



BOYS TOWN



# Substance Use in Youth and Families

Boys Town conducts research on substance use to inform services for youth and families. The following is a list of key findings from research conducted by Boys Town and its research partners on parental influences related to substance use in youth, protective and risk factors, and the impact of substance use on adolescent brain development. Please see referenced studies for more information.

## PARENTAL INFLUENCE ON YOUTH SUBSTANCE USE

### ➤ Prenatal Alcohol Use

- Alcohol use by parents during their adolescence and the prenatal period was related to adolescents' heavy drinking (Parra et al., 2020).
- Maternal smoking, drinking while pregnant, and paternal heavy alcohol use clustered together as key prenatal risk factors, and these factors co-occur differently for various subgroups of youth (Parra et al., 2018).

### ➤ Parental Stressors & Capabilities

- Reduced perceived stressors and improved parental capabilities play a protective role against substance use (Parra et al., 2016).
- Positive family management practices predicted lower adolescent substance use (Fleming et al., 2016).

### ➤ Child Depressive Phenomena & Antisocial Behavior

- Child depressive phenomena and antisocial behavior partially explained the link between maternal depressed mood and adolescent alcohol and cigarette use (Cortes et al., 2009).

### ➤ Parental Mental Health & Conduct Disorder

- Adolescents whose parents experienced increased depression and conduct disorder symptoms were at higher risk for substance use-related impairment (McCarty et al., 2013).

## YOUTH SUBSTANCE USE PROTECTIVE FACTORS

### ➤ Positive Childhood Experiences

- Positive childhood experiences predicted less adolescent substance use, while substance use was related to less civic involvement, productivity, and responsibility (Kosterman et al., 2011).

### ➤ Delaying Alcohol Initiation

- Emphasize efforts to delay alcohol initiation to prevent problematic alcohol use (Mason, Toumbourou et al., 2011).

### ➤ Religious Involvement

- Religious salience and attendance growth factors were negatively associated with late adolescent substance use (Mason & Spoth, 2011).

### ➤ School Protection

- School is a protective factor related to reduced heavy drinking (Kim et al., 2017).
- School-bonding, academic skills, and school rewards were associated with decreased risk for depression and alcohol use comorbidity in adolescents (Mason, Hawkins et al., 2010).

### ➤ Cognitive Skills

- Flexible shifting was negatively associated with marijuana initiation, while deficits in inhibitory control were positively related to marijuana initiation (Guo et al., 2023).
- Executive control ability was associated with less electronic cigarette use for youth from low-income backgrounds (Mason et al., 2021).

### ➤ Parent Training/Family Intervention

- Parent training reduced substance use in high school indirectly through increased emotion regulation in middle school (Mason et al., 2016).
- Family intervention reduced the frequency of alcohol use among high-risk youth (Mason et al., 2012).

## YOUTH SUBSTANCE USE RISK FACTORS

### ➤ Peer Influence

- Troubled and deviant peer behavior and approval of substance use played a role in substance initiation (Mason, Patwardhan et al., 2017; Mason & Spoth, 2011).
- Exposure to antisocial peers and siblings predicted a higher likelihood of heavy drinking and alcohol harm for students (Kim et al., 2017).

### ➤ Starting Early & Using More

- Early alcohol use predicted a higher level of, and a faster rate of increase in, adolescent drinking, which then predicted young adult alcohol use disorders (Mason, Hitch et al., 2010).

### ➤ Negative Affect & Executive Control Deficits

- Solitary substance use was related to coping motives and negative emotions, and later substance use disorder and diminished health (Fleming et al., 2021; Mason et al., 2020).
- Solitary alcohol and cannabis use were prevalent among American Indian adolescents and might reflect attempts to cope with adversity (Guo et al., 2021).
- Impulsive behaviors predicted earlier onset of alcohol problem drinking (Mason & Spoth, 2012).
- Relational aggression in elementary school mediated executive control in preschool and adolescent substance use (Patwardhan et al., 2023).

### ➤ School & Behavior

- School-related factors such as truancy were associated with substance use (Mason et al., 2013).
- Solitary alcohol and marijuana use were associated with diminished academic performance (Mason et al., 2020).

### ➤ Adverse Childhood Experiences/Trauma

- Child sexual abuse was positively related to adolescent marijuana use, whereas preschool abuse was positively related to adult marijuana use (Mason, Russo et al., 2017).

## IMPACT OF SUBSTANCE USE ON ADOLESCENT BRAIN DEVELOPMENT

### Adolescent Alcohol Use (AAU)

#### ➤ Negative Impact on Learning & Decision-Making

- AAU was related to decreased reward processing (Aloi, Meffert et al., 2019).
- AAU was related to poorer decision-making and response modulation (striatum and regions of prefrontal cortex) when exploring new stimuli (Aloi, Crum et al., 2021).

#### ➤ Increased Emotional Reactivity & Aggression

- AAU was related to increased response to emotional stimuli (i.e., amygdala) and decreased response to executive attention and response control (i.e., dorsolateral prefrontal cortex, anterior cingulate cortex, precuneus) (Aloi et al., 2018).
- AAU was related to exaggerated retaliation response (dorsomedial frontal, anterior insula cortices, caudate) related to reactive aggression (Blair et al., 2021).

