



# The Association between Adolescent Marijuana and Alcohol Use, Depression and Exposure to Neighborhood Violence



Adriana Soto Acevedo, Applied Data Analysis, Wesleyan University

## Introduction

- Exposure to violence is associated with an increase in adolescent substance use, although theories on what mechanism cause this relationship and how it may vary among different populations differ (Wright, E. M. et al. 2013)
- Psychological factors such as depression and trauma are closely linked to both substance use and exposure to violence, which suggests they may be confounding variables (Scheidell, J. D. et al. 2018)
- Increase in depressive symptoms in adolescents can lead to higher alcohol and marijuana usage linking psychological well being with substance abuse issues (Rao, U. 2016)

## Research Questions

- Is there a correlation between the amount of substances that adolescents consume and whether they have been exposed to violence in their neighborhoods?
- Does this relationship differ between both marijuana and alcohol use and singular use of these substances and is depression a confounding variable in this relationship?

## Methods

### Sample

- Respondents (n=7045) were drawn from the Adolescent Behaviors and Experiences Survey (ABES) of 2021 conducted by the Center for Disease Control(CDC), nationally representative data on adolescent 9th through 12th grade students in the U.S.

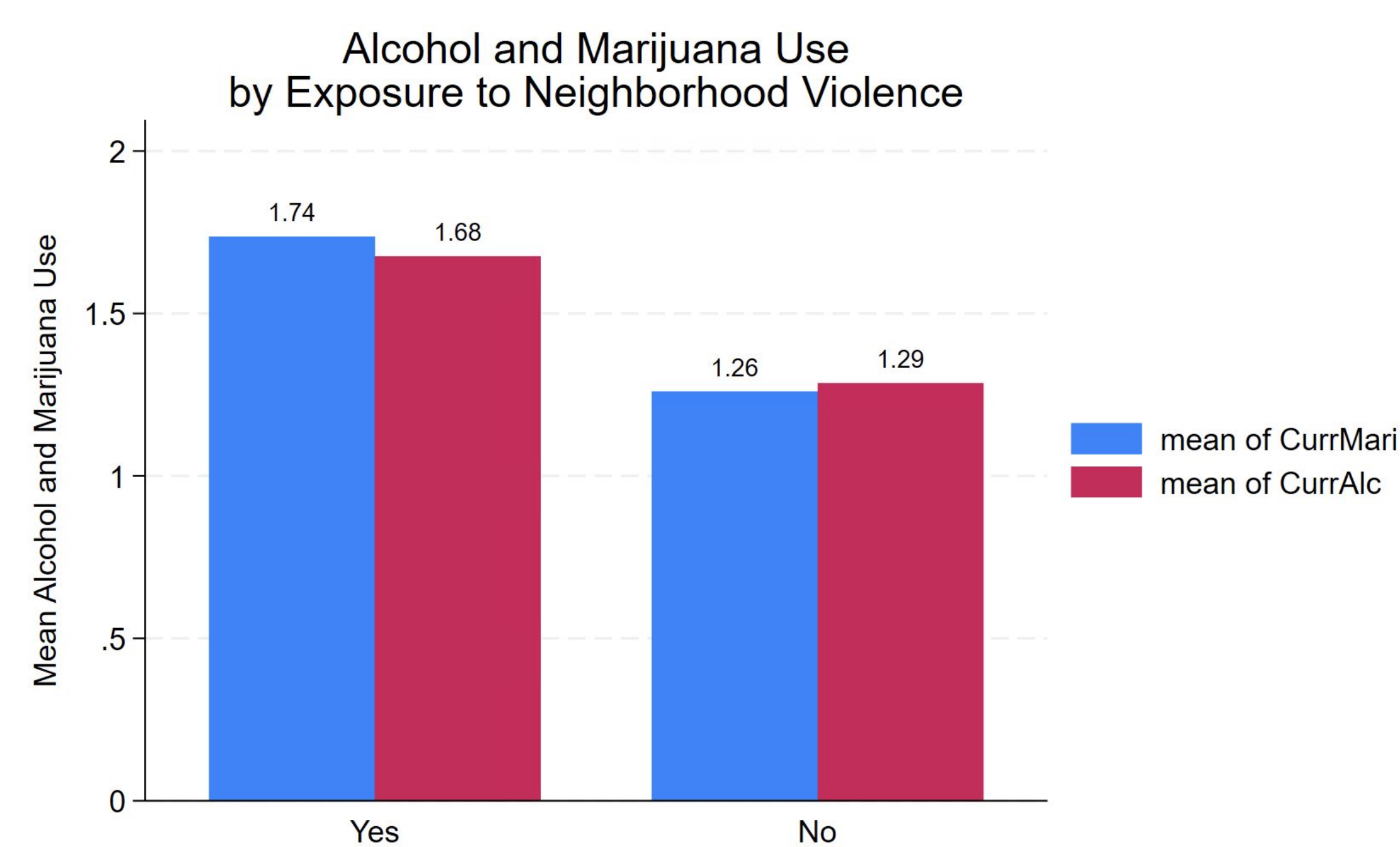
### Measures

- Participants answered whether they had witnessed violence in their neighborhoods and responses were coded dichotomously with 1=Yes and 2=No
- Alcohol use frequency was coded ordinally in terms of the presence or absence of daily alcohol use within 30 days(i.e., 0 days, a short range of days, and all 30 days)
- Marijuana use frequency was coded ordinally in terms of the number of times within the 30 days marijuana was used(i.e., 0 times, a short range of times and 40 times or more)

