assurance Test (tRAT) scores for TBLs 1, 2, and 3 were compared by cohort (2019, 2020, 2021) with mean self-rated introversion and extroversion scores for team members included as covariates.

Question 3

Team Ratings on their performance during the Team Based Learning activities for TBLs 1 and 3 were compared by Cohort (2019, 2020, 2021) and the difference scores between TBLs 1 and 3 were compared by Cohort with mean self-rated introversion and extroversion scores for team members included as covariates.



Results



Quick Look at the Data

Means and standard deviations for TBLs 1-3 for the iRAT, tRAT, and iRAT-tRAT difference scores sorted by cohort

		iRAT score	tRAT score	iRAT-tRAT difference score
TBL 1	2019	3.57(1.04)	14.3 (1.44)	3.61 (2.96)
	2020	3.38 (1.07)	14.9 (0.56)	4.76 (3.3)
	2021	3.58 (1.09)	15 (0)	4.26 (3.26)
TBL 2	2019	2.9 (0.94)	13.5 (0.97)	4.77 (2.99)
	2020	2.71 (1.16)	14.2 (1.39)	6.05 (3.7)
	2021	2.52 (1.12)	12.7 (1.88)	5.10 (3.47)
TBL 3	2019	2.95 (1.19)	14 (1.01)	3.47 (3.47)
	2020	2.95 (1.22)	14.4 (1.21)	3.62 (3.62)
	2021	2.88 (1.20)	14.2 (1.47)	3.65 (3.65)



Quick Look at the Data

Means and Standard
Deviations for TBL 1
and TBL 3 for Team
Ratings and
Difference Scores by
Cohort

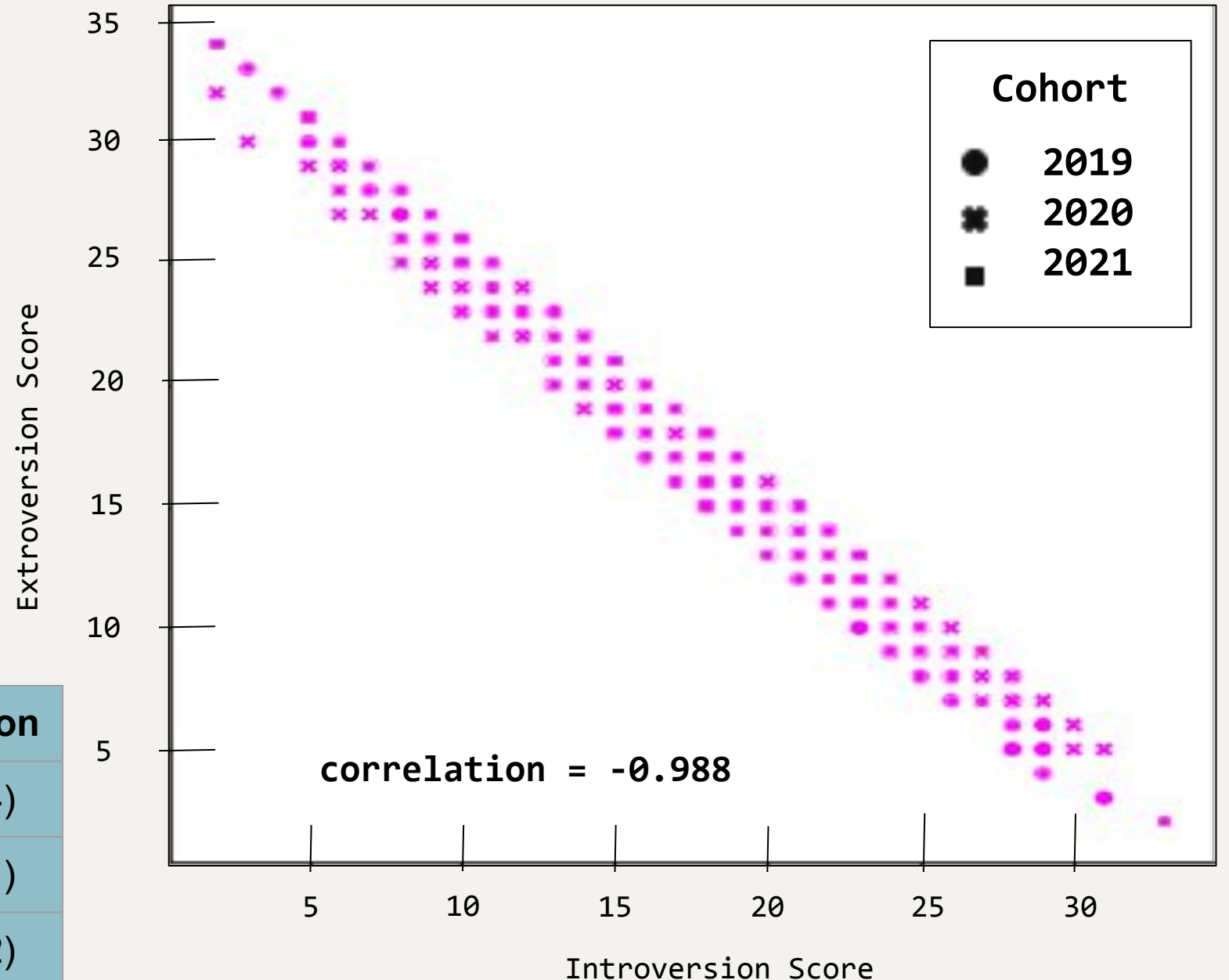
		Team Rating
TBL 1	2019	14.6 (1.87)
	2020	14.6 (2.08)
	2021	16.8 (1.97)
TBL 3	2019	18.5 (1.58)
	2020	18.5 (1.69)
	2021	19.1 (1.08)
TBL 1 - TBL 3 Difference Score	2019	3.92 (2.25)
	2020	3.88 (2.52)
	2021	2.24 (1.69)



