The Impacts of Child-Mentor Relationships on Child Mental Health

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Abstract

With mental health being a field that is becoming progressively more familiar and researched in depth, an important subject of interest that should be addressed is child mental health, and the different factors that can influence it. In this paper, we use a dataset from the Substance Abuse and Mental Health Data Archive to analyze the impacts of child-mentor relationships on child mental health. Previous studies have come to similar conclusions: positive parent-student and teacher-student relationships often lead to signs of positive mental health in children. To expand upon these past findings, we used different measures of mental health and relationship qualities to create a predictive model. We conducted classification and coefficient weight analyses to see how strong of an impact different variables representing indicators of healthy relationships had on different aspects of child mental health. This information was used to create predictions of future cases. Like previous studies, we found that there was a general pattern that showed that good child-mentor relationships, defined specifically by the frequency of praise and fights, had an overall positive impact on child mental health, specifically when it came to symptoms of depression. Furthermore, parents seemed to have stronger impacts on child mental health than teachers did. Limitations include possibly biased respondents who may not be representative of the greater population, as well as the specificity of the variables that were chosen. Going forward, further steps to analyze different datasets and deepen the scope of the research will be helpful in finding patterns and developing more detailed conclusions.

Introduction

How can mentorship and relationships with mentors affect a child's mental health? The concept of mental health is becoming increasingly widespread and accepted in the United States, and as society begins to address the stigma surrounding mental health, it is also important to search for the causes of disorders and symptoms that could increase an individual's likelihood of developing a disorder. In this way, scientific research can aid the fast diagnosis of disorders and also help to create effective treatments and prevention methods.

Mentor figures are people such as parents, teachers, and counselors that children can look up to. Oftentimes children will seek guidance and support from these people, and the relationships between mentors and children can be some of the most important and influential connections that can be made (Rhodes et al., 2006). Mentors can have a strong impact on the social and emotional development of children, meaning that they can in turn impact children's mental well-being (Rhodes et al., 2006).

The topic of child-mentor figure relationships and mental health has been approached before. For example, one study found that negative parent-child relationships can have a detrimental effect on optimism levels that can be traced to adulthood (Korkeila et al., 2004). Another study found that teacher-child relationships can impact a child's mental health and even change school dropout rates (Krane et al., 2016).

However, the existing studies do have some gaps. There are two main factors that imply that there is more to research. The first factor is that rather than having children answer the questions themselves, the mentor is often asked to assess relationship quality and the child's mental health, which can not be entirely valid without the child's opinion on the matter. The second factor is that even when children were surveyed, the age range was quite limited, with only a small variation in the ages of the children. These factors apply to studies that focused specifically on the United States as well.

In the present study, we sought to address these gaps by finding a dataset where all participants answered questions based on their own personal experiences, so all of the data on the children's personal relationships and mental health were collected based on what the children said themselves. The dataset was based on a survey that included a nationally representative sample and was conducted by a government health survey agency. Furthermore, the age range for this research goes from fifth grade or lower up to twelfth grade, which is a wide variety of students covering elementary, middle, and high school.

Another factor that differentiates this research from previous studies is that it uses frequency of arguments as well as praise as the two indicators of a healthy relationship. Whereas previous studies have broadly shown that mentorship affects mental health, in the present study, we seek to isolate specific contributions of certain aspects of mentorship - such as praise, teacher relations, parent relations, etc - and understand how much each of these components contribute to mental health. Therefore, we get closer to understanding the mechanisms underlying the link between mentorship and mental health. This research also takes the patterns found through the dataset and uses them to predict future cases, and although this is not the first attempt at doing so, it is still extremely beneficial to take the observed patterns a step further.

This research focuses on the relationships between fifth to twelfth grade children and mentor figures such as parents or teachers, and how the state of such relationships can impact a child's likelihood of developing depressive symptoms. Using a dataset from the National Substance Abuse and Mental Health Data Archive and statistical classification techniques such as Logistic Regression, an experiment was conducted in order to find patterns that would help with reaching a conclusion and determining the exact effects of these relationships on child mental health.

The dataset, which was created based on the Substance Abuse and Mental Health Data Archive's 2019 "National Survey on Drug Use and Health," is composed of 2,396 questions asked to 67,625 individuals in the United States. Questions focused on participants' drug use and mental health, and collected demographic and background information as well. All data and results will be analyzed with acknowledgements to demographic differences, meaning that the results will only be applied to the demographic that was included in the surveys, and no direct comparisons or assumptions will be made based on previous results from other studies that surveyed a different group of people. However, similarities between this study's results and previous study results will be noted.