### Adolescent Cannabis Use (ACU)

#### ➤ Negative Impact on Learning & Decision-Making

- ACU was associated with reduced responsiveness to future high-intensity events (Aloi, Blair et al., 2021).
- ACU was negatively related to error detection (Aloi, Meffert et al., 2019).
- ACU moderated novelty propensity and reward prediction error (inferior parietal lobule, dorsomedial prefrontal cortex) (Aloi, Crum et al., 2021).

#### ➤ Decreased Empathy & Increased Proactive Aggression

- ACU was related to decreased responding to threatening stimuli (rostral frontal and fusiform gyrus; amygdala) (Blair et al., 2019).
- ACU was negatively related to responses to facial expressions (rostromedial prefrontal cortex; anterior cingulate cortex) involved in social and emotional functioning (Leiker et al., 2019).

## ABOUT BOYS TOWN

Boys Town has been a national leader in the care of children and families since its founding more than 100 years ago by Father Edward Flanagan. As one of the largest nonprofit, nonsectarian child and family care organizations in the country, Boys Town offers a broad spectrum of services through our Continuum of Child and Family Services. We also provide health and medical care through Boys Town National Research Hospital® and other resources; conduct cutting-edge research on child behavior issues; and provide services for children with severe behavioral problems through our Outpatient Behavioral Health programs.

In addition to the Village of Boys Town, Nebraska, our national headquarters, we have a network of sites nationwide that offer life-changing services to children and families.

Each year, Boys Town youth, family, community, and health care programs touch the lives of more than 2 million people across the country.

**Boys Town National Headquarters** | 14100 Crawford Street | Boys Town, Nebraska 68010 | 531-355-1300 | [boystown.org](http://boystown.org)



## References

- Aloi, J., Blair, K. S., Crum, K. I., Meffert, H., White, S. F., Tyler, P. M., Thornton, L. C., Killanin, A. D., Mobley, A. M., Adams, K. O., Filbey, F. M., Pope, K., & Blair, R. J. R. (2018). Adolescents show differential dysfunctions related to Alcohol and Cannabis Use Disorder severity in emotion and executive attention neuro-circuitries. *NeuroImage: Clinical, 19*, 782-792.
- Aloi, J., Blair, K. S., Meffert, H., White, S. F., Hwang, S., Tyler, P. M., Crum, K. I., Thornton, L. C., Mobley, A., Killanin, A. D., Filbey, F. M., Pope, K., & Blair, R. J. R. (2021). Alcohol use disorder and cannabis use disorder symptomatology in adolescents is associated with dysfunction in neural processing of future events. *Addiction Biology, 26*(1), e12885.
- Aloi, J., Crum, K. I., Blair, K. S., Zhang, R., Bashford-Largo, J., Bajaj, S., Schwartz, A., Carollo, E., Hwang, S., Leiker, E., Filbey, F. M., Averbek, B. B., Dobbertin, M., & Blair, R. J. R. (2021). Individual associations of adolescent alcohol use disorder versus cannabis use disorder symptoms in neural prediction error signaling and the response to novelty. *Developmental Cognitive Neuroscience, 48*, 100944.
- Aloi, J., Meffert, H., White, S. F., Hwang, S., Tyler, P. M., Thornton, L. C., Crum, K. I., Adams, K. O., Killanin, A. D., Filbey, F., Pope, K., & Blair, R. J. R. (2019). Differential dysfunctions related to alcohol and cannabis use disorder symptom severity in reward and error-processing neuro-circuitries in adolescents. *Developmental Cognitive Neuroscience, 36*, 100618.
- Blair, R. J. R., Bajaj, S., Sherer, N., Bashford-Largo, J., Zhang, R., Aloi, J., Hammond, C., Lukoff, J., Schwartz, A., Elowsky, J., Tyler, P., Filbey, F. M., Dobbertin, M., & Blair, K. S. (2021). Alcohol use disorder and cannabis use disorder symptomatology in adolescents and aggression: Associations with recruitment of neural regions implicated in retaliation. *Biological Psychiatry: Cognitive Neuroscience and Neuroimaging, 6*(5), 536-544.
- Blair, R. J. R., White, S. F., Tyler, P. M., Johnson, K., Lukoff, J., Thornton, L. C., Leiker, E. K., Filbey, F., Dobbertin, M., & Blair, K. S. (2019). Threat responsiveness as a function of cannabis and alcohol use disorder severity. *Journal of Child and Adolescent Psychopharmacology, 29*(7), 526-534.
- Cortes, R. C., Fleming, C. B., Mason, W. A., & Catalano, R. F. (2009). Risk factors linking maternal depressed mood to growth in adolescent substance use. *Journal of Emotional and Behavioral Disorders, 17*, 49-64.
- Fleming, C. B., Mason, W. A., Stevens, A. L., Jaffe, A. E., Cadigan, J. M., Rhew, I. C., & Lee, C. