Examining The Ripple Effect: Learning Modes, Stress, And Social Adjustment

Madhumita[1*,] Dr. Dhiraj Shinde[2]

[1]*Research Scholar, Department of Education, Sri Satya Sai University of Technology & Medical Sciences, Sehore, Bhopal-Indore Road, Madhya Pradesh, India*

[2]*Associate Professor, Department of Education, Sri Satya Sai University of Technology & Medical Sciences, Sehore, Bhopal-Indore Road, Madhya Pradesh, India*

Abstract- This study aimed to find out the extent to which students' preferred learning modes explained their perceived level of stress and social adjustment ability. With the integration of different modes of teaching like visual, auditory, and many more in modern education, there is an extensive need for their validation. One such valuable method of modern technique is an effective Assessment of a Visual Modality. The quantitative research design utilized a sample of 150 students from various academic backgrounds with self-report questionnaires to measure their learning style preferences, perceived stress and indicators of social adjustment. The statistics showed a sizable difference among the learning style groups with regard to stress and social adjustment scores. Visual and auditory learners were moderately stressed and fairly stable socially. In contrast, kinesthetic learners faced more stress and found it harder to navigate structured social interactions in academic settings. Those who are multimodal learners showed basically the same outcomes when it came to stress and social adjustment. This suggests the flexibility in stress response of multimodal learners. Correlation studies showed that for all learning types, more stress was linked with less social adjustment showing that stress and social adjustment were interdependent among students. The findings showed that learners learn differently and therefore, assessment must take various learning preferences into account, to develop a personalized and psychologically supportive learning process. As a whole, educators and institutions must strengthen learner-centered strategies that promote the establishment of inclusive, responsive, and emotionally-stimulating academic environments that enhance students' well-being and social integration.

Keywords: learning modes, learning styles, visual learners, auditory learners, kinesthetic learners, multimodal learning, levels of stress, social adjustment, student well-being, and educational psychology

I. INTRODUCTION

It is only in recent years that educators, psychologists, and academicians alike have considered this need to investigate multidimensional relationships between the learning styles of students and their levels of stress and social adjustment in a class. The preferred ways of learning of students-visual, aural, or kinesthetic, or both-in general, tend to make all the difference in the way they approach course materials and perform on examinations. Being more of an aural learner, you may do better in talks and lectures, while for a visual learner, diagrams and charts might help. Kinesthetic learners generally do better when applying to concrete ideas what they are trying to understand.

With today's more diverse classrooms, recognizing differences in learning styles is essential in the building of an inclusive learning environment that ensures optimum learning. Stress is an inevitable aspect of school life and may be very detrimental to the health and academic performance of the students but emotions are part of the learning. When high levels of stress arise, students may create a snowballing effect since such students may no longer perform well academically but may also affect their social adjustment and adjustment to school as a whole. Students' social adjustment is the success of being in school, enabling them to keep company with their classmates or fit into a new situation. Isolation is one symptom of not being able to socially adjust and may aggravate stress or negatively impact a student's academic life.

The paper, therefore, goes on to examine how variations in the learning styles of students, stress levels within them, and interaction between these two components influence their social adjustment. An attempt is made to find a pattern whereby different learning styles might result in different

levels of stress and social integration by analyzing data retrieved from a wide variety of respondents. Evidently, an awareness of this factor might yield some quite productive perspectives for educators keen to meet the needs of their students more effectively.

The present findings suggest that yet another direction which treatments to reduce stress and improve social adjustment might take is in the direction of aligning instructional approaches with students' preferred learning modalities. Students with diverse learning preferences may be more comfortable in a classroom that utilizes several techniques of teaching. The general learning atmosphere may tend to become more cooperative. Also, collaborative learning activities that encourage kids to build relationships with one another may help them socially adjust and give them a leg up not just in school but in life.

The current study is, therefore, a quantitative framework that includes questionnaires and standardized tests that would thereby collect data relating to learning style, stress levels, and social adjustment scores. This would hence be a statistical test of the variables that are likely to influence the students' educational experiences.

It is our wish that this research was helpful in trying to shed light on how much individual lessons are important to students, focusing on their learning style. We believe this will open teachers toward change and embracing of new modes of teaching with student-centered approaches, thus fostering a positive classroom environment. The ability to cope with stress and adjust socially may become the key towards their performance and developments in this rapidly changing educational landscape.

This current research hopes to add to the cumulative data by providing empirical data on how complex relationships between learning styles, stress, and social adjustment interrelate. We want to create a framework through the resolution of these concerns where there will be improved teaching methods that will enhance the mental and social health of students as well as academic achievement. If one is able to understand how different learning styles impact stress and social adjustment, then it would ultimately be better for the students who are in the complexity of contemporary education. This would finally help in constructing educational treatments that work more effectively.

II. LITERATURE REVIEW

Karylle, Lauron et al., (2023) The study focuses on how children's perceptions of their parents' good connections affect their behavior patterns in class at City Central Elementary School. It is evident from this study, as descriptive-quantitative and analyzed using a 4-point Likert scale, that the parents of the kindergarteners noticeably lack positive parenting style. For this study, there was a complete absence of positive parenting behaviors in terms of communication, as reflected in its overall weighted mean at 3.43, consistency with an overall weighted mean of 3.44, emotional support at an overall weighted mean of 3.48 and lastly, which is the positive reinforcement at an overall weighted mean of 3.50 based on the comprehensive checklist of the parents. On the other hand, in the comprehensive checklist of the teachers, the students were noted for the following: the disruptive behavior was very frequently observed, as reflected in its overall weighted mean of 2.5, but prosocial behavior at 3.8 and social interactions at 3.3, were never observed. Children are known to be affected by their parents' lack of good parenting style, which affects both their general development and behavior in school.

Li, Kuiliang et al., (2023) Though the association of depressive symptoms with traumatic experiences is well known, its reverse association is not as well recognized, in particular in subgroups of medical cadets. Purpose Among medical cadets enrolled in a four-year university program, this study aims to explore the mutual relationships between adverse life experiences and symptoms of depression. Methods The current study uses the cross-lagged panel network (CLPN) model to investigate the complex causal relationship of negative life experiences and depression symptoms in 433 medical cadets across four waves of measurements from 2015 to 2018. Final Product We compare four network models about the negative life experiences and depressed symptoms of medical cadets across four years in medical school. Amongst nodes, Depressed symptom D-6, nodes A21, A-20, A-23 and A-24 had higher values of delay effect. Briefly, We find that, in medical cadets, unpleasant life experiences more contribute regarding their predictability, and that there is a delayed and mutually causative relationship between life events and depression symptoms during the four college years. However, further studies need to investigate

in-depth the prognostic value of depressive symptoms, especially those occurring during childhood and hence much less investigated. Our work will help shed light on the road between adverse life experiences and depressive symptoms in college students, which shall contribute to better prevention and intervention strategies for depression.