## Results

### Bivariate

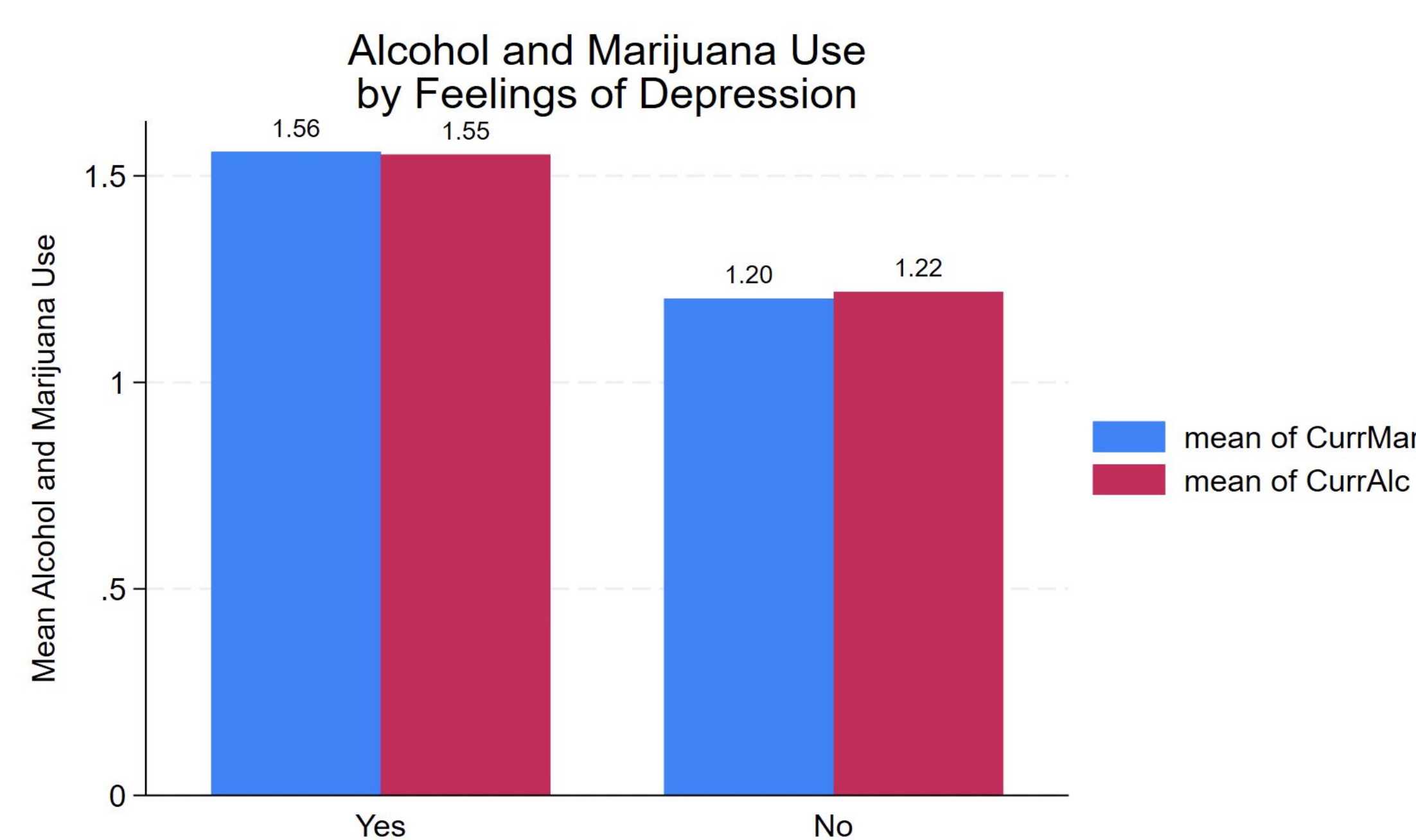
- Chi-Square analysis showed that alcohol use, marijuana use and depressive symptoms were all significantly associated with witnessing neighborhood violence ( $p = .000$ )
- Chi-Square analysis showed that marijuana use and alcohol use are both significantly associated with depressive symptoms ( $p=.000$ )
- Marijuana was more likely to be used when neighborhood violence was witnessed and Alcohol was more likely to be used when not witnessed (see fig.1) The same can be said for depressive symptoms (see fig.2)



