Analyzing Suicide Attempts by Adolescents

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Abstract

The report explores the multifaceted issue of adolescent suicide attempts, drawing from both psychological and sociological perspectives. It utilizes Emile Durkheim's theories, categorizing the motives for suicide into four types influenced by social factors: anomic, altruistic, egoistic, and fatalistic. The research aims to understand the complex interplay between individual identity, societal integration, and external social events in influencing suicide tendencies among adolescents. The methodology involves sophisticated data analysis, using Python for data extraction and visualization to identify correlations between suicide rates and various sociological factors. This analytical approach helps to discern patterns and trends that could inform interventions. Preliminary findings indicate a fluctuation in suicide rates, with significant peaks and troughs over the years, hinting at underlying, unexplored factors. The study also considers a range of variables from personal behavior to social experiences, highlighting the impact of bullying, serious injuries, and the lack of close friendships on the likelihood of attempted suicide. This research is crucial in providing insights into the reasons behind adolescent suicide attempts, which could be instrumental in developing targeted prevention strategies. The interrelationship of the mentioned factors underscores the complexity of addressing adolescent suicide and the need for a nuanced approach that considers both individual and societal dimensions.

Keywords: adolescent suicide attempts, Emile Durkheim, prevention strategies

1. Introduction

The increasingly complex tapestry of modern society has woven a myriad of pressures that uniquely affect adolescents, a demographic navigating the tumultuous transition from childhood to adulthood. This phase is often marked by a quest for identity, acceptance, and purpose, within which the risk of suicide attempts has emerged as a critical issue. This paper seeks to delve into the multifaceted nature of suicide attempts among adolescents, a dire reflection of the silent battles fought in the shadows of youthful exuberance. Our exploration is scaffolded upon the sociological perspective, diverging from the traditional psychological focus on the individual's internal struggles. We hypothesize that the external environment and societal influences are key determinants in the prevalence of suicide among

young individuals. Our investigation focuses on the complex relationship between how well adolescents are woven into the societal fabric and their inclination towards suicidal thoughts. Our research endeavors to identify the less apparent factors that stem from societal systems, personal relationships, and individual experiences, which may predispose teenagers to consider harming themselves.

In this effort, we employ a structured approach that capitalizes on the strengths of data analysis techniques to sift through and interpret complex data arrays. This strategy equips us with the ability to enhance our comprehension of the societal factors that play a role in incidents of suicide among the youth. Our analysis does not merely chronicle statistical trends but seeks to illuminate the underlying social currents driving these developments. By investigating the correlation between social variables and suicide attempts, we strive to advance our understanding and inform interventions that could serve as lifelines for at-risk youth. As we embark on this analytical journey, we hold firm the belief that a deeper comprehension of these social dynamics is imperative in forging effective strategies to mitigate the harrowing phenomenon of adolescent suicide attempts.

2. Literature Review

In a groundbreaking exploration of our formative years, Felitti and his team (1998) pierced the veil on a topic that has long puzzled medical professionals: the origins of adult chronic diseases. Their research artfully connected the dots between the shadows of childhood adversity and the onset of health conditions later in life, painting a picture that compels a reevaluation of early life experiences as more than just fleeting memories. They posited that these early traumas are, in fact, insidious architects of future illness. Ormel et al. (2004), in a complementary thread of inquiry, turned the lens on our inner emotional landscapes. They probed neuroticism, a trait that whispers a narrative of worry and emotional upheaval, and its role in guiding us through life's labyrinth of stressors. This trait, they argued, acts as both a filter and amplifier of life's challenges, potentially setting individuals on a path toward psychological distress. Their work suggests a silent synergy between our emotional disposition and the external chaos we navigate.

Their analysis highlights the intricate interplay between personality and the psychological scars left by childhood distress. Shifting the focus to the social sphere, Siennick, and Picon (2019) shed light on the influential role of peer networks in adolescent behaviors, particularly in the context of prescription drug use. Their investigation reveals that the company adolescents keep can either contribute to or protect against the adoption of risky behaviors, illuminating the social dimensions of health risk behaviors. In the digital age, Smith et al. (2008) bring attention to the emergent threat of cyberbullying and its psychological repercussions. Their study extends the conversation about childhood adversity into the virtual realm, acknowledging that online harassment can be an additional source of stress that compounds the negative legacy of adverse childhood experiences. Collectively, these studies underscore the multifaceted nature of childhood trauma's impact, from the internalization of neurotic tendencies (Ormel et al., 2004) to the external pressures of peer influence (Siennick & Picon, 2019) and the modern challenges of cyberbullying (Smith et al., 2008). This body of research converges on the imperative to address the far-reaching implications of ACEs, as initially highlighted by Felitti et al. (1998), through a comprehensive approach that encompasses both personal and social interventions.

3. Theoretical Ground

Unlike psychology's emphasis on the internal causes of suicide, namely the psychological factors of suicide victims, sociologists pay more attention to the external causes of suicide, exploring the impact of social factors on suicide behavior. Emile Durkheim, one of the founding figures and creators of sociology, produced classic work on suicide which is one of his three major achievements with the other two being "division of labor" and "methodology combining empirical research" (Peyre, 2023). Our project is mainly guided by his theories on suicide.

The motivation for suicide is very important because eliminating motivation is the most fundamental way to eliminate suicidal behavior. Durkheim divided the motives for suicide into four categories that are all closely related to external social factors (Crossman, 2020). The first type is anomic suicide, which is a response to anomie. The concept of "anomie" can refer to both the collapse of social values or norms and

the individuals' lack of belief system and disintegration of values. Social events such as severe economic, or political turmoil can trigger collective "anomic" and increase suicide. The second type is altruistic suicide referring to suicidal behaviour for the benefit of the collective, organization, and society. Social regulation and religious and political propaganda may all promote this type of suicide, such as suicide movements initiated by extremist organizations and terrorist suicide attacks. The third type is egoistic suicide. When people become disconnected from family, friends, and society, their "social bonds" are weakened and there is a greater chance for them to choose suicide to escape the pressure of loneliness and depression. The last type is fatalistic suicide. When facing a social environment where one is extremely dissatisfied but unable to change, people are more likely to develop a pessimistic attitude towards the future and a tendency to self-doubt. Instead of continuing to endure the current situation helplessly, some people will end the impact of the harsh environment on themselves by committing suicide. Overall, these four motives for suicide are closely related to social factors.

Next, from the sociological perspective, we need to precisely understand the association between social factors and these suicide motivations. As mentioned above, sociologists tend to emphasize the external social factors influencing suicide. Specifically, Durkheim preferred to consider suicide as a phenomenon reflecting the collective social breakdown rather than paying attention to the subjective reasons for suicide by suicide victims. By giving the term "integration" a unique connotation, he emphasized the power of collective social relationships which not only bring a strong sense of self-worth and belonging to avoid what he called "egoistic suicide", but also provides "social capital" offering benefit to improve people's quality of life (Mueller et al, 2021). Therefore, the more "integrated" one is into society, the less possible for him to commit suicide. Integration is also correlated with social identities, for instance, the elderly tend to have weaker social bonds caused by retirement and death of acquaintances or the inconvenience of social activities.

Finally, based on these sociological theories related to suicide, our research will be conducted from two perspectives: the identity of suicide victims and the development trends of

suicide. Identity is the role that a person plays in society, and different identities will assume different social responsibilities and have different social integration as mentioned above; the trend of suicide development reflects the correlation between suicide and social events and social development, helping us better understand the impact of objective social factors on suicide.

4. Methodology

Our methodologies are mainly about how to summarize and extract information from mass data and draw conclusions based on the analysis of the information. We focus on the analysis of the correlation between different variables, such as suicide rate and alcohol, friendship, family background, and other 10 variables. To correlate these variables together, Python was used to extract data and transform it into visualized graphs, including column charts, box plots, and so on. These graphs can visualize the relationships between various variables. After getting their correlation, we conclude in two major ways. One way is through comparison. For instance, by comparing relevant variables and data of different genders, we may figure out how to deal with the suicide issues of males, females, and transgenders respectively. Another way is through timeline analysis. We use line charts to analyze the developing trend of one or several variables so that we can get more information like the effect of social events on suicide rate.

After collecting and analyzing information, we will conclude according to it. Based on the extent of correlation, we distinguish the degree of influence of different independent variables on the dependent variable, to more effectively identify the main reasons and emphasize key factors. The relevant authoritative research results can also provide support or challenge for the preliminary conclusions we draw, for example, the specific impact of friendship on suicide mentioned by scholars. These theories from other scholars can make our conclusions more profound, allowing us not only to rely on surface-level viewpoints derived from data but also to understand the underlying reasons behind the phenomena. In the absence of other research results to support our analysis, we will also use reasonable hypotheses and concatenation of other data to obtain more scientific and reasonable explanations.

Our methodologies aim to guide us to rigorously search for patterns from abstract data while visually presenting these patterns to conclude better. These methodologies also allow us to think independently and research, while leveraging the research results of others to deepen our research.
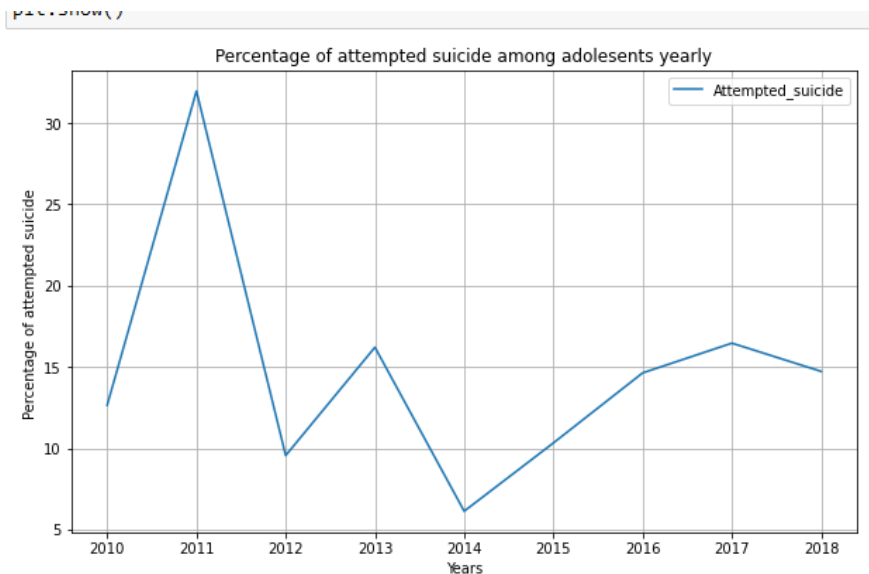
5. Current Results

Figure 1. Trends of attempted suicide yearly

From this graph, we see the percentage of suicides among adolescents had an unsteady increasing and decreasing trend over the years. The highest number of suicides was in 2011 with at least 30% while the lowest was in 2014 with around 6% and was seen to increase towards 2017 and dropped a bit. From our research, there were no specific studies on why 2011 was the highest and 2014 was the lowest. Instead, we have only found the results from the datasets on what kind of various factors have affected attempted suicide rates over the years among adolescents. However, our datasets may not be able to cover all of the variables that could have contributed to the attempted suicides since there may be also some hidden reasons that have not been explored yet and it was only a short time frame. Despite these, our results were noteworthy enough to explain the reasons that affected attempted suicide among adolescents.

Variables	Explanation
Country	Country they live
Year	The year in which the information was collected
Age Group	The age group of participants
Sex	Gender of participants
Currently_Drink_Alcohol	Percentage of students who currently drank alcohol (at least one drink of alcohol on at least one day during the 30 days before the survey)
Really_Get_Drunk	Percentage of students who ever drank so much alcohol that they were drunk one or more times during their life
Overweight	Percentage of students who were overweight (>+1SD from the median for BMI by age and sex
Use_Marijuana	Percentage of students who ever used marijuana one or more times during their life
Have_Understanding_Parents	Percentage of students who reported that their parents or