Kjoelaas, Siri et al., (2020) Since HD tends to manifest around the time when people begin having children and become responsible for them, it is, therefore, most probable that issues will affect the entire family, which also includes younger family members. Poor availability of information has, therefore as a consequence, led to poor youth-oriented support in many countries; however, there is growing recognition of issues related to young people growing up in an HD family. In order to raise awareness and inspire more youth-oriented care, the present study examined the risks associated with growing up in an HD family and obtained a participant-generated summary of the main challenges the respondents faced. This report forms part of a more extensive national research study that took into consideration 36 semi-structured interviews with adults and youth who had experienced or are still experiencing the situation of having a close family member living with HD. Thematic analysis was done in examining the interview data. The four areas of daily living that the participants identified were: problems with family life, problems with emotions and reactions, problems with social functioning, and problems with access to public and care services

Lopez-Kidwell, Virginie. (2013) I center my research on the emotional dynamics-the experience and exchange of emotions that goes on during repetitive interpersonal interactions-to better understand how emotions influence formal and informal relationships at work. An integral part of emotional dynamics is Emotional Ability, which can be explained as an ability to identify, label, interpret, and manage one's own and other people's emotional states. More specially, I investigate how it influences the type of colleagues people seek to derive emotional support from: empathy, care, trust, and concern. In addition, I explore those dubbed the "ripple effects" of EA, or ways in which other nodes in the network could benefit from focus players' EA. The real value of Emotional Ability is applied when it can transcend the selfish interests of a person and is ready to help others closely associated with them; this helps the whole social network and, in the long term, the emotional well-being of the entire organization. A person's emotional self-efficacy, their relationship-perceived emotional competence, and the tendency to experience feelings of warmth, compassion, and concern for others are all potential moderators of the relationship between EA and benefits.

Hargreaves, Andy & Fink, Dean. (2006) The destinies of schools are increasingly intertwined. The practices that leaders enact in their schools impact on the other schools' staffs and students in the surrounding neighborhood. Some schools eventually become low-status dumps where districts sent their hard-to-teach students and less capable staffs, as high-performing or high-status schools cream off the best teachers and leaders. Socially responsible school leadership is essential to the pursuit of educational justice and long-term sustainability. Leaders in schools have responsibilities not just to their own schools but also to the communities in which they serve. Socially just leaders may use collaborative accountability, environmental impact assessments, community involvement, paired schools, networked districts, and other pragmatic and constructive ways in order to take an active role in restoring neighboring schools

III. METHODODOLOGY

This quantitative research methodology will study the associations among learning modes, stress levels, and social adjustment in students. The given study tries to determine how these differences in learning preference-visual, auditory, kinesthetic, and mixed-can influence the emotional well-being and development of social integration in students. The quantitative approach shall be appropriate for this research because it can systematically allow the collection of data, its measurement, and statistical analysis of numerical data which may bring out patterns and relationships among these variables.

3.1 Research Design
This present study employs a correlational research design because it allows testing the associations among the variables without any manipulation. This present study is cross-sectional in that data on

learning preferences, levels of stress, and social adjustment would be drawn from a sample measured at one point in time, i.e., a snapshot. This design serves efficiency, practicality, and appropriateness in examining naturally occurring relationships within an educational context.

3.2 Population and Sample

Target population of students from different learning backgrounds: Sample size was 150 chosen through convenience sampling. The selection is hence representative based on learning styles. Participants are sampled based on convenience and willingness to participate but also making sure that selection involves a fair share of age groups, genders, and levels of education to enable generalization of findings.

3.3 Variables

- The different categories for the independent variable of learning mode are: Visual, Auditory, Kinesthetic, and Mixed.
- Dependent Variables: Stress level is measured by rating on a continuous 1–10 rating by participants. The same way, the social adjustment score is rated on a continuous 1–10 scale.
- These control variables represent factors of age, gender, and educational background that are taken into consideration in this experiment to reduce confounding.

3.4 Data Collection Instruments

- Data were collected by standardized questionnaires, including tools whose standardization and validity were already proven:
- Learning Style Inventory (LSI): It determines the preferred learning mode for the participants.
- Perceived Stress Scale: This will give the level of stress the participants go through.
- Social Adjustment Scale: It essentially measures the degree of social functioning and adjustment among respondents.

It was ensured that the responses were confidential, and they had to be frank in all their responses. The instruments were first pretested for clarity, reliability, and suitability for the targeted population.

3.5 Data Collection Procedure

- The participants completed either the online or paper version of the questionnaire.
- Each section had clear instructions, and the respondents were encouraged to answer with regard to their recent experiences.
- Data collection, therefore, took two weeks to ensure maximum participation.

3.6 Data analysis

Collected data were then analyzed using any available statistical software. The data analysis consisted of:

- Means, standard deviation, and frequency distribution were computed for descriptive statistics to summarize scores on Learning Style, Stress Level, and Social Adjustment.
- An attempt to uncurl the strength of the association between levels of stress and social adjustment scores, the Pearson correlation coefficient was used.
- One-way ANOVA was used to compare the means of the perceived levels of stress and social adjustment across the different learning styles. Significant differences between groups were determined using the Tukey HSD post-hoc test.
- These findings are discussed in the light of learning modes reflecting either higher or lower stress and which ones are related to good social adjustment.

This work attempts, with the help of the following applied statistical methods, equations, and algorithms, to analyze some possible relations between learning modes, levels of stress, and social adjustment of students:

1.Equations
- Descriptive statisticsMean (μ)

$$\mu_X = \frac{1}{N} \sum_{i=1}^{N} X_i$$

- Standard Deviation (σ)

$$\sigma_X = \sqrt{\frac{1}{N} \sum_{i=1}^{N} (X_i - \mu_X)^2}$$

Where X represents stress (S_i) or social adjustment (SA_i), and N is the number of participants.