Self-Rated Introversion and Extroversion Scores by Cohort

Expected negative correlation
between introversion and
extroversion scores

	Introversion	Extroversion
2019	17 (6.19)	17.7 (6.64)
2020	18.1 (6.35)	16.8 (6.01)
2021	16.6 (6.44)	18.2 (6.92)



Question 1 - impact on individual performance

For TBL 1, trend difference in iRAT scores for the Cohorts

$$F(2, 607) = 2.72, p = 0.06694$$

2019 (mean = 3.7), 2020 (mean = 3.5), and 2021 (mean = 3.7)

For TBL 2, statistically significant difference in iRAT scores for Cohorts 2019 and 2021

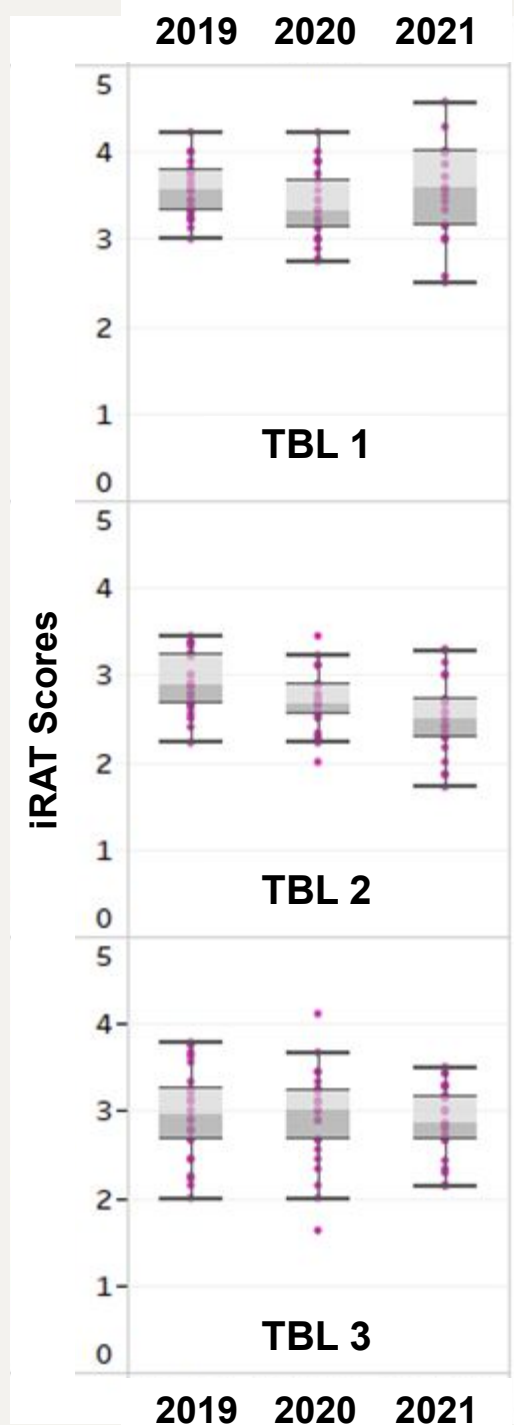
$$F(2, 607) = 6.42, p = 0.00175$$

2019 (mean = 2.9) higher than 2021 (mean = 2.52)

For TBL 3, no difference in iRAT scores for the Cohorts. Extroversion had a main effect on iRAT scores

$$F(2, 607) = 0.15, p = 0.85947$$

2019 (mean = 2.9), 2020 (mean = 3), and 2021 (mean = 2.9)



Question 2 - impact on team performance

For TBL 1, statistically significant difference in tRAT scores for Cohort 2019 compared to Cohorts 2020 and 2021.

Extroversion also had a main effect on tRAT scores

$$F(2, 607) = 87.63, p < 0.0001$$

2019 (mean = 14.4) lower scores than 2020 (mean = 14.9) and 2021 (mean = 15)

For TBL 2, statistically significant difference in tRAT scores for all Cohorts

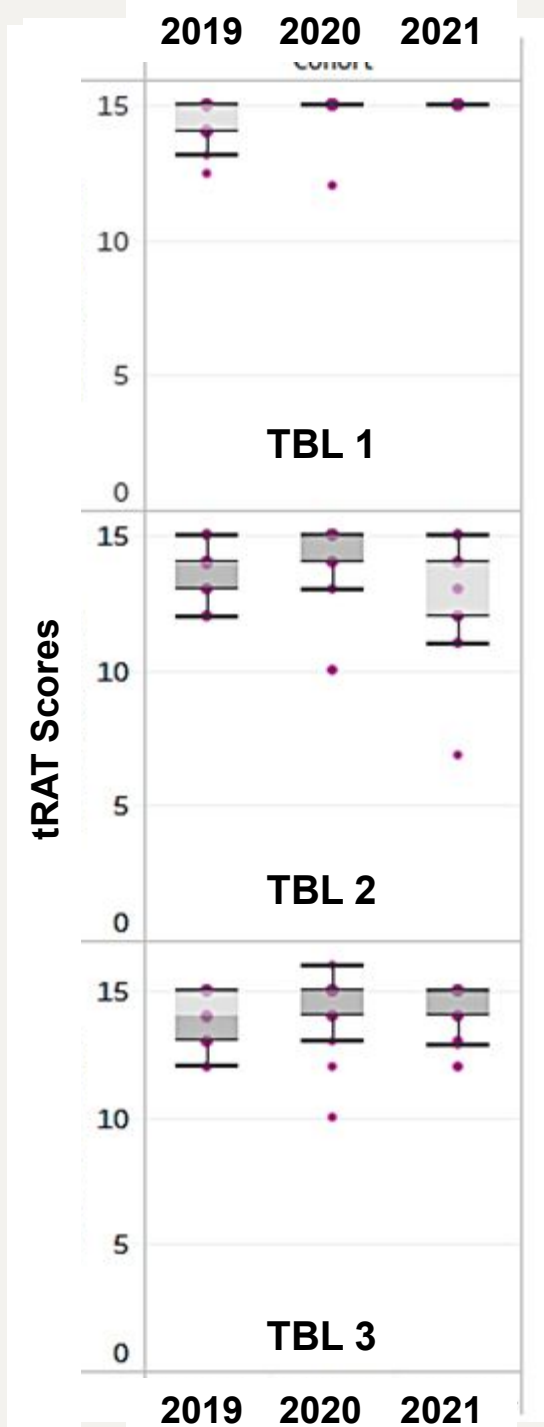
$$F(2, 607) = 55.98, p < 0.0001$$

2020 (mean = 14.3) higher scores than 2019 (mean = 13.5) and 2021 (mean = 12.9)

For TBL 3, statistically significant difference in tRAT scores for Cohorts 2019 compared to Cohorts 2020 and 2021

$$F(2, 607) = 10.39, p < 0.0001$$

2019 (mean = 14.1) lower scores than 2020 (mean = 14.5) and 2021 (mean = 14.3)



Question 2 - impact on team performance

For TBL 1 iRAT and tRAT scores, statistically significant difference in iRAT and tRAT difference scores for Cohort 2019 compared to Cohort 2020

$$F(2, 607) = 7.56, p = 0.000574$$

2019 (mean = 3.6) smaller increase in their iRAT to tRAT scores than 2020 (mean = 4.8)

For TBL 2 iRAT and tRAT scores, statistically significant difference in iRAT and tRAT difference scores for Cohort 2020 compared to Cohorts 2019 and 2021