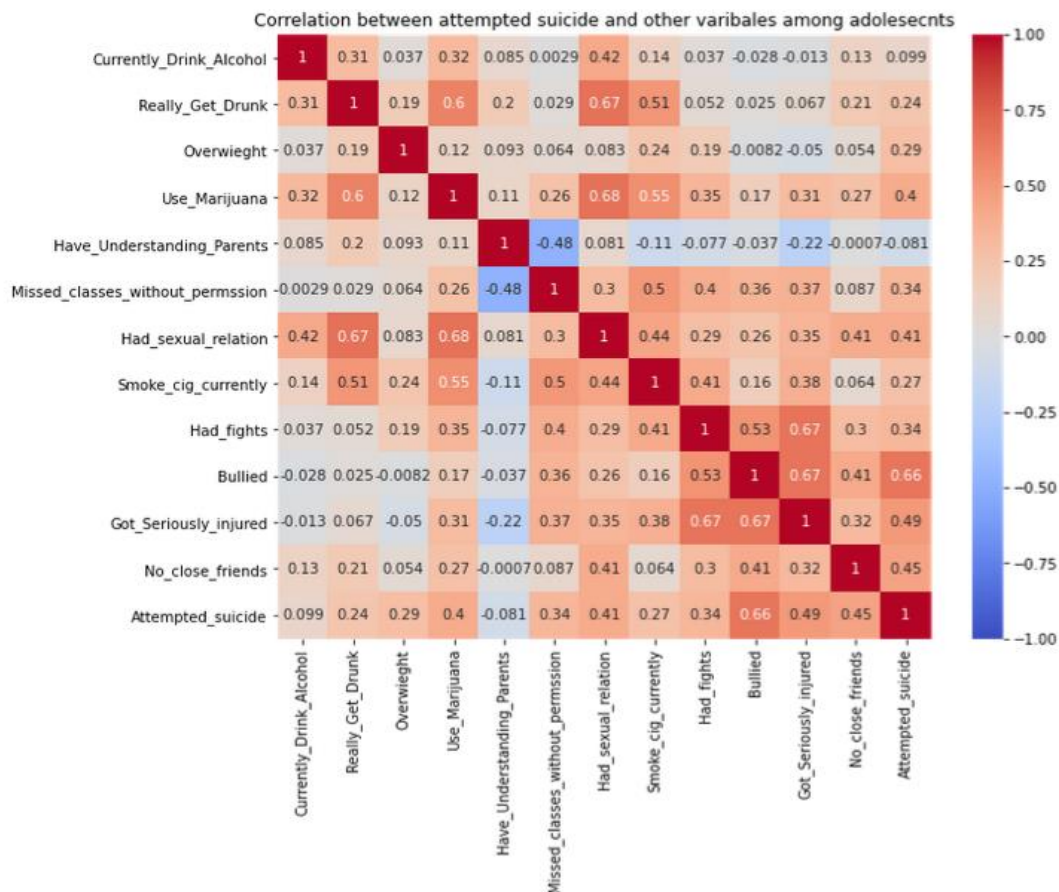|	
	guardians most of the time or always understood their problems and worries during the 30 days before the survey
Missed_classes_without_permssion	Percentage of students who missed classes or school without permission on one or more days during the 30 days before the survey
Had_sexual_relation	Percentage of students who ever had sexual behaviour
Smoke_cig_currently	Percentage of students who currently smoked cigarettes (smoked cigarettes on at least 1 day during the 30 days before the survey)
Had_fights	Percentage of students who were in a physical fight one or more times during the 12 months before the survey
Bullied	Percentage of students who were bullied on one or more days during the past 30 days
Got_Seriously_injured	Percentage of students who were seriously injured one or more times during the past 12 months
No_close_friends	Percentage of students who did not have any close friends
Attempted_suicide	Percentage of students who attempted suicide one or more times during the 12 months before the survey

Figure 2. Major issues contributing to attempted suicide among adolescents

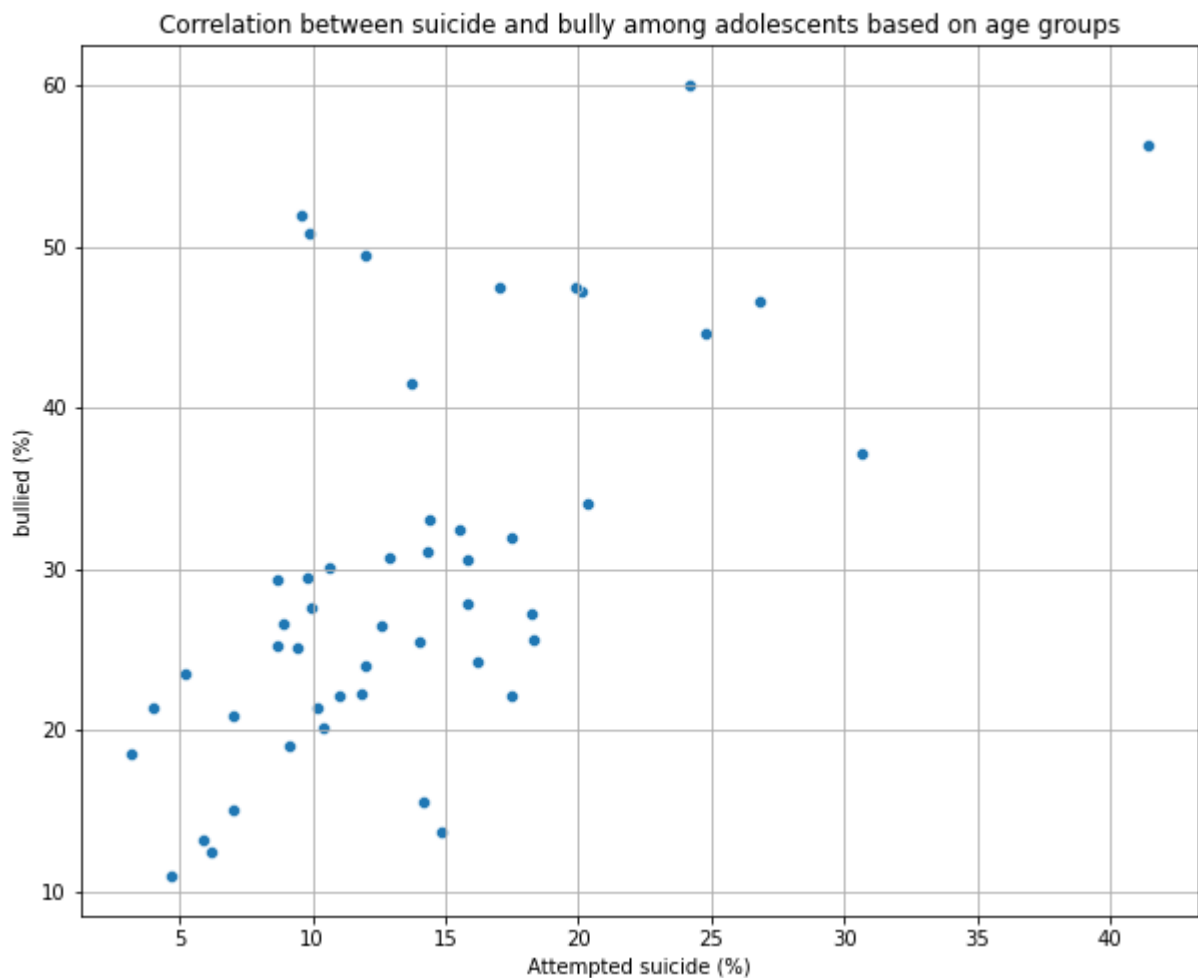Looking at the potential cause of attempted suicide among adolescents, we can see there are several reasons. In this graph, the heatmap showed the correlation on how each variable interacts with each other and its results show:

Causes	Relation
Bullied (66%)	Strong positive
Seriously injured (49%)	Moderate positive
No close friends (45%)	Moderate positive
Sexual relation (41%)	Moderate positive
Use marijuana (40%)	Moderate positive

Although there were other several positive results, we are only concerned about the relation which is from 0.4 and above because they provide more meaningful and reliable insights compared to those which are weak relationships despite being a positive value since it may not give reliable insights.