Background

Previous Studies and Results

Parent-Child Relationships

Multiple studies have been conducted in the past in order to determine the correlation between child-mentor relationships and child mental health. These studies cover different types of mentor figures, situations, and demographics. For example, numerous studies have found that parent-child relationships can have impacts on child mental health, but each study used different indicators of mental health.

An example of a more recent study is one that was published in the *Journal of Pediatric Psychology* in 2021. The study, titled "Be My Safe Haven: Parent-Child Relationships and Emotional Health During COVID-19," conducted surveys from March 31, 2020 to May 15, 2020 (Bate et al., 2021). Participants who filled out the surveys were all parents from the United States with children between the ages of six and twelve. The study collected survey data on COVID-19's impact on individuals' lives, the parents' perspectives on their relationships with their children, the parents' emotional health, and the children's emotional and behavioral health. After receiving all of the survey responses, the study concluded that COVID-19 seemed to generally decrease a parent's emotional health, which in turn impacted a child's emotional and behavioral health. It seemed that the more unstable a parent-child relationship was, the more likely it was that the parent's emotional health was linked to the child's.

Another study conducted on this topic was published in 2009 in the *Marriage and Family Review*. This study looked into both marital relationships and parent-child relationships in the United States, and their impacts on child health, whether that be physical, mental, or substance-use related (Hair et al., 2009). Similarly to the last study, all of the results in this study were based on reports, this time by adolescents. The overall conclusion of the study was also similar to the last study. There was a correlation between child health and both marital quality and parent-adolescent relationships. The results showed that bad relationships in family led to negative physical and mental health outcomes for both adolescents and young adults. Furthermore, among adolescents who stated that their parents had high marital quality, there was a significantly more negative health outcome for those who had a good relationship with just one parent as compared to those who had good relationships with both parents.

More studies on parent-child relationships include the paper "Childhood adversities, parent-child relationships and dispositional optimism in adulthood," which was centered in Finland and found that poor parent-child relationships and negative childhood experiences was linked to a lower level of optimism in adulthood (Korkeila et al., 2004). Another article from the *Journal of Family Issues* titled "Parent-Child Relations and Children's Psychological Well-Being: Do Dads Matter?" found that in the United States, fathers can have a very strong impact on their children's mental and psychological well-being (Videon, 2005). This study came to the conclusion that while mother-child relationships are analyzed more often, father-child relationships are just as important to consider (Videon, 2005).

Teacher-Child Relationships

Beyond the subject of parent-child relationships, another common mentor figure is a child's teacher. Similarly to the last few studies discussed, each of these studies look into different demographics and mental health indicators. One previous article, which was published in 2014 and titled

"Student-teacher relationship trajectories and mental health problems in young children," included a sample of 460 Australian children who started off at age four and ended at age six (Miller-Lewis et al., 2014). All teachers involved assessed their own relationships with their students, and both parents and teachers analyzed the children's mental health at the beginning and end of the study. After reviewing the responses, the study found that having a stable high quality teacher-student relationship was linked to a student having fewer mental health "problems" and less problematic relationships with peers.

Another article, this one from a Scandinavian psychology journal, titled "Teacher–student relationship, student mental health, and dropout from upper secondary school: A literature review" uses school dropout rates as a way to measure student mental health (Krane et al., 2016). The article reviews sixteen studies, ten of which analyzed teacher-student relationships and dropout rates from upper secondary school. Overall, the studies found that positive teacher-student relationships seemed to prevent student dropouts or lower student intentions to drop out. One study didn't find a correlation between the two variables, but the general consensus was that there was a link.

Summary of Literature

Studies have reached a general agreement that mentor figures, whether they are parents or teachers, and their relationships with children do have effects on child mental health. Each study varied for multiple reasons. For example, the studies that were analyzed were conducted in different locations, such as the United States, Australia, and Scandinavia. Different studies also used different indicators of mental health, such as school dropouts and optimism levels, as well as different points of view, such as parents, teachers, and the children themselves. Regardless of these differences, there continue to be conclusions that support the link between positive relationships and positive mental health.