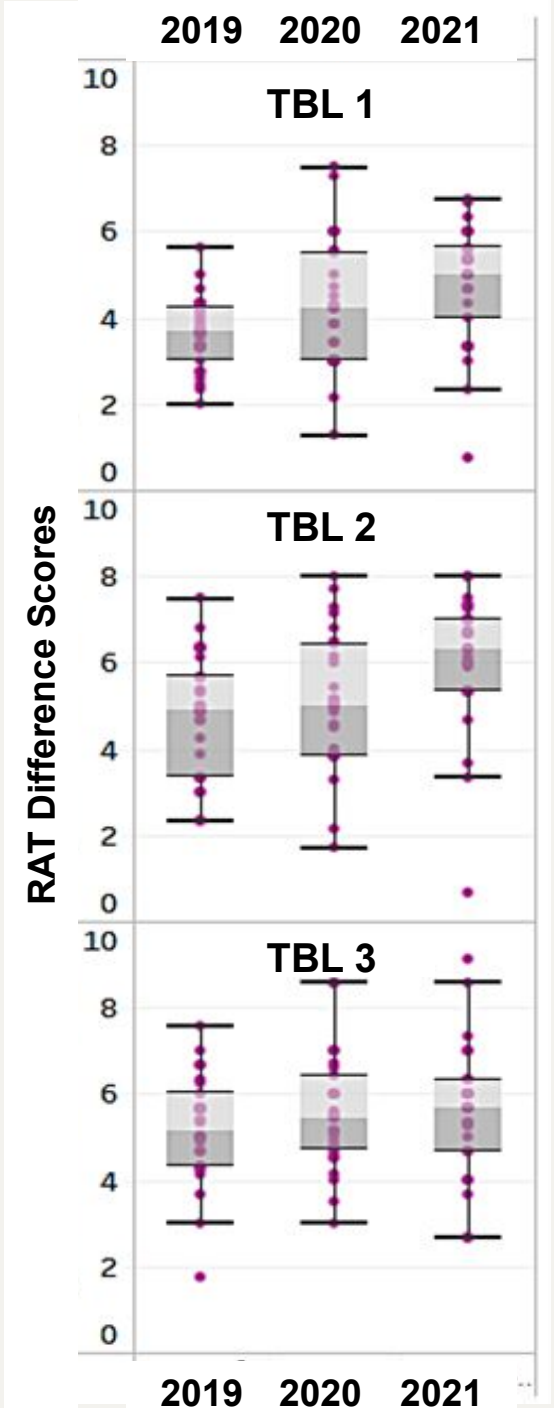
$$F(2, 607) = 7.89, p = 0.0004134$$

2020 (mean = 6) larger increase in their iRAT to tRAT scores than 2019 (mean = 4.8) and 2021 (mean = 5.1)

For TBL 3 iRAT and tRAT scores, no statistically significant difference in iRAT to tRAT difference scores. Main effect of Extroversion

$$F(2, 607) = 0.74, p = 0.4787$$

2019 (mean = 5.2), 2020 (mean = 5.5), and 2021 (mean = 5.6)



Question 3 - impact on team dynamics

For TBL 1, statistically significant difference in Team Ratings for Cohort 2021 compared to Cohorts 2019 and 2020

$$F(2, 70) = 10.41, p = 0.0001$$

2021 (mean = 16.9) had higher team ratings than 2019 (mean = 14.6) and 2020 (mean = 14.6)

For TBL 3, no statistically significant differences in Team Ratings for the Cohorts

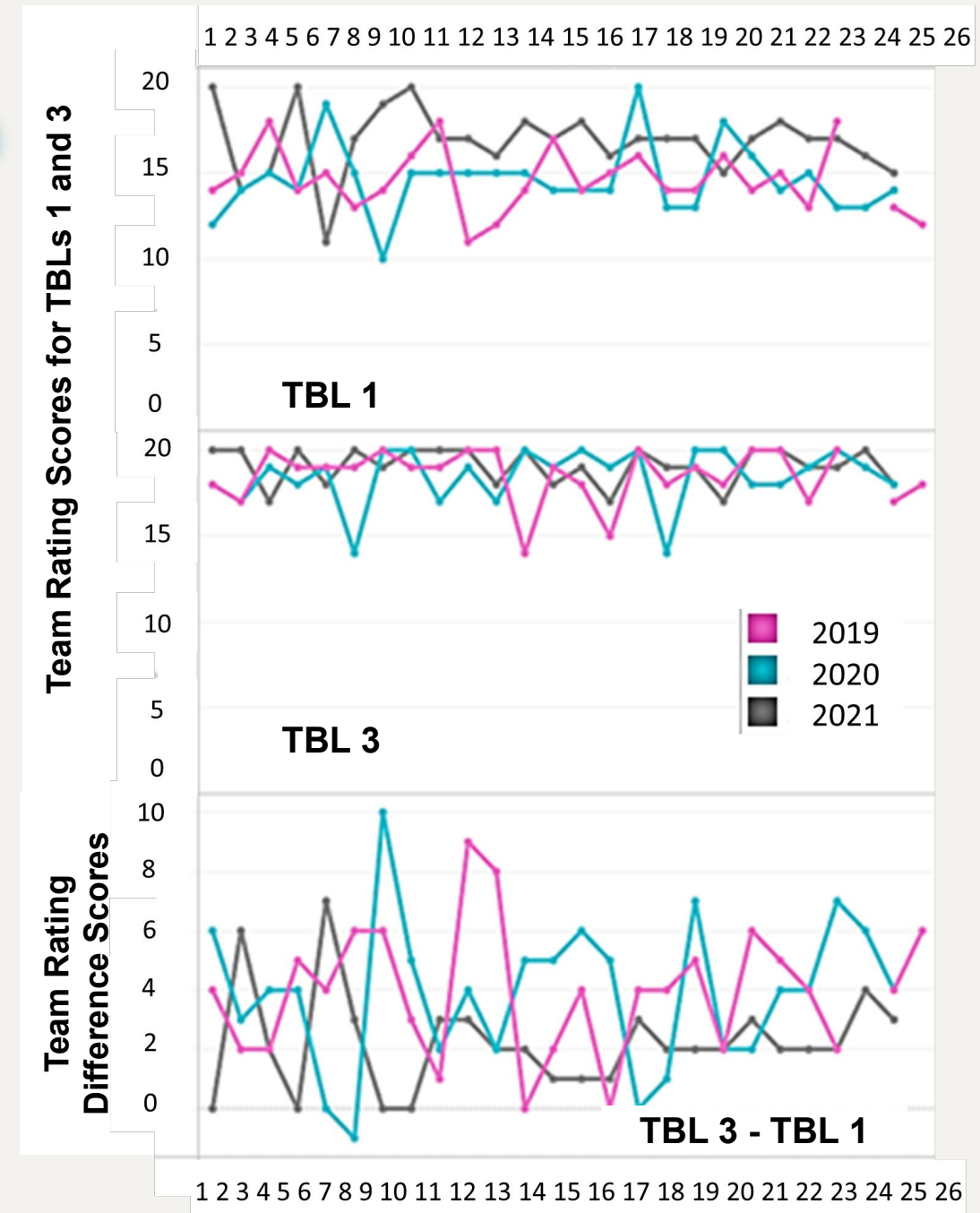
$$F(2, 607) = 1.06, p = 0.3503$$

2019 (mean = 18.5), 2020 (mean = 18.5) and 2021 (mean = 19.1)

For difference in TBL 1 and TBL 3 ratings, statistically significant difference in change in Team Ratings for Cohorts 2021 compared to Cohorts 2019 and 2020

$$F(2, 70) = 4.99, p = 0.0094$$

2021 (mean = 2.2) had a smaller change in team ratings than 2019 (mean = 3.9) and 2020 (mean = 4)



Interpretation

- Academic performance at an individual level was the least impacted by changes that occurred with the COVID19 pandemic and quarantine.
- Team academic performance actually improved during and post COVID19 compared to before while team dynamics improved post COVID19 compared to prior years despite no changes occurring in the format and delivery of activities.
- Our data suggest that higher extroversion was an asset for students when engaging in team activities.
- In addition, our findings could speak to either students having acclimated prior to starting the program in 2020 and 2021 to the numerous changes across the nation in the delivery of academics or improvements in their health and wellness following the acute pandemic and quarantine effect.



Conclusions

- Our findings strongly support taking into consideration a variety of factors when examining student performance
 - a. At an individual level, students appear to adapt and maintain performance.
 - b. At a team level, online formats can improve their performance and experience working in teams.
- Given our data were from students in an accelerated program where anxiety is often quite high, our findings also speak to the students adaptability and resilience when faced with a global event.



Summary

- Our main objective: Determine the effect, if any, the pandemic had on the individual and team academic performance of students.
- We found individual and team academic performance were impacted differently as a result of the COVID-19 pandemic and quarantine:
 - a. Very little impact was noted with individual academic performance when delivery was moved from in-person to a virtual in-person format, which suggests students acclimated to these changes better when considered on an individual level
 - b. However, team academic performance improved even during the COVID-19 pandemic and quarantine
- In addition, personal factors, primarily extroversion, played a role in team academic performance and team dynamics



Questions?

LAST STOP!
THE HOT MESS
EXPRESS