5.1 Bullied

Correlation between suicide and bully among adolescents based on age groups
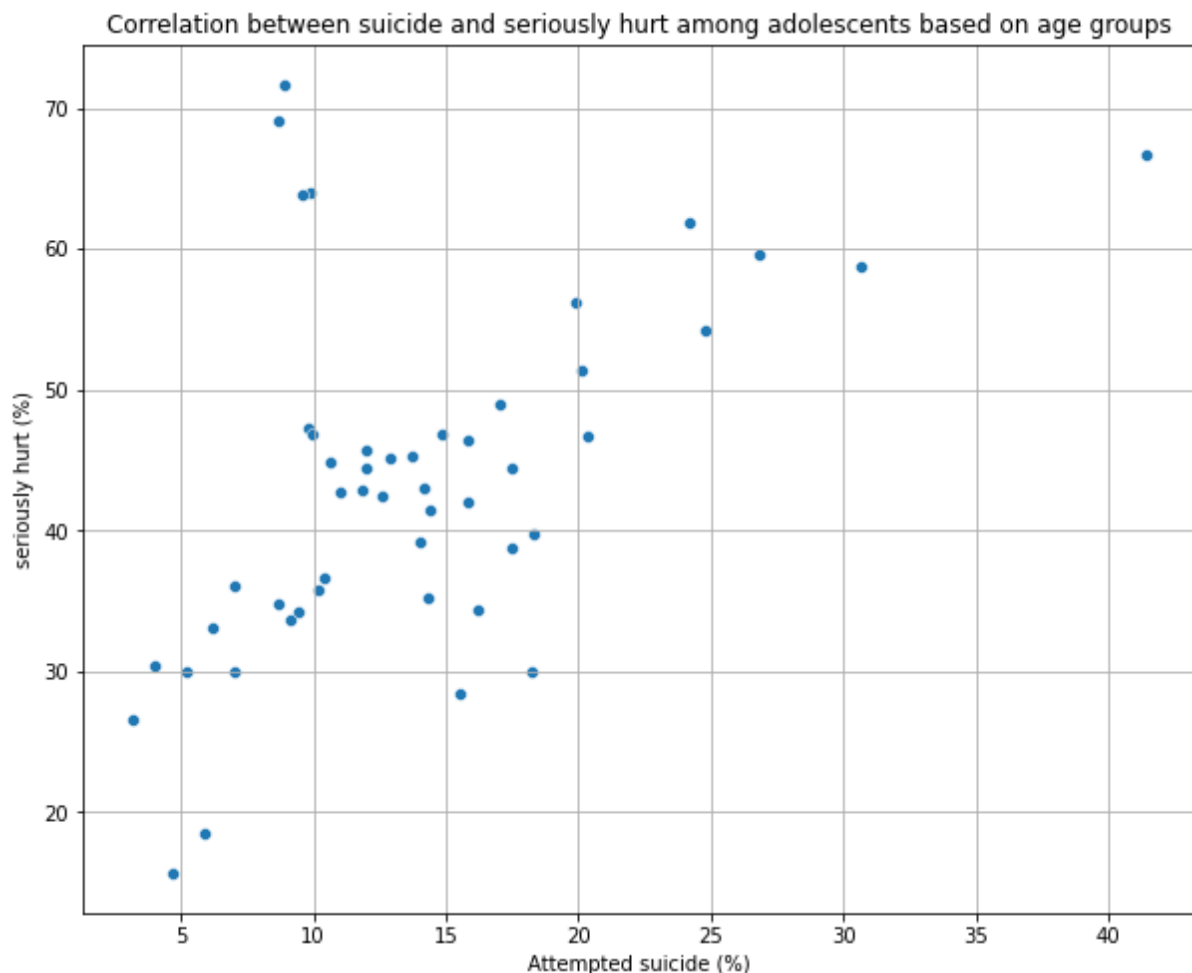
The reason behind this result is that bullies would try to show they are dominant to others so they would pick on the weak victims to show their superiority. The heatmap shows getting seriously hurt is a high association with bullied at 67% which could explain the reason bullies bully and hurt the victims to gain authority. This finding is similar to research done by Salmaivali et al., (2018), it was found that bullying exists to gain status goals such as popularity goals, social demonstration goals, social dominance goals, and agentic goals are all positively related to bullying. Through this, the victims may sometimes be traumatized by all these events as they will be more frequently involved in these bullying activities and other people may not want to be associated with the bullied victims because it may also make them a loser as the bullies may target them as well. This can be supported by our heatmap result which shows

an association between friends and bullies being 41% causing the victims to not have friends that can stand up for them. Moreover, this will also harm the bullying victims' self-esteem as it causes them to lack faith in themselves as they develop mechanisms that mess up their feelings and thoughts since they are unable to speak up for themselves (Silva et al., 2020). Therefore, it leads to isolation where they are unable to socialize and ask for help causing them to be depressed and eventually suicide (Klomek et al., 2007).