Mental Health and Depression

Depression is a common mental health disorder that can affect an individual's emotions, thoughts, and actions negatively. According to the American Psychiatric Association, one in six people will develop depression at least once in their lives, and first appearances of the disorder are most common during the late teens to mid twenties age range (Torres, 2020). Furthermore, women are more likely to develop depression than men are, and depression can be heritable (Torres, 2020). Some symptoms of depression include feeling sad or worthless, losing interest in activities, irregular sleeping habits, and changes in appetite (Torres, 2020).

Dataset

The dataset being used in this study comes from the Substance Abuse and Mental Health Data Archive, where a 2019 national survey titled "National Survey on Drug Use and Health" was conducted in the United States to measure drug use and mental health in individuals who were aged twelve years or older (2019 National, 2020). The survey was sponsored by the Center for Behavioral Health Statistics and

Quality. In total, there were 67,625 individuals who were interviewed. All respondents were assured that they would remain anonymous.

Questions range from substance use of different drugs and the frequency of such drug use to experiences with mental health disorders, symptoms, and treatment. Questions about personal life including relationships, income, and school performance were also a part of the survey, as well as demographic data, such as gender, age, and ethnicity. The survey was cross-sectional, so individuals only answered the questions once, and all participants were also given the option to skip certain questions. In total, there were 2,396 questions in the interview.

This study used seven of the questions included in the survey. The first question, initially labeled "EDUSCHGRD2" then renamed "SchoolGradeLevel" as a variable, asked participants what grade they were in at school. The answers that were kept as a part of this research were fifth grade or lower, sixth grade, seventh grade, eighth grade, ninth grade, tenth grade, eleventh grade, and twelfth grade. The original question included college years, but for the sake of this research, which analyzes elementary, middle, and high school students, those answer choices were excluded.

The second question, "YEPGDJOB," or "OftenParGoodJob," asked participants how often their parents told them that they were doing a good job in the past twelve months. All answer choices that didn't give a clear response were excluded from the new variable set. The third question, "YETCGJOB," or "TchrGoodJob," asked participants how often their teachers told them that they were doing a good job in the past twelve months. Like the last variable, all answer choices that were not direct were excluded.

The fourth question, first called "YODPDISC" then changed to "DiscrgdLife," assessed whether or not participants felt discouraged about life during days when they felt depressed. The only responses that were included were "yes" and "no," because the remaining answers were not clear.

The fifth question, "YEYARGUP," or "OftenParFight," had participants indicate how many times they had a fight with at least one of their parents in the last twelve months. Answers ranged from zero to ten or more times. If a participant entered a response for the sixth question, called "YETLKNON" and renamed "TalkNobody," it indicated that the participant felt like there was nobody they could talk to about serious problems. Participants also had the option to enter this response and enter another response that meant that there were others that they could trust. However, due to the two statements being somewhat contradictory, this option was excluded in the final analysis.

The last question, "YODPREV," or "FeltDep," asks participants if they ever went through a period in time when they felt depressed for several days or longer. This question includes just "yes" or "no" answers.

Have you ever in your life had a period of time lasting several days or longer when most of the day you felt sad, empty, or depressed?

(YDS21)

YODPREV[1] Len : 2 EVER HAD SEVERAL DAYS WHRE FELT SAD/EMPTY/DEPRSSD

	Freq	Pct
1 = Yes	6350	11.31
2 = No	6804	12.12
85 = BAD DATA Logically assigned	10	0.02
94 = DON'T KNOW	126	0.22
97 = REFUSED	105	0.19
98 = BLANK (NO ANSWER)	2	0.00
99 = LEGITIMATE SKIP	42739	76.13

Figure 1. Answer choices for the "FeltDep" question from the dataset codebook. "Freq" indicates the number of participants that chose each answer choice.

For the variables chosen from the dataset, 80% of the answers were used for training and 20% of the answers were used for testing every time an accuracy score for predictions was printed. Descriptions and explanations for the accuracy scores and predictions are located in the "Methodology/Models" section.

Methodology/Models

Software Tools

In order to analyze the dataset and the variables that were chosen, the following software tools were imported and used: SKlearn, NumPy, Pandas, and CoLab. All of these tools were used to download and process the data. SKLearn, NumPy, and Pandas are all libraries that include different coding functions that were used in the data processing.

Data Processing

The dataset itself was downloaded through a link and transferred to Google Drive. Then, it was loaded and imported into the CoLab file that was used to process all of the data. The seven variables that were used for the research were all renamed, as explained in the "Dataset" section. The final variable names used when modeling the data were "SchoolGradeLevel," "OftenParGoodJob," "TchrGoodJob," "DiscrgdLife," "OftenParFight," "TalkNobody," and "FeltDep."