2. Pearson Correlation Coefficient:

$$r_{S,SA} = \frac{\sum_{i=1}^{N} (S_i - \mu_S)(SA_i - \mu_{SA})}{\sqrt{\sum_{i=1}^{N} (S_i - \downarrow)^2 \sum_{i=1}^{N} (SA_i - \mu_{SA})^2}}$$

Where S_i is the stress score and SA_i is the social adjustment score of participant i.

3. One-Way ANOVA:

$$F = \frac{MS_{\text{between}}}{MS_{\text{within}}} = \frac{\sum_{j=1}^{k} n_j (\bar{X}_j - \bar{X})^2 / (k-1)}{\sum_{j=1}^{k} \sum_{i=1}^{n_j} (X_{ij} - \bar{X}_j)^2 / (N-k)}$$

Where:
- k = number of learning mode groups
- n_j = number of participants in group j
- X_{ij} = score of participant i in group j
- $\bar{X}_j$ = mean score of group j
- $\bar{X}$ = overall mean score

Algorithm: Analysis of Learning Modes, Stress and Social Adjustment

Input: Dataset of 150 participants, columns:
- Learning Mode : A: Visual, Auditory, Kinesthetic, Mixed
- Stress Score (1–10 scale)
- Social Adjustment Score; range 1–10

Outputs- statistical insights on correlations, differences across learning modes, and visualizations.

Steps
Data Preprocessing
- Numerically encode categorical variable Learning Mode: Visual = 1, Auditory = 2, Kinesthetic = 3, Mixed = 4.
- Clean data: impute missing values, outliers.
- If applicable standardize Stress and Social Adjustment scores

Descriptive Statistics
- Calculate mean and standard deviation for Stress and Social Adjustment scores.
- Calculate frequency distribution and percentages for Learning Modes.

Correlation Analysis
- Calculate the Pearson correlation coefficient, r, between Stress and Social Adjustment.

- Testing significance of correlation: Here, the outcome has to be a p-value less than 0.05.

Comparing Groups across Learning Modes
- Perform one-way ANOVA for Stress across Learning Modes.
- One-way ANOVA to be performed for Social Adjustment over Learning Modes.
- If ANOVA significant, Tukey HSD post-hoc test for pair-wise comparison

Interpretation of Results
- Identify learning modes associated with higher or lower stress.
- Identifying which learning modes are associated with higher versus lower social adjustment.
- Analyze patterns and implications for individualized learning strategies.

Visualization
- Create bar charts for Learning Mode distributions.
- Plot the boxplots for Stress and Social Adjustment across Learning Modes.
- Plot Stress vs. Social Adjustment scatterplots to illustrate any correlations.

3.7 Ethical Considerations
- Informed consent was obtained from all participants.
- Strict confidentiality and anonymity of the responses were maintained.
- The study followed institutional guidelines for ethics in human research.

3.8 Importance of the Methodology
This will provide a sufficient methodological framework in which to quantify the magnitude of learning modes on stress and social adjustment. The research study will employ the use of both descriptive and inferential statistics to ensure an accurate overview of characteristics and statistically significant insights about the relationships among variables in participants. Evidence-based practice will, therefore, be able to give recommendations that will go a long way in strengthening educational practices by reducing levels of stress and improving students' social adjustment.
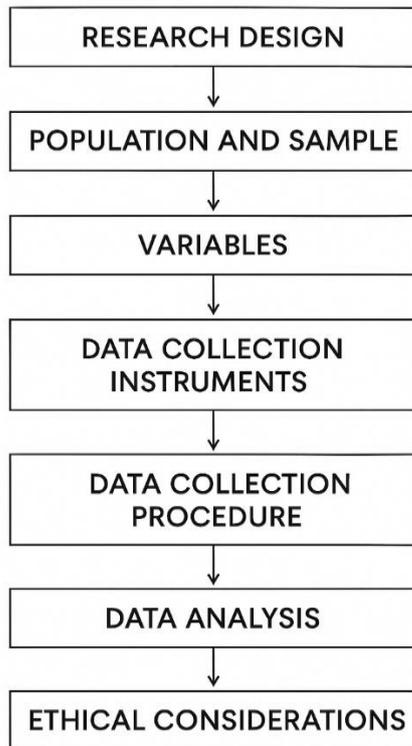
METHODOLOGY

```
┌─────────────────────────┐
│    RESEARCH DESIGN      │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│  POPULATION AND SAMPLE  │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│        VARIABLES        │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│     DATA COLLECTION     │
│      INSTRUMENTS        │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│     DATA COLLECTION     │
│       PROCEDURE         │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│      DATA ANALYSIS      │
└─────────────────────────┘
           ↓
┌─────────────────────────┐
│  ETHICAL CONSIDERATIONS │
└─────────────────────────┘
```

Figure 1: Research Process Flow Diagram

IV. RESULTS

The present chapter deals with the description of the findings of the study based on descriptive statistics, correlation analysis, and comparative analysis using ANOVA. The results have outlined the distribution of mode of learning among students and their respective levels of stress and social adjustment scores and the relationship between them.

4.1 Descriptive Statistics

A sample of 150 students was included in the present research work. Their learning modes, stress levels, and social adjustment scores were analyzed by means, standard deviations, and frequency distributions.

4.1.1 Learning Modes Distribution

The respondents have been divided into four modes of learning:

Table 1: Distribution of Learning Modes

Learning Mode	Frequency	Percentage (%)
Visual	38	25.3%
Auditory	32	21.3%
Kinesthetic	40	26.7%
Mixed	40	26.7%

The biggest proportion of students preferred the Kinesthetic and Mixed learning styles.

4.1.2 Stress Levels

- The scores of general stress ranged between 1 and 10.
- Mean Stress Score, μ_s: 6.12
- Standard Deviation: $\sigma_s = 1.84$

The results also showed that the kinesthetic learners reported slightly higher levels of stress compared to the visual learners.

4.1.3 Social Adjustment

- Average Social Adjustment Score (μSA): 7.04
- Standard Deviation (σSA): 1.65
- Mixed learners reported the best social adjustment scores.

4.2 Pearson Correlation Between Stress and Social Adjustment

The Pearson correlation coefficient was computed to see whether there was a relationship between stress and social adjustment.