5.2 Seriously Hurt

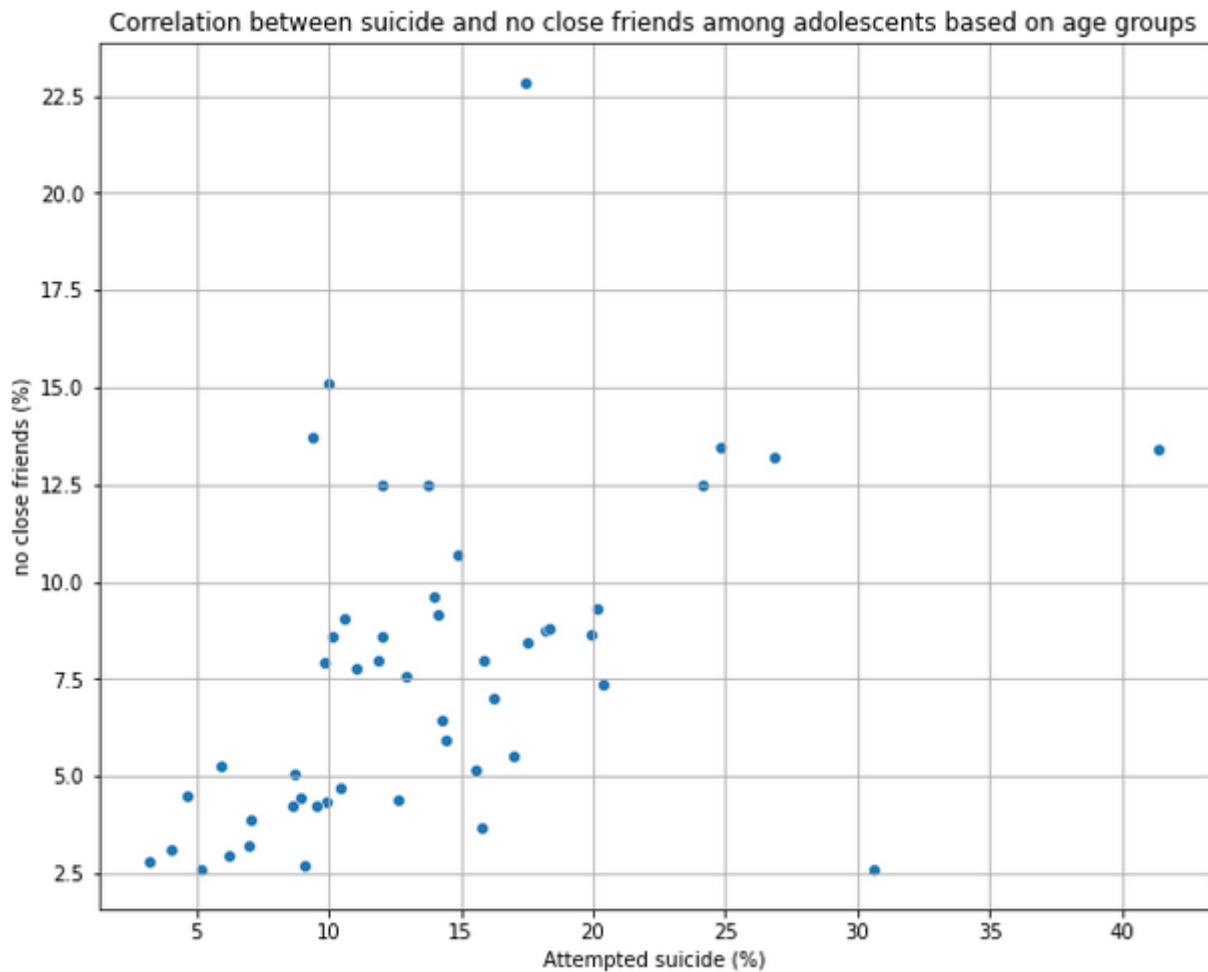Correlation between suicide and seriously hurt among adolescents based on age groups

The reason behind this result could be due to two factors when explaining being hurt: Mental and Physical. In Mental Factors, there are ways to be affected such as parental mental health problems through genes and social environment. These two are the key factors on how adolescents mainly affect their mental health because it helps to change according to their surroundings and the outcome of their life will depend on how they are affected by their environment (Blakemore, 2019). It was stated that Rivzi et al., (2017) results had a higher association with suicidal risks and mental health when people affected with suicidal ideation scored higher on mental pain compared to those without suicidal ideation due to three main experiences: being independent, nobody caring for them and loss of control and power. Whereas, physical is different. They may inflict self-harm since they have a desire to escape from situations that they are unable to escape and would harm themselves since they would not be able to control themselves (Rizvi et al., 2017). Our heatmap also showed fights and bullied had a high association with serious hurt with 67%. This indicates that adolescents who experience physical aggression or bullying are at an increased risk of self-harm or serious hurt which will eventually lead to impacting the adolescent's mental health negativity. Therefore, both mental and physical factors are closely associated with each other contributing to being
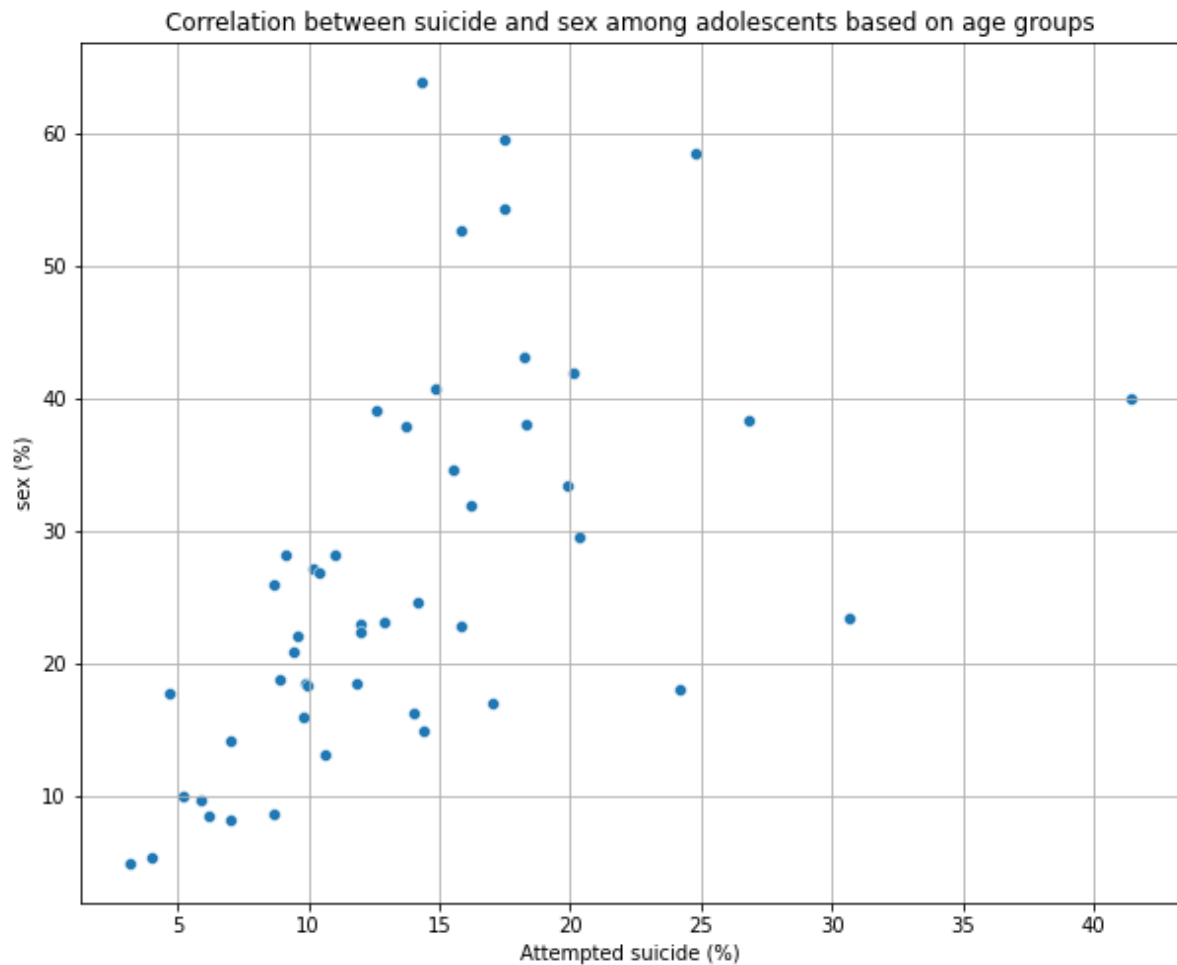
seriously hurt which causes attempted suicide.