**Figure 1: The Mean Use of Marijuana and Alcohol in Respect to Exposure to Violence**

### Multivariate

- A linear regression analysis showed those who have not witnessed violence had lower use of both substances (Beta= -0.416(Marijuana), Beta=-0.331 (Alcohol),  $p<0.001$ )
- A linear regression analysis showed those with no depression had lower use of both substances (Beta= -0.297(Marijuana), Beta= -0.287(Alcohol)  $p<0.001$ )
- The regression model with regards to marijuana use, neighborhood violence and depression showed a low level of variance ( $R^2=0.0540$ )
- The regression model with regards to alcohol use, neighborhood violence and depression showed a low level of variance ( $R^2=0.0530$ )



**Figure 2: The Mean Use of Marijuana and Alcohol in Respect to Depressive Symptoms**

## Discussion

- A lack of neighborhood violence and depression were both associated with lower marijuana and alcohol use in multivariate analysis, which is also present in bivariate
- These findings highlight a complex relationship between mental health and substance abuse in adolescents while also stressing how environmental factors can play a part
- Future research should focus on additional factors that may influence adolescent substance abuse and examine the mechanism that encourage these patterns

## References

- National Institute on Drug Abuse(2024). Trauma and Stress. Retrieved from <https://nida.nih.gov/research-topics/trauma-and-stress>
- Fusco, R. A. (2021). Frequent Marijuana or Alcohol Use in Low-Income Emerging Adults: Impact Adverse Life Experiences. *Substance use & misuse*, 56(5), 711-717. <https://doi.org/10.1080/10826084.2021.1892140>
- Petering, R., Rhoades, H., Winetrobe, H., Dent, D., & Rice, E. (2017). Violence, Trauma, Mental Health, and Substance Use Among Homeless Youth Juggalos. *Child psychiatry and human development*, 48(4), 642-650. <https://doi.org/10.1007/s10578-016-0689-3>
- Meyers, J. L., Sartor, C. E., Werner, K. B., Keonen, K. C., Grant, B. F., & Hasin, D. (2018). Childhood interpersonal violence and adult alcohol, cannabis, and tobacco use disorders: variation by race/ethnicity? *Psychological medicine*, 48(9), 1540-1550. <https://doi.org/10.1017/S0033291717003208>
- Curry, A., Latkin, C., & Davey-Rothwell, M. (2008). Pathways to depression: The impact of neighborhood violence on inner-city residents in Baltimore, Maryland, USA. *Social Science & Medicine* (1982), 67(1), 23-30. <https://doi.org/10.1016/j.socscimed.2008.03.007>
- Rao, U. (2006). Links between depression and substance abuse in adolescents - Neurobiological mechanisms. *American Journal of Preventive Medicine*, 31(6), S161-S174. <https://doi.org/10.1016/j.amepre.2006.07.002>
- Harley, M., Kelleher, I., Clarke, M., Lynch, F., Arseneault, L., Connor, D., Fitzpatrick, C., & Cannon, M. (2010). Cannabis use and childhood trauma interact additively to increase the risk of psychotic symptoms in adolescence. *Psychological medicine*, 40(10), 1627-1634. <https://doi.org/10.1017/S0033291709991966>
- Scheidell, J. D., Quinn, K., McGorray, S. P., Frueth, B. C., Beharie, N. N., Cottler, L. B., & Khan, M. R. (2018). Childhood traumatic experiences and the association with marijuana and cocaine use in adolescence through adulthood. *Addiction (Abingdon, England)*, 113(1), 44-56. <https://doi.org/10.1111/add.13921>
- Petering, R. (2016). Sexual risk, substance use, mental health, and trauma experiences of gang-involved homeless youth. *Journal of Adolescence*, 48, 73-81. <https://doi.org/10.1016/j.adolescence.2016.01.009>
- Santiago, A. M., & Margolis, I. (2025). Neighborhood Violence Exposure and Alcohol and Tobacco Use Initiation Among Ethnic Minority Adolescents. *Healthcare (Basel)*, 13(2), 194. <https://doi.org/10.3390/healthcare13020194>
- Dunn, C. B., & Farrell, A. D. (2023). Patterns of alcohol use among middle school students in rural communities: Associations with community violence exposure. *American journal of community psychology*, 72(1-2), 157-169. <https://doi.org/10.1002/ajcp.12690>
- Wright, E. M., Fagan, A. A., & Pinchevsky, G. M. (2013). The effects of exposure to violence and victimization across life domains on adolescent substance use. *Child abuse & neglect*, 37(11), 899-909. <https://doi.org/10.1016/j.chabu.2013.04.010>
- Vermeiren, R., Schwab-Stone, M., Debutte, D., Leckman, P. E., & Ruchkin, V. (2003). Violence Exposure and Substance Use in Adolescents: Findings From Three Countries. *Pediatrics (Evanston)*, 111(3), 535-540. <https://doi.org/10.1542/peds.111.3.535>