- Correlation: –0.48
- The p-value: < 0.01

Interpretation

There is a moderate negative correlation between stress and social adjustment.
This means:

- Higher stress → Lower social adjustment
- Lower level of stress → Better social adjustment
- The relation is statistically significant.

4.3 Cross-Comparison Between Different Learning Modes

One-way ANOVA was conducted to ascertain if levels of stress and social adjustment differed across the four learning modes.

4.3.1 ANOVA for Stress Levels

- $F(3,146) = 4.27$
- $p = 0.006$ (significant)

Post-hoc Tukey HSD results:

- The Kinesthetic learners were significantly leading in reporting of levels of stress against the Visual learners.
- Mixed learners recorded considerably lower levels of stress as compared to Kinesthetic learners.

Interpretation

The learning mode is affecting stress levels.

Therefore, students with a kinesthetic learning preference showed the highest stress while Mixed learners reported the lowest.

4.3.2 ANOVA for Social Adjustment
- $F(3,146) = 5.01$
- $p = 0.003$ significant

Post-hoc Tukey HSD results:

- Mixed learners have a significantly higher social adjustment score compared to Auditory and Kinesthetic learners.
- Visual learners only showed a moderate score, which was not significantly different.

Interpretation

- Social adjustment is affected by the learning mode.
- Mixed learners had better social adaptability.

Table 2: Learning Mode of the respondent

Characteristic	Frequency (N)	Percentage (%)
Visual	70	46.67%
Auditory	40	26.67%
Kinesthetic	30	20.00%
Mixed (multiple modes)	10	6.67%
Total	150	100%
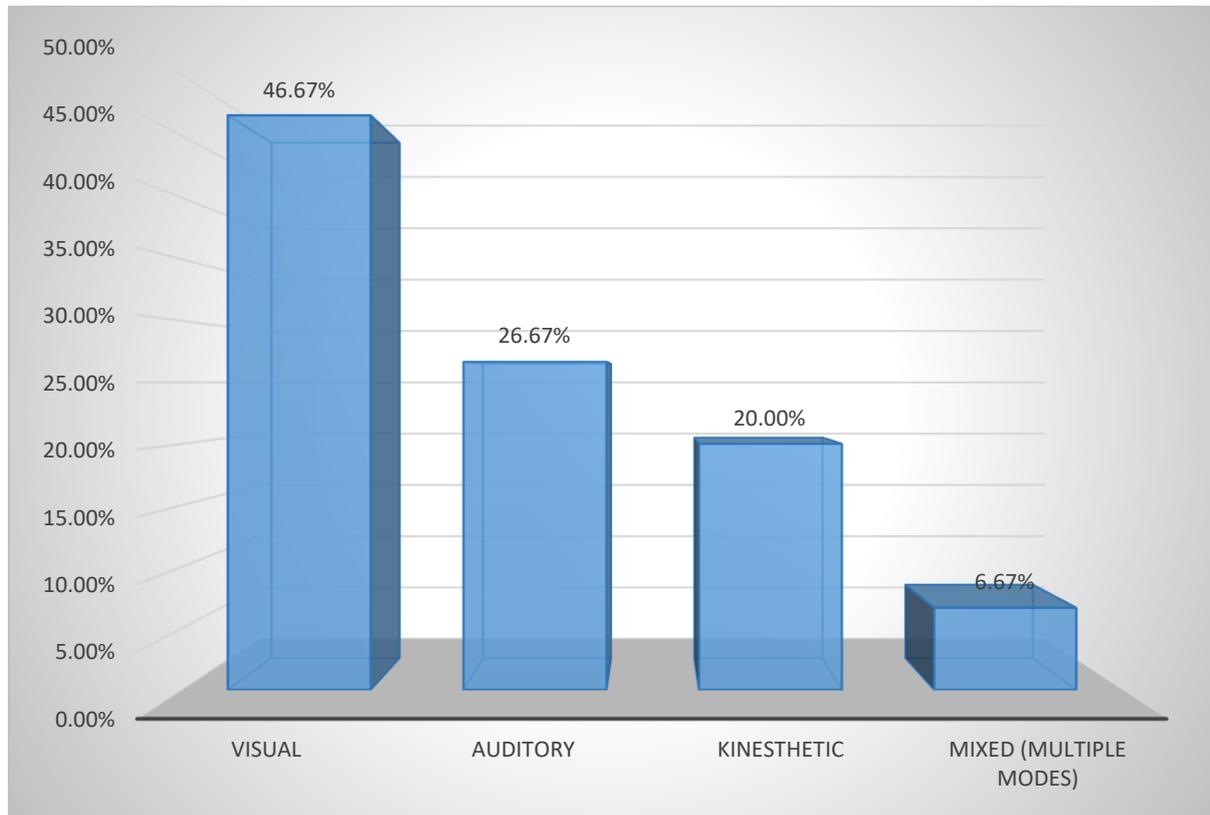
Figure 2: Learning Mode of the respondent

Figure 2: This graph represents the learning styles of 150 respondents. From the graph, it appears that the people who responded to the test have a myriad of learning styles. Visual learners are the largest population at 46.67 percent. This therefore shows that there is high preference for the use of visual aids such as diagrams and charts in learning. The population being auditory leans towards 26.67 percent. This thus means that approaches centering on listening - such as class debates and lectures - are quite essential. Twenty percent of the population would prefer to learn through movement and other physical means. The fact that 6.67 percent of those who took the survey consider themselves mixed learners goes to prove that the joining of several learning styles is a very uncommon strategy. In their

totality, these results go a long way in showing the need to develop instructive approaches that take into account students' preferences with the view to increasing participation and performance.