5.3 No Close Friends

Correlation between suicide and no close friends among adolescents based on age groups

The reason behind this graph is that suicide victims may not have the emotional support to support them when they feel unhappy or stressed. It was found in research by Miler et al., (2015), that suicidal attempt histories were associated with the lack of close friends which left adolescents feeling isolated and alone. The heatmap result showed a high association between having sexual relations and having no close friends with 41% having been the key factor in replacing the lack of close friends through intimate relations to have a feeling of being loved by someone else. This shows that friends also play an important role in adolescents' lives because it is their social circle with whom they will eventually grow up and make memories. More importantly, even when they make friends, it is a must to make good types of friends as it is stated in the report that exposure to suicidal behaviors or attempts of

their close friends or acquaintances is associated with adolescent suicide behaviors (Liu et al., 2020). This implies when making friends, it is better to be with people who have a good influence, especially during the adolescent period because most of the time spent will be mostly with friends rather than families as they may enter their rebellious years. Thus, through participating in different activities together, friendships are created and new friends are more likely to have a huge effect on the adolescents' behaviours which helps to create their own identity (Maxwell, 2002). Therefore, friends help adolescents build their character and without them, it will still be manageable but difficult to live by as there will be no one to talk to when things get rough and instead turn to suicide for answers.
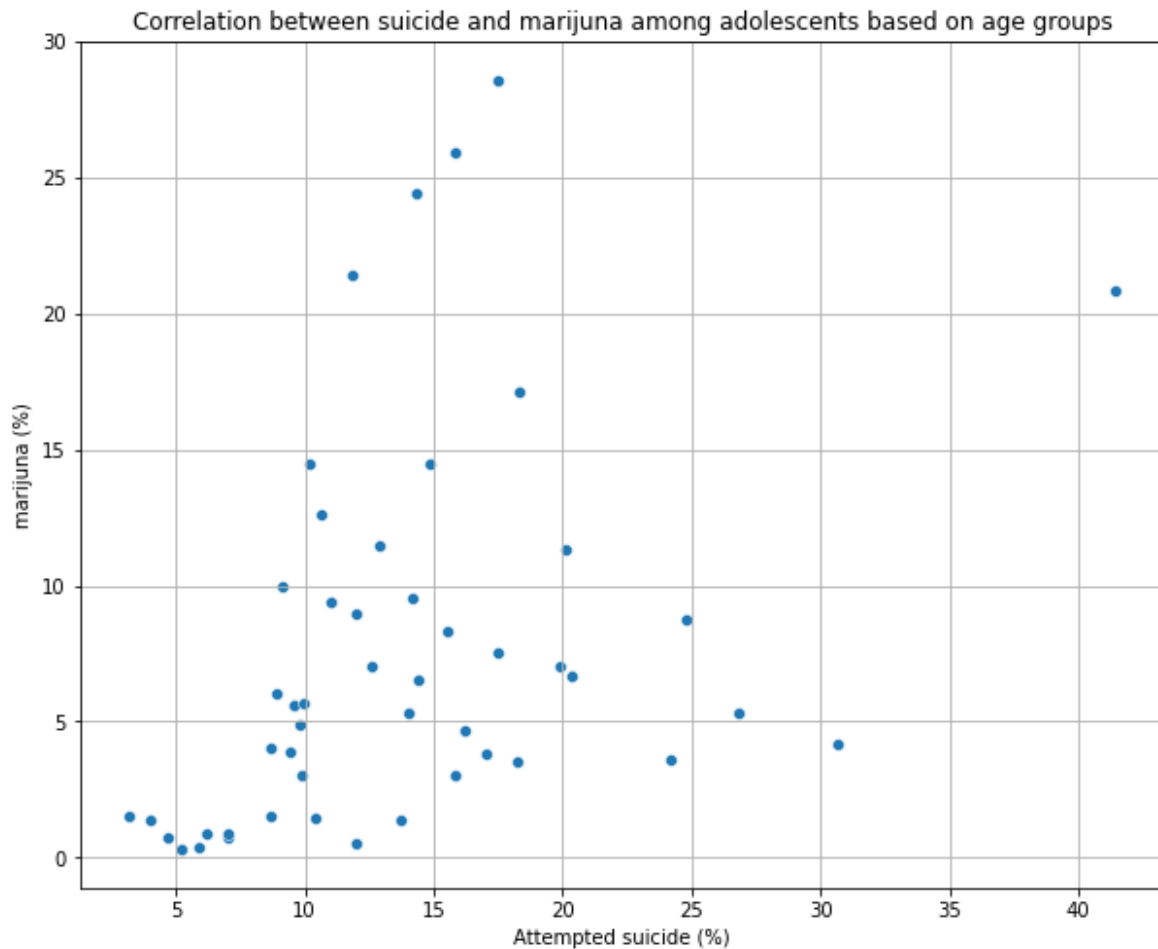
5.4 Sexual Relation

Correlation between suicide and sex among adolescents based on age groups

The reason behind this graph could be influenced by various factors. In sex education, adolescents may have sex without proper sex education which could cause some uncertainties and unwanted pregnancies. It was also supported by Shtarkshall et al., (2007) that ninety percent of parents of middle and high school students believed it was essential for their kids to learn sex education. This would also help them to prevent abortion which could have a huge toll on their mental health especially females since they are at a higher risk for abortions (Steinberg et al., 2014). This heavily emphasizes that sex education will help to eliminate potential dangers causing harm to mental health which may affect adolescents in many ways. Moreover, sexual violence was a possible cause of attempted suicides. It was stated by Mondin et al., (2016) that individuals who have suffered sexual assault are three times more likely to suffer from having suicidal thoughts compared to those who did not suffer. This shows that sexual violence is a serious concern because it will create traumatic experiences for victims and would learn not to trust people easily which causes them to lose hope in the people around them due to fear of having to live through the traumatic experience. This is similar to Brokke et al., (2022) where sexual abuse can be understood as an exposure to frightening situations or physical pain that contributes to the desire to attempt suicide. Therefore, these possible factors could be the reasons why sex could cause attempted suicides.
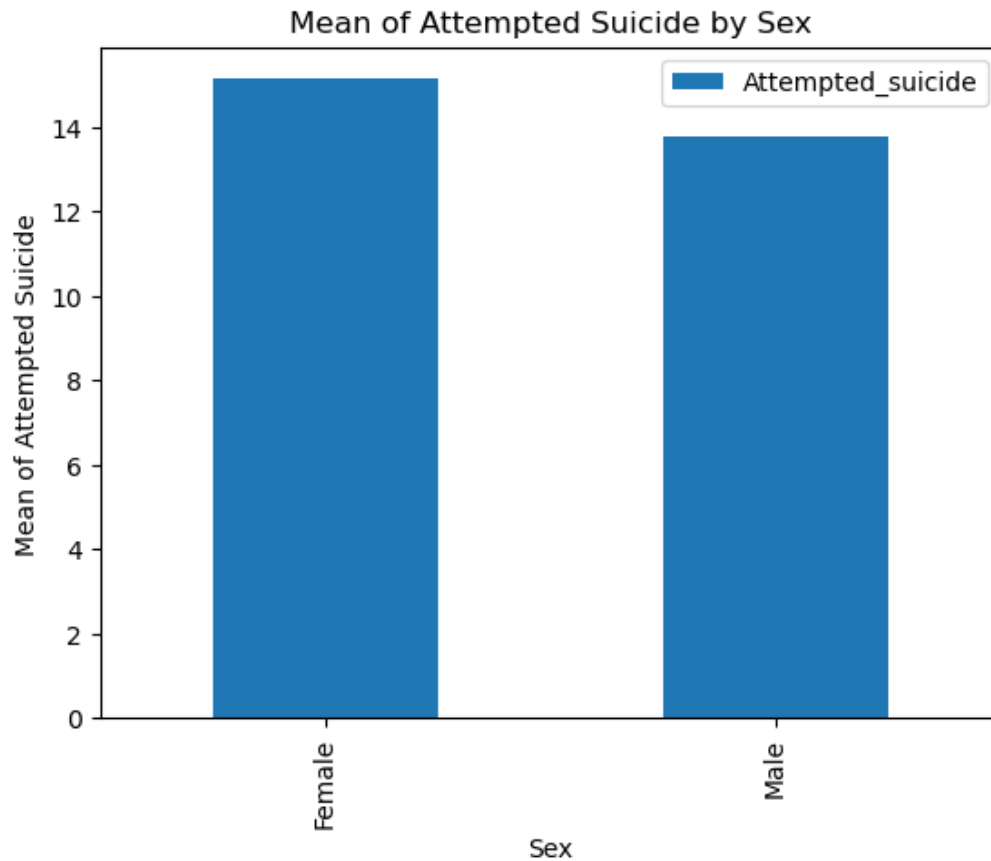
5.5 Use of Marijuana

Correlation between suicide and marijuna among adolescents based on age groups

The reasons behind this could be due to marijuana addiction. It was stated by Flores et al., (2023) that the dropped price of marijuana could play a role in the increasing use among adolescents due to marijuana legalization making it more accessible to adolescents. Moreover, it was also found that frequent usage of marijuana is positively associated with suicidal ideation and depression thoughts (Anderson et al., 2012). This implies that when adolescents use marijuana more frequently, it may hurt their mental health since the more they use it, the higher the risk of them being exposed to suicidal ideations and depression symptoms. Moreover, it can be found from our heatmap showed a strong positive correlation between the three variables and the usage of marijuana: The first is sexual relations with 68% since it could be linked to the effects of sex-related expectancies especially in boys (Willoughy et al.,

2022). The Second is drunk with 60% due to other variables such as unsupervised activities and neighborhood problems that eventually link with each other (Ewing et al., 2015). The last one is smoking currently with 55% where the few common ways related to marijuana are through joints, vape pens, and alcohol. However, as studies have been researched on this particular relationship between marijuana and attempted suicide, there are not many findings that show that usage of marijuana is directly related to attempted suicide instead the sub-variables caused by mental well-being are affected which cause the attempted suicides. Therefore, the direct cause is still unknown but marijuana addiction is the possible assumption that explains the positive correlation with attempted suicide.

5.6 The Gender Factor

Mean of Attempted Suicide by Sex

Previous scholars have mentioned that data on suicidal tendency is also affected by gender (Benny et al., 2023) and this is confirmed in this graph which shows that the mean value of attempted suicide data for females is higher than that of males.

```
print(stats.ttest_ind(a = female_data, b = male_data, equal_var = False))

Ttest_indResult(statistic=0.7420355987556426, pvalue=0.4597972778833258)
```

To further confirm this statement, hypotheses were tested on the suicide indices of males as well as females. The null hypothesis is that the suicide indices of males and females are the same, whereas the alternative hypothesis is that the suicide indices of males and females are different. However, the p-value = 0.4597972778833258, which is greater than 0.05 at a significant level = 0.05, shows that the null hypothesis is not rejected. The result shows that there is no significant difference between male and female suicide indices.

6. Conclusion

This paper analyzed suicide attempts among adolescents to explore their prevalence and associated factors. The available data was examined to gain valuable insights and identify important findings.

The analyses suggest that attempted suicide among adolescents is a pressing issue with significant public health implications. The data indicates that while the suicide trend has decreased in recent years, suicide among this vulnerable group still requires attention. Potential contributors to youth suicide attempts include bullying, severe injuries, peer relationships, sexual behavior, and drug use.

These factors align with existing literature in the field and support the idea that adolescent suicide attempts are complex and influenced by multiple factors. Our study confirms these findings and contributes to a deeper understanding of adolescent mental health and suicide prevention.

The results may affect related disciplines, such as education, sociology, and public policy. Understanding the complex interplay of factors that contribute to adolescent suicide attempts can inform the development of comprehensive interventions and policies that promote adolescent mental health and well-being.

As for the limitations, the analyses relied on existing data sources, which may have inherent biases and limitations. Additionally, the complexity of suicide attempts requires an integrated approach that considers individual, familial, and societal factors. These factors may not have been adequately considered in our analyses.

In conclusion, this study offers valuable insights into the prevalence, factors, and impact of suicide attempts among adolescents. By examining the expected outcomes and their implications for related disciplines, we aim to contribute to addressing this critical public health issue and promoting the well-being of adolescents worldwide.