All of the variables were picked based on their relevance to the topic at hand because the dataset covered a wide variety of topics, such as drug use, therapy experiences, etc. Furthermore, all of the possible responses for each variable were included as long as they were clear answers that were not indicating a participant's uncertainty about the answer or skipped in any way. The one exception to this rule is the "SchoolGradeLevel" variable, where answers involving any school grade level above the twelfth grade were not included, due to this project's aim to focus on elementary, middle, and high school students.

Classification Analyses

In order to model the relationships between each of these variables, histograms were plotted. Due to the limitations of the histogram's visual capabilities, only two variables were used for each histogram. The x-axis and the y-axis were used to display the x-variable, with bars indicating the number of participants that chose each answer choice. The y-variable was displayed using hues, with different colored bars representing different answer choices (Fig 2).

After modeling a variety of variable pairs, larger groups of variables were consolidated in order to find the model's accuracy at using the patterns that were previously found, applying them to multiple variables, and predicting different outcomes. For example, if the model has the information that an eighth grade student often hears positive feedback and praise from both parents and teachers, it will have a

certain level of accuracy when it comes to predicting whether that student feels discouraged about life. All of these accuracy scores came in percentages, and allowed for an idea of how clear the relationships between the different variables were.

There were three specific variable group relationships that were modeled and evaluated. The first group looked into the effects of grade level, parent encouragement, and teacher encouragement on a student's feelings of discouragement in life. The variables that were used were "SchoolGradeLevel," "OftenParGoodJob," "TchrGoodJob," and "DiscrgdLife." The second group analyzed the effects of grade level, frequency in fights with parents, and feelings of depression on a student's feelings about discussing serious topics with others, which could be interpreted as that student's level of comfort and trust in others. The variables that were used were "SchoolGradeLevel," "OftenParFight," "FeltDep," and "TalkNobody." The third group was somewhat of a combination between the first and second groups because it looked into grade level, parent encouragement, and teacher encouragement, but this time, it brought these variables in relation to a student's comfort and trust in others. Therefore, the variables used were "SchoolGradeLevel," "OftenParGoodJob," "TchrGoodJob," and "TalkNobody."

Coefficient Weight Analysis

After using Logistic Regression to find the accuracy score of the predictions for each variable group, the weights of each variable were displayed, first in numbers, then in with a bar graph. In other words, the next step was to conduct the coefficient weight analysis, which aided in figuring out how important each variable was in predicting an outcome.

The Logistic Regression model was utilized to find the weight values of each coefficient, and therefore see how strongly each variable impacted the final prediction. This process tested different groups of answers each time, so the weight varied slightly every time the cell was reloaded. The process of finding the probability of each coefficient leading to a certain prediction can be explained when visualized in a bar graph with an x-axis and a y-axis. With the x-axis representing the coefficient in question and different colored bars representing the different response options of the y-variable, the ratios between the colored bars can reveal how large of a weight each coefficient has on the y-variable (Fig 2). For example, with the "SchoolGradeLevel" and "DiscrgdLife" varibles, each school grade had a different ratio between the number of students who felt discouraged and the number of students who did not. The general pattern discovered was that as the students aged, the ratios between the two answer choices became smaller, indicating that as students got older, they were more likely to pick the first option, or answer that they did feel discouraged. This would mean that "SchoolGradeLevel" would have a negative weight.

Once the numbers in the arrays were printed, they were displayed visually on a bar graph. Both negative and positive numbers were included in this graph because some variables resulted in a negative weight value, meaning that as those variables increased, the final result would decrease.

Results

Before creating specific variable groups, multiple pairs of variables were plotted on histograms to get an idea of the individual relationships first. An example is the relationship between school grade level and feelings of discouragement in life, where it was found that overall, children who felt sad for most of the day also felt discouraged about life. However, the older grades seemed to have larger gaps between the number of respondents that answered yes, meaning that they did feel discouraged, as compared to no, meaning that they didn't.

```
[56] sns.histplot(x = 'SchoolGradeLevel', hue = 'DiscrgdLife', data = clean_data, stat = 'count', multiple = 'dodge')
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fae6c0a5fd0>
```