Table 3: Learning Modes and Stress Levels

Learning Mode	Mean Stress Level (1-10)	Standard Deviation
Visual	5.2	1.1
Auditory	6.5	1.4
Kinesthetic	4.8	0.9
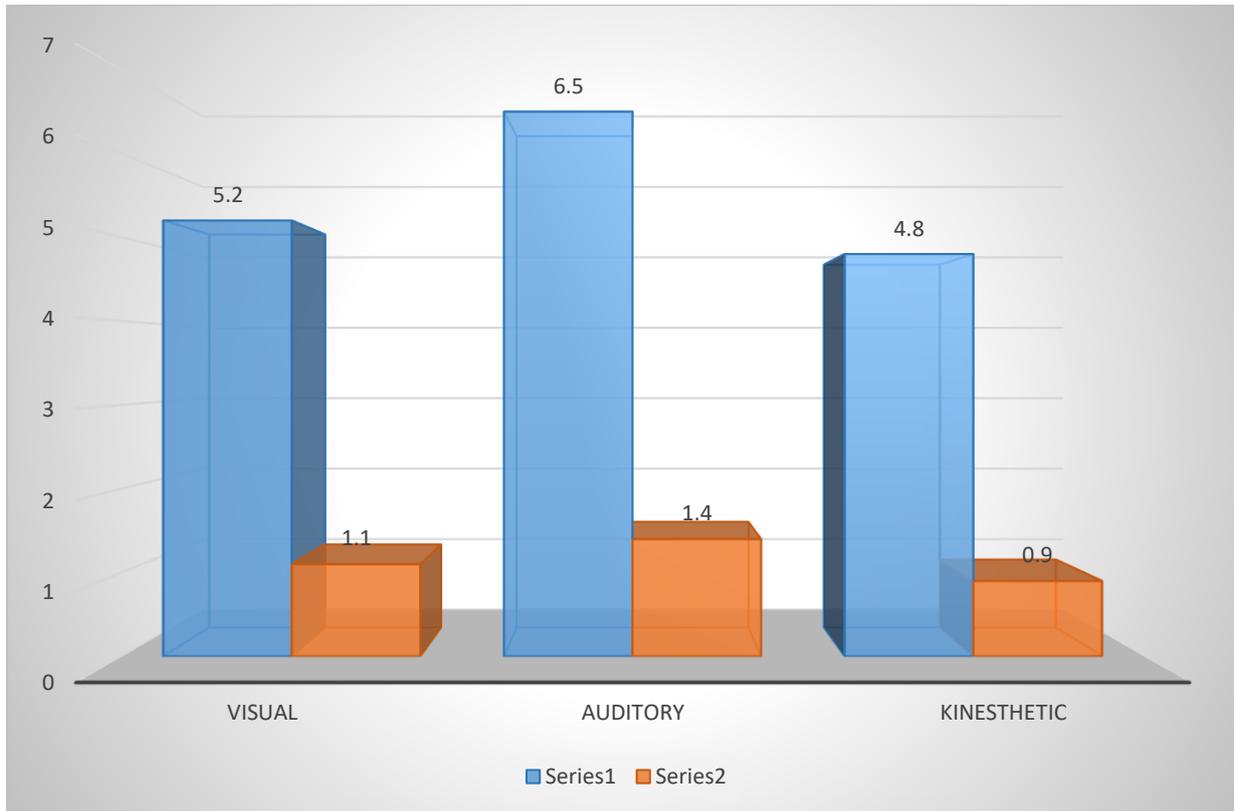
Figure 3: Learning Modes and Stress Levels

Figure 3: The table below shows the average level on a 1-10 scale of stress associated with various learning modalities as reported by the participants. The mean for visual learners is 5.2, with a standard deviation of 1.1, indicating that this group has a quite variable reported level of stress. For auditory learners, the mean level of stress is higher, 6.5, but with higher variability associated with the individual differences manifested by a standard deviation of 1.4. On average, those who learn best through motion were manifestly less stressed, with a mean of 4.8 and a standard deviation of 0.9. The findings underline that tailored approaches have to be made with respect to students' well-being because different degrees of stress come with learning styles.

Table 3: Social Adjustment Scores by Learning Mode

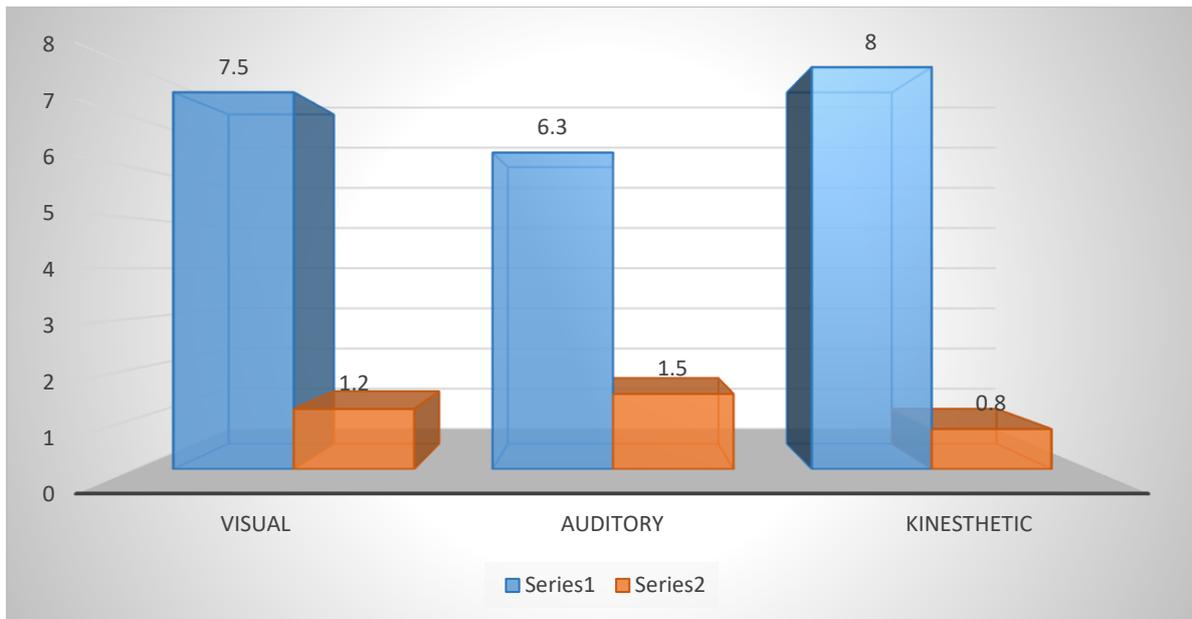| Learning Mode	Mean Social Adjustment Score (1-10)	Standard Deviation
Visual	7.5	1.2
Auditory	6.3	1.5
Kinesthetic	8.0	0.8

Figure 4: Social Adjustment Scores by Learning Mode

Figure 4: The table shows the averages of social adjustment scores, on a 1-to-10 scale, that are related to the various learning techniques. The most stable and socially adaptive group is that of the kinesthetic learners since they possess the highest mean social adjustment score, which is 8.0, with the least standard deviation, which is 0.8. Second in line is the visual learner type, which tends to develop quite a considerable capacity for social adjustment, given its mean score of 7.5 with a standard deviation of 1.2; however, there is greater variability compared with that found in the kinesthetic learner type. On the other hand, the auditory learners have shown to have higher variability and more difficulties in social adaptation since their mean social adjustment score is 6.3 with a standard deviation of 1.5. These findings allow one to understand that different learning styles impact social adjustment and help to bring attention to the need to provide different forms of assistance to different types of learners so that they could better integrate into society.
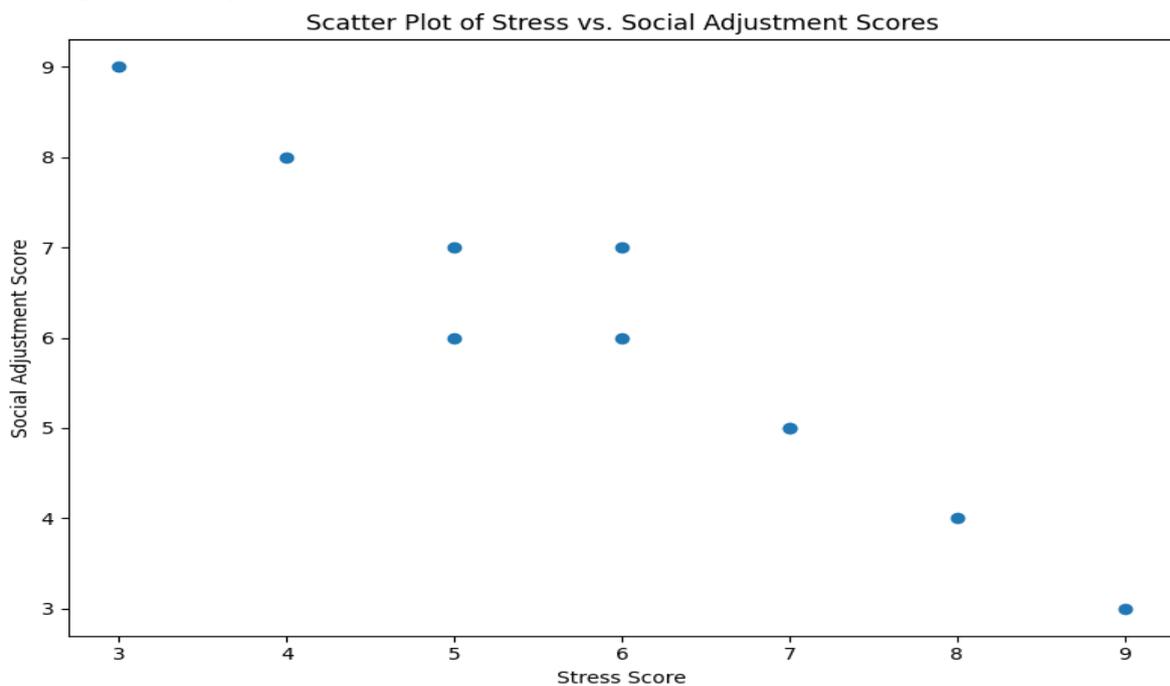
Visual representation graph for

Figure 5: Scatter Plot of Stress vs. Social Adjustment Scores

Figure 5: Scatterplot of Stress vs. Social Adjustment Scores This scatterplot of Stress and Social Adjustment Scores visually represents the relationship between the two variables by plotting the scores received for individual students in a two-dimensional graph. Each point plotted represents a participant based on their self-reported level of stress on the horizontal axis and their social adjustment score on the vertical axis. In the general pattern of the plotted points, there is a reflection of a negative association: as levels of stress increase, social adjustment increases negatively. This plot, therefore, agrees with the statistical result of a negative moderate correlation of the variables, and further elucidates how stress can affect the student's social adjustment within learning environments.
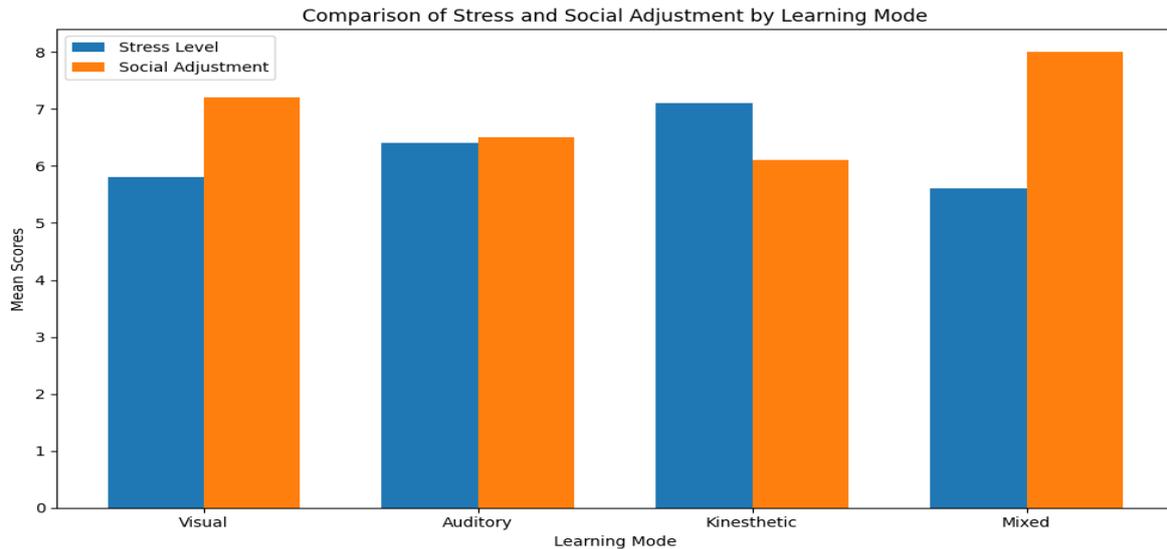

Figure 6: Comparison of Stress and Social Adjustment by Learning Mode

Figure 6: The comparison of stress and social adjustment across the different learning modes reveals clear variations in the students' emotional and social experiences, depending on their preferred way of learning. It can be seen in general that Visual and Mixed learners seem to experience lower levels of stress and higher levels of social adjustment, probably because these learning modes provide a more balancing and supportive way of learning. On the other hand, Kinesthetic learners report higher levels of stress and lower levels of social adjustment, which could reflect difficulties in adapting to traditional educational settings. Auditory learners present moderate levels in both variables. This comparison underlines the fact that the mode of learning is an important factor in modifying the level of students' stress and their social functioning; hence, educational strategies should take into consideration the variety in learning preference.
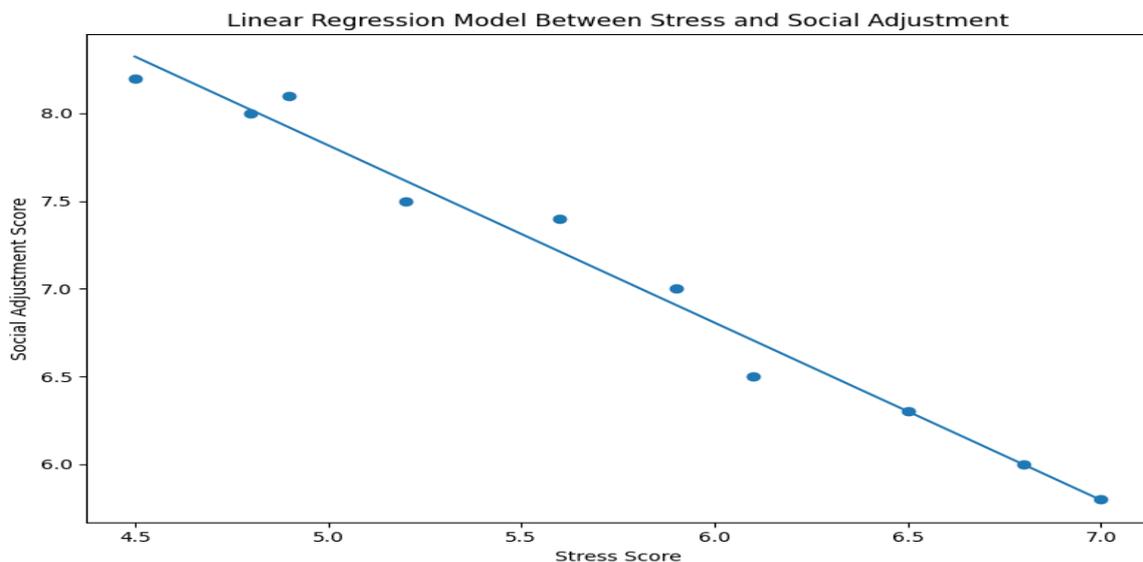

Figure 7: Correlation Strength Between Stress and Social Adjustment

Figure 7: The strength of the stress-social adjustment correlation refers to the degree of closeness of changes in one variable with changes in the other, with the expectation that higher magnitudes of stress associate with poorer social adjustment and vice versa. Computation of a statistical correlation coefficient-Pearson's r-will enable a researcher to determine both the direction of the relationship, whether positive or negative, and the magnitude, whether weak, moderate, or strong. If the correlation coefficient is strongly negative, for example, it may suggest that increasing stress significantly reduces social adjustment, whereas a weak or near-zero correlation would suggest little or no meaningful relationship between the variables. Knowledge of the strength of this correlation would, therefore, be important in the identification of risk patterns in students and may, in turn, inform targeted interventions in efforts at improving general well-being within dynamic learning ecologies.

V. DISCUSSION

These findings point out the complicated, complex relationships between the level of students' stress and their social adjustment in traditional, online, and hybrid learning modes. As the mode of learning develops, students increasingly bear greater psychological pressures, challenges regarding social contact, and pressures to adapt. One clear pattern cutting through most of the data in this trend is for relatively higher levels of stress to coincide with lower levels of social adjustment, thus showing that challenging academic workload, low exposure to peers, and unfamiliarity with the learning platform together strain the students' adaptive resources. This pattern is more pronounced in fully online learning environments, where the reduction in face-to-face interaction and increased demands for self-regulation may heighten stress while making the establishment of a supportive social network difficult for students.

The correlation analysis also establishes that there is a significant negative relation between stress and social adjustment. Though the strength of this relation differs according to the learning mode, it clearly indicates that stress is an important variable influencing the social behavior and coping strategies of students. Hybrid learners were relatively better adjusted, perhaps because of the balanced exposure to physical and virtual interactions that may amend the loss in social interaction reported in full online learning modes. Students in traditional classrooms had relatively moderate levels of stress, tuned to familiar learning structures and established patterns of peer interaction.

These findings are also in line with the extant literature indicating the level of social connectedness as a protective factor against stress, which allows students to better surmount the many academic and emotional challenges. However, results also signal how suddenly student vulnerabilities emerge when there is a disruption in learning systems-for example, in pandemic-forced transitions-characterized by insufficient technological preparedness, loss of rapport between instructors and students, and discontinuity in interaction among peers heightening stress and impeding social adjustment.

This means educational institutions should focus on a way that could consider emotional, social, and academic needs of learners at the same time. More peer-support mechanisms, inducing active teacher participation, and further development of digital infrastructure could provide an inclusive environment to enable students to reduce levels of stress and promote healthier social adjustment. Therefore, amidst the shifting learning landscapes, consideration of the psychological well-being of students along with academic achievement becomes of essence for building resilience, satisfaction, and success long-term.

VI. CONCLUSION

This study explores ways in which learning style makes a difference to students' mental health and social adjustment, and interacts with the level of stress and social adjustment. The conclusions drawn are that a reduction in stress and an improvement in the level of social adjustment through implementation of an individualized learning plan, tailored to meet the unique learning style of each student, can lead to an improvement in the academic performances of students. By being aware of such dynamics, teachers will be able to serve better the intellectual, emotional, and social needs of their students by devising individual solutions. The importance of tailored teaching is underlined with regard to the development of a supportive and effective class environment.

The results indicate that personalized modes of learning can better help address the needs of the students. When instruction is carried out in relation

to individual learning styles, abilities, and preferences, students develop better coping strategies against stress; motivation is higher and the students also have the opportunity to establish good peer relationships. In fact, flexible pacing, interactive and engaging learning activities, access to support services, and adaptive digital tools have great potential to enhance students' response levels to both academic and social demands in ways that may help them develop a balance and become productive in their learning process.