References

Anderson, D. Mark, Rees, Daniel I., Sabia, Joseph J. (2012). High on life? Medical marijuana laws and suicide, IZA Discussion Papers, No. 6280, Institute for the Study of Labor (IZA), Bonn, https://nbn-resolving.de/urn:nbn:de:101:1-201203064100

Benny, A. H., Aarsha, V. S., Subair, A. S., Nair, A. P., & Thomas, S. (2023). Suicidal Ideation Prediction Using Machine Learning. *2023 International Conference on Circuit Power and Computing Technologies (ICCPCT).* https://doi.org/10.1109/iccpct58313.2023.10245513

Blakemore, S. J. (2019). Adolescence and mental health. *The lancet*, *393*(10185), 2030-2031. https://doi.org/10.1016/S0140-6736(19)31013-X

Brokke, S. S., Bertelsen, T. B., Landrø, N. I., & Haaland, V. Ø. (2022). The effect of sexual abuse and dissociation on suicide attempt. *BMC psychiatry*, *22*, 1-8. https://doi.org/10.1186/s12888-021-03662-9

Crossman, A. (2020, January 6). The Study of Suicide by Emile Durkheim. https://www.thoughtco.com/study-of-suicide-by-emile-durkheim-3026758

Feldstein Ewing, S. W., Filbey, F. M., Loughran, T. A., Chassin, L., & Piquero, A. R. (2015). Which matters most? Demographic, neuropsychological, personality, and situational factors in long-term marijuana and alcohol trajectories for justice-involved male youth. *Psychology of Addictive Behaviors*, *29*(3), 603. https://psycnet.apa.org/doi/10.1037/adb0000076

Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., Edwards, V., ... & Marks, J. S. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The Adverse Childhood Experiences (ACE) Study. *American Journal of Preventive Medicine*, *14*(4), 245-258. https://doi.org/10.1016/S0749-3797(98)00017-8

Flores, M. W., Granados, S., & Cook, B. L. (2023). US trends in the association of suicide ideation/behaviors with marijuana use among adolescents ages 12–17 and differences by gender and race/ethnicity. *Frontiers in psychiatry*, *13*, 1057784. https://doi.org/10.3389/fpsyt.2022.1057784

Klomek, A. B., Marrocco, F., Kleinman, M., Schonfeld, I. S., & Gould, M. S. (2007). Bullying, depression, and suicidality in adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*(1), 40-49. https://doi.org/10.1097/01.chi.0000242237.84925.18

Liu, Z. Z., Wang, Z. Y., Bo, Q. G., Qi, Z. B., Xu, R. J., Jia, C. X., & Liu, X. (2020). Suicidal behaviours among Chinese adolescents exposed to suicide attempt or death. *Epidemiology and psychiatric sciences*, *29*, e12. https://doi.org/10.1017/S2045796018000756

Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth and adolescence*, *31*(4), 267-277. https://doi.org/10.1023/A:1015493316865

Miller, A. B., Esposito-Smythers, C., & Leichtweis, R. N. (2015). Role of social support in adolescent suicidal ideation and suicide attempts. *Journal of Adolescent health*, *56*(3), 286-292. https://doi.org/10.1016/j.jadohealth.2014.10.265

Mondin, T. C., Cardoso, T. D. A., Jansen, K.,

Konradt, C. E., Zaltron, R. F., Behenck, M. D. O., ... & Silva, R. A. D. (2016). Sexual violence, mood disorders and suicide risk: a population-based study. *Ciencia & saude coletiva*, *21*, 853-860. https://doi.org/10.1590/1413-81232015213.10362015

Mueller, A. S., Abrutyn, S., Pescosolido, B., & Diefendorf, S. (2021). The Social Roots of Suicide: Theorizing How the External Social World Matters to Suicide and Suicide Prevention. *Frontiers in psychology, 12,* 621569. https://doi.org/10.3389/fpsyg.2021.621569

Ormel, J., Jeronimus, B. F., Kotov, R., Riese, H., Bos, E. H., Hankin, B., ... & Oldehinkel, A. J. (2004). Neuroticism and common mental disorders: Meaning and utility of a complex relationship. *Clinical Psychology Review*, 24(3), 300-319. https://doi.org/10.1016/j.cpr.2004.03.004

Peyre, H.M. (2023, November 17). *Émile Durkheim French social scientist.* https://www.britannica.com/biography/Emile-Durkheim

Rizvi, S. J., Iskric, A., Calati, R., & Courtet, P. (2017). Psychological and physical pain as predictors of suicide risk: evidence from clinical and neuroimaging findings. *Current opinion in psychiatry*, *30*(2), 159-167. https://doi.org/10.1097/YCO.0000000000000314

Salmivalli, C., Laninga-Wijnen, L., Malamut, S. T., & Garandeau, C. F. (2021). Bullying prevention in adolescence: Solutions and new challenges from the past decade. *Journal of Research on Adolescence*, *31*(4), 1023-1046. https://doi.org/10.1111/jora.12688

Shtarkshall, R. A., Santelli, J. S., & Hirsch, J. S. (2007). Sex education and sexual socialization: Roles for educators and parents. *Perspectives on sexual and reproductive health*, *39*(2), 116-119. https://doi.org/10.1363/3911607

Siennick, S. E., & Picon, M. (2019). Friends' influence on adolescents' first-time use of prescription drugs. *Addictive Behaviors*, 90, 139-145. https://doi.org/10.1016/j.addbeh.2018.10.031

Silva, G. R. R., Lima, M. L. C. D., Acioli, R. M. L., & Barreira, A. K. (2020). Prevalence and factors associated with bullying: differences between the roles of bullies and victims of bullying. *Jornal de pediatria*, *96*, 693-701. https://doi.org/10.1016/j.jped.2019.09.005

Smith, P. K., Mahdavi, J., Carvalho, M., Fisher, S., Russell, S., & Tippett, N. (2008). Cyberbullying: Its nature and impact in secondary school pupils. *Journal of Child Psychology and Psychiatry*, *49*(4), 376-385. https://doi.org/10.1111/j.1469-7610.2007.01846.x

Steinberg, J. R., McCulloch, C. E., & Adler, N. E. (2014). Abortion and mental health: findings from the national comorbidity survey-replication. *Obstetrics and gynecology*, *123*(201), 263. https://doi.org/10.1097/aog.0000000000000306

Willoughby, J. F., Hust, S. J., Li, J., & Couto, L. (2022). Social media, marijuana and sex: An exploratory study of adolescents' intentions to use and college students' use of marijuana. *The Journal of Sex Research*, *59*(1), 85-97. https://doi.org/10.1080/00224499.2020.1827217