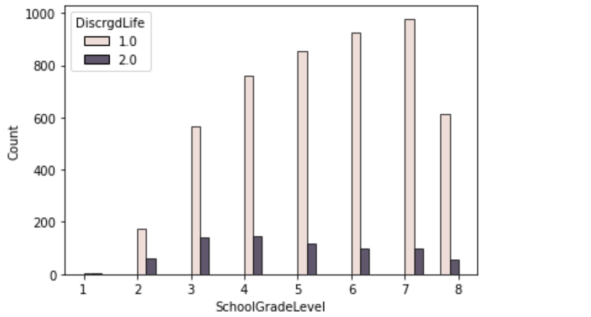

Figure 2. Histogram displaying the patterns among students who responded to the "SchoolGradeLevel" question and the "DiscrgdLife" question. X-axis shows each possible answer for "SchoolGradeLevel" (1 = 5th grade or lower, 2 = 6th grade, 3 = 7th grade, 4 = 8th grade, 5= 9th grade, 6 = 10th grade, 7 = 11th grade, 8 = 12th grade). Y-axis shows participant count for "SchoolGradeLevel" answers. Pink bars represent "yes" (participants do feel discouraged). Gray bars represent "no" (participants don't feel discouraged).

Another example is the relationship between school grade level and feeling sadness or depression. After graphing this relationship, it was found that among students from grades five through nine, the more common response to the question "FeltDep" was that they did not experience a period lasting several days where they felt depressed. However, in grades ten through twelve, the more common response was that the students have felt depressed for several days before.

```
[43] sns.histplot(x = 'SchoolGradeLevel', hue = 'FeltDep', data = clean_data, stat = 'count', multiple = 'dodge')
```

```
<matplotlib.axes._subplots.AxesSubplot at 0x7fae6cbdc7d0>
```

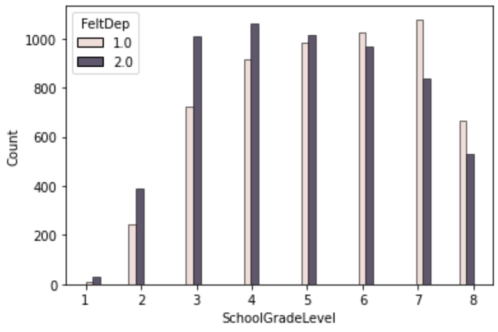

Figure 3. Histogram displaying the patterns among students who responded to the "SchoolGradeLevel" question and the "FeltDep" question. X-axis shows each possible answer for "SchoolGradeLevel." Y-axis shows participant count

for “SchoolGradeLevel” answers. Pink bars represent “yes” (participants have felt depressed). Gray bars represent “no” (participants haven’t felt depressed).

Question 1: How do grade level, parent encouragement, and teacher encouragement impact a student’s feelings of discouragement in life?

The first model, which used the “SchoolGradeLevel,” “OftenParGoodJob,” “TchrGoodJob,” and “DiscrgdLife” variables, revealed an accuracy score of about 87%. With the coefficients modeled, the array showed that “SchoolGradeLevel” had a weight of about -0.20, “OftenParGoodJob” had a weight of about -0.45, and “TchrGoodJob” had a weight of about -0.12. This information reveals three main ideas. First, the older the student, the more likely that student would feel discouraged about life. Second, the more parents praised their children, the less discouraged the children would feel about life. Finally, just like with parents, the more teachers praised their children, the more discouragement levels would go down.

```
[47] plt.bar([1, 2, 3], model.coef_.ravel())
```

```
<BarContainer object of 3 artists>
```