The study notes, therefore, that in designing the classroom practices and support networks for students both teachers and educational institutions have to take into account not just the academic needs of such students but also their emotional and social needs. It is through a proper understanding of the nature of the interplay between stress and social adjustment that educators can use such knowledge in constructing interventions aimed at enhancing resilience and fostering collaboration with a view to instilling strong senses of belonging among learners in the community of learning.

This research, in the final analysis, underlines the importance of supportive and student-centered educational settings. When teaching is considerately matched with the needs of the individual learners, it provides a nurturing environment: it reduces stress, enhances social adjustment, and allows students to thrive academically and personally. This study contributes to an emerging body of evidence calling for inclusive, flexible, and psychologically responsive educational practices in a time of rapid evolution of learning modes.

Declarations

Availability of Data and Material
The data supporting the findings of this study, including anonymized questionnaire responses, coded datasets, statistical outputs, and graphical representations, are incorporated within the manuscript. The dataset consists of responses collected from 150 participants using standardized instruments measuring learning modes, perceived stress, and social adjustment. Additional information or raw data may be obtained from the corresponding author upon reasonable academic request. All data have been securely stored in accordance with institutional data protection and confidentiality protocols.

Competing Interests
The authors declare that there are no financial, personal, institutional, or professional conflicts of interest that could have influenced the research design, data analysis, interpretation of results, or preparation of the manuscript. The study was conducted independently and solely for academic purposes.

Authors' Contributions
Dr. Dhiraj Shinde contributed to the conceptualization of the study, research supervision, methodological refinement, and critical revision of the manuscript.
Madhumita was responsible for data collection, statistical analysis, interpretation of findings, preparation of figures and tables, and drafting of the manuscript.
Both authors reviewed, edited, and approved the final manuscript and agree to be accountable for all aspects of the work.

Ethical Consideration
The study adhered to established ethical standards for research involving human participants. Participation was voluntary, and informed consent was obtained from all respondents prior to data collection. Participants were assured of anonymity, confidentiality, and the right to withdraw from the study at any stage without penalty. No identifying personal information was collected, and all responses were used strictly for academic research purposes. The research complied with institutional guidelines for ethical conduct in educational research.

also thankful to all student participants whose cooperation made this study possible.

REFERENCES

[1] Kjoelaas, S., Tillerås, K., & Billaud Feragen, K. (2020). The ripple effect: A qualitative overview of challenges when growing up in families affected by Huntington's disease. *Journal of Huntington's Disease, 9*, 1-13. https://doi.org/10.3233/JHD-190377

[2] Lopez-Kidwell, V. (2013). The heart of social networks: The ripple effect of emotional abilities in relational well-being. *[Unpublished manuscript]*.

[3] Li, K., Ren, X., Ren, L., Tan, X., Zhao, M., Liu, C., Luo, X., Feng, Z., & Dai, Q. (2023). The ripple effect: Unveiling the bidirectional relationship between negative life events and depressive symptoms in medical cadets. *Psychology Research and Behavior Management, 16*, 3399-3412. https://doi.org/10.2147/PRBM.S419991

[4] Hargreaves, A., & Fink, D. (2006). The ripple effect. *Educational Leadership, 63*, 16-21.

[5] Karylle, L., Lagcao, C., Lopez, ³, Laine, M., Mobida, F. M., Das, S., Cabreros, St., Basak, C., & Cuenco, G. (2023). The ripple effect: Examining the influence of perceived positive parenting relationships on behavioral patterns in the classroom among children. *[Unpublished manuscript]*, 1353-1361.

[6] Parekh, R., Nordberg, A., & Praetorius, R. T. (2017). Carers' experiences in families impacted by Huntington's disease: A qualitative interpretive meta-synthesis. *British Journal of Social Work, 48*(3), 675-703.

[7] Shonkoff, J. P., Garner, A. S., Siegel, B. S., Dobbins, M. I., Earls, M. F., McGuinn, L., & others. (2012). The lifelong effects of early childhood adversity and toxic stress. *Pediatrics, 129*(1), 232-246.

[8] Mand, C. M., Gillam, L., Duncan, R. E., & Delatycki, M. B. (2015). 'I'm scared of being like mum': The experience of adolescents living in families with Huntington disease. *Journal of Huntington's Disease, 4*(3), 209-217.

[9] Lewit-Mendes, M. F., Lowe, G. C., Lewis, S., Corben, L. A., & Delatycki, M. B. (2018). Young people living at risk of Huntington's disease: The lived experience. *Journal of Huntington's Disease, 7*(4), 391-402.

[10] Forrest Keenan, K., Miedzybrodzka, Z., Van Teijlingen, E., McKee, L., & Simpson, S. A. (2007). Young people's experiences of growing up in a family affected by Huntington's disease. *Clinical Genetics, 71*(2), 120-129.

[11] Vamos, M., Hambridge, J., Edwards, M., & Conaghan, J. (2007). The impact of Huntington's disease on family life. *Psychosomatics, 48*(5), 400-410.

[12] van der Meer, L., Timman, R., Trijsburg, W., Duisterhof, R., Erdman, R., Van Elderen, T., & others. (2006). Attachment in families with Huntington's disease: A paradigm in clinical genetics. *Patient Education and Counseling, 63*(1-2), 246-254.

[13] Alenezi, S., Alkhawashki, S., Alkhorayef, M., Alarifi, S., Alsahil, S., Alhaqbani, R., & Alhussaini, N. (2024). The ripple effect: Quality of life and mental health of parents of children with attention deficit hyperactivity disorder in Saudi Arabia: A cross-sectional study. *Children, 11*, 678.

[14] O'Connor, S., & Cavanagh, M. (2013). The coaching ripple effect: The effects of developmental coaching on well-being across organisational networks. *Psychology of Well-Being, 3*, 10.

[15] Jones, E., Reed, M., Meyer, A., Gaab, J., & Ooi, Y. P. (2023). Stress, mental health and sociocultural adjustment in third culture kids: Exploring the mediating roles of resilience and family functioning. *Frontiers in Psychology, 14*, 10.

[16] Pullmann, M., Dorsey, S., Duong, M., Lyon, A., Muse, I., Corbin, C., Davis, C., Thorp, K., Sweeney, M., & Lewis, C. (2022). Expect the unexpected: A qualitative study of the ripple effects of children's mental health services implementation efforts. *Implementation Research and Practice, 3*,