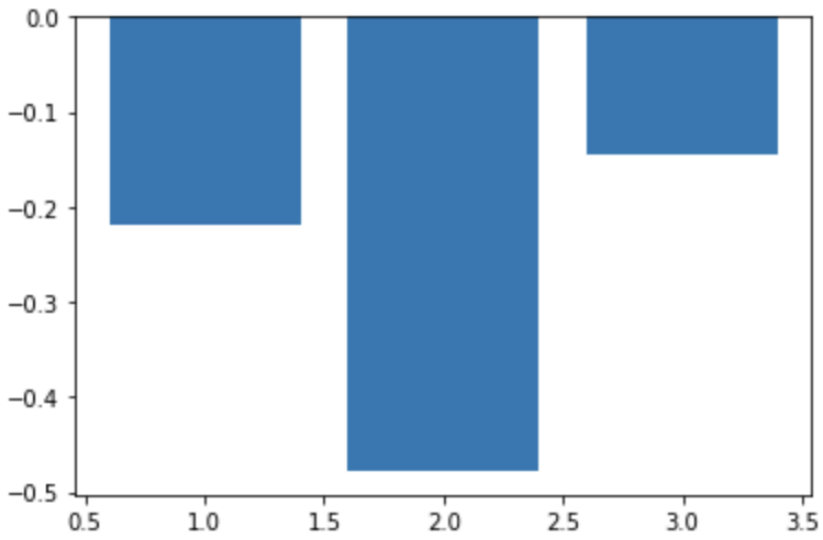

Figure 4. Coefficient weights for “DiscrgdLife” prediction. Bars denote Logistic Regression coefficient weights. Left bar is “SchoolGradeLevel” weight. Middle bar is “OftenParGoodJob” weight. Right bar is “TchrGoodJob” weight.

Question 2: How do grade level, frequency in fights with parents, and feelings of depression impact a student’s comfort with discussing serious topics with others?

The second model, which used “SchoolGradeLevel,” “OftenParFight,” “FeltDep,” and “TalkNobody,” revealed an accuracy score of about 95%. With the coefficients modeled, the array showed that “SchoolGradeLevel” had a weight of around 0.06, “OftenParFight” had a weight of around -0.13, and “FeltDep” had a weight of around 0.74. This information would mean that of the three variables, feeling depressed had the greatest influence on the final prediction of whether someone felt that there was no one they could discuss serious topics with. The positive weight of 0.74 would mean that if children felt depressed, it would be more likely for that child to also feel less comfortable talking with others, which may imply that such feelings are a symptom of depression, or are at least somewhat impacted by depression. The positive weight of 0.06 for “SchoolGradeLevel” indicated that the younger the child, the more likely that child would feel less comfortable talking with others. Finally, the weight of -0.13 for “OftenParFight” would indicate that the more often a child has fights with their parent, the more likely it would be for the child to feel uncomfortable reaching out to others. Therefore, if they don’t fight often, that would mean that the child would feel more comfortable and less alone.

```
[47] plt.bar([1, 2, 3], model.coef_.ravel())
```

```
<BarContainer object of 3 artists>
```

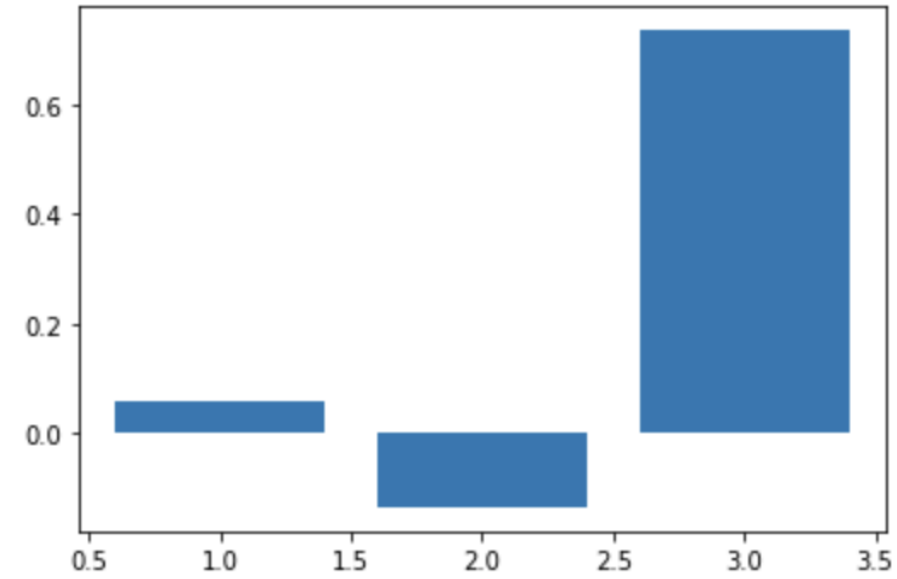

Figure 5. Coefficient weights for “TalkNobody” prediction. Bars denote Logistic Regression coefficient weights. Left to right. Left bar is “SchoolGradeLevel” weight. Middle bar is “OftenParFight” weight. Right bar is “FeltDep” weight.

Question 3: How do grade level, parent encouragement, and teacher encouragement impact a student’s comfort with discussing serious topics with others?

The third model, which used “SchoolGradeLevel,” “OftenParGoodJob,” “TchrGoodJob,” and “TalkNobody,” revealed an accuracy score of about 95%. With the coefficients modeled, the array showed

that “SchoolGradeLevel” had a weight of around 0.08, “OftenParGoodJob” had a weight of around -0.80, and “TchrGoodJob” had a weight of around -0.22. From this data, it can be inferred that the younger the student, the more likely that child would feel hesitant about talking about serious topics with others. Furthermore, the more often both parents and teachers praised their children or students, the more likely those children would feel as though there were people that they could talk to.

```
[51] plt.bar([1, 2, 3], model.coef_.ravel())
```

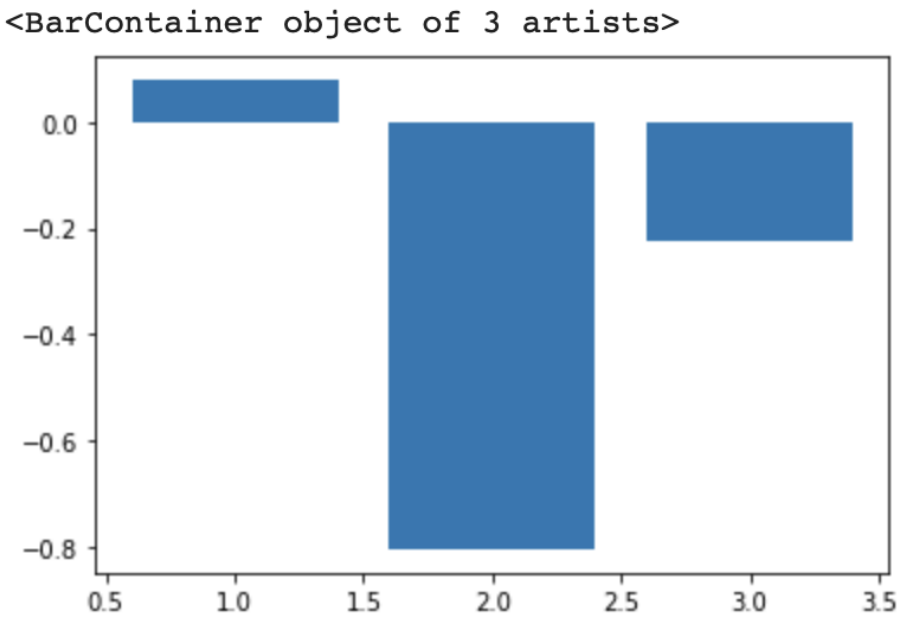

Figure 6. Coefficient weights for “TalkNobody” prediction. Bars denote Logistic Regression coefficient weights. Left to right. Left bar is “SchoolGradeLevel” weight. Middle bar is “OftenParGoodJob” weight. Right bar is “TchrGoodJob” weight.

Implications for Main Question

Based on the results discussed above, there was a general pattern that showed that good child-mentor relationships, defined specifically by the frequency of praise and fights, had an overall positive impact on child mental health, specifically when it came to symptoms of depression. When parents and teachers praised their children or students, there was a consistent trend of discouragement or loneliness levels going down.

It also seemed that parent encouragement had greater impacts on child mental health than teacher encouragement, suggesting that parent-child relationships might have stronger mental effects on children. Another prominent coefficient weight was the “FeltDep” impact on “TalkNobody.” This information implies that oftentimes, when children feel sad or depressed for longer periods of time, they are more prone to feeling as though there is nobody that they can talk to about serious topics. This idea may

suggest that symptoms of depression can further isolate children and prevent them from building relationships of trust, which is important for mentor figures to keep in mind.

An interesting observation to note, however, is the inconsistency of children's ages and their impacts on the final outcome. While younger children were less likely to feel discouraged by life, they were also more likely to feel as though there was no one they could talk to about serious topics. There may be other factors going into this inconsistency, and while feeling discouraged is a different variable from feeling lonely, it is still interesting to note that two factors that can indicate a child's mental well-being have two different results when it comes to age.

A limitation that should be noted when analyzing these results is the response rates of each participant. Many participants chose not to answer different questions throughout the survey, so the variable groupings that were made came from a limited set of options, due to the restriction of choosing multiple questions that a large number of participants chose to answer. Therefore, it must be acknowledged that these results may not be entirely representative of all Americans.

Discussion and Conclusions

Through histograms, logistic regression techniques, and coefficient weight analyses based on the the "National Survey on Drug Use and Health," it was concluded that among children in the United States, having a healthy and stable relationship with mentor figures such as parents and teachers can have a positive impact on mental health and well-being. Through different symptoms of depression and mental health, as well as different indicators of healthy relationships, these findings remained consistent and also supported the conclusions of studies conducted in the past.

It is important to research and be aware of all of the different factors that could have an impact in child and adult mental health. Acknowledging the importance of mental health and using research to create better lifestyles and treatment options can be the key to both reducing stigma and promoting mental well-being. This research is particularly useful because it builds on the foundations established by other studies and directly surveys a large pool of participants from various stages in the youth and adolescent stages. It also offers helpful visual tools to see which components of one's relationships with others might have the strongest impact in their interactions with others and symptoms of depression, and creates a tool that can put those findings to use and predict future cases.

However, this study is not without its flaws. While the variables that were used to indicate depression were all symptoms of depression, there is no certainty that the participants did indeed develop depression. Furthermore, with participants being allowed to choose whether they wanted to answer each question, there is a chance that the pool of respondents is somewhat biased and not representative of the greater population. It should also be acknowledged that there were very specific indicators of healthy relationships and mental well-being that were used, so there may be other relationship factors that have even greater impacts on mental health, or more accurate signs of mental health disorders. Regardless, there are patterns that were found through this research that should be acknowledged and considered.

The next step in this research would be to compile more groups of variables and see if there are any stronger patterns than the ones that were already observed. This method would help to create more prediction models with greater accuracy scores, and with the development of these models, they could be

of assistance in real-world scenarios. Branching out and reviewing other datasets would also expand the horizons of this research and comparisons could be made between multiple different datasets in order to reach the most accurate conclusions.

Continuing to build on the knowledge established in this paper will ensure that the data and results that have been analyzed will be utilized to their fullest extent. As society's understanding of mental health continues to develop, the horizons of what can be studied in order to benefit people of all ages will expand immensely, and provide even more lessons to be learned by all.

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References

Bate, J., Pham, P. T., & Borelli, J. L. (2021). Be my safe haven: Parent–Child relationships and emotional health during COVID-19. *Journal of Pediatric Psychology*, *46*(6), 624-634. https://doi.org/10.1093/jpepsy/jsab046

Hair, E. C., Moore, K. A., Hadley, A. M., Kaye, K., Day, R. D., & Orthner, D. K. (2009). Parent marital quality and the parent–adolescent relationship: Effects on adolescent and young adult health outcomes. *Marriage and Family Review*, *45*(2-3), 218-248. https://doi.org/10.1080/01494920902733567

Korkeila, K., Kivelä, S.-L., Suominen, S., Vahtera, J., Kivimäki, M., Sundell, J., Helenius, H., & Koskenvuo, M. (2004). Childhood adversities, parent-child relationships and dispositional optimism in adulthood. *Social Psychiatry and Psychiatric Epidemiology*, *39*, 286-292. https://doi.org/10.1007/s00127-004-0740-x

Krane, V., Karlsson, B. E., Ness, O., & Kim, H. S. (2016). Teacher–student relationship, student mental health, and dropout from upper secondary school: A literature review. *Scandinavian Psychologist*, *3*(11). https://doi.org/10.15714/scandpsychol.3.e11

Miller-Lewis, L. R., Sawyer, A. C.P., Searle, A. K., Mittinty, M. N., Sawyer, M. G., & Lynch, J. W. (2014). Student-teacher relationship trajectories and mental health problems in young children. *BMC Psychology*, *2*(27). https://doi.org/10.1186/s40359-014-0027-2

Rhodes, J. E., Spencer, R., Keller, T. E., Liang, B., & Noam, G. (2006). A model for the influence of mentoring relationships on youth development. *Journal of Community Psychology*, *34*(6), 691-707. https://doi.org/10.1002/jcop.20124

Torres, F. (2020, October). *What is depression?* American Psychiatric Association. Retrieved August 24, 2022, from https://psychiatry.org/patients-families/depression/what-is-depression

2019 national survey on drug use and health. (2020, October 20). Substance Abuse & Mental Health Data Archive. Retrieved August 24, 2022, from https://www.datafiles.samhsa.gov/sites/default/files/field-uploads-protected/studies/NSDUH-2019/NSDUH-2019-datasets/NSDUH-2019-DS0001/NSDUH-2019-DS0001-info/NSDUH-2019-DS0001-info-codebook.pdf

Videon, T. M. (2005). Parent-Child relations and children's psychological well-being: Do dads matter? *Journal of Family Issues*, *26*(1), 55-78. https://doi.org/10.1177/0192513X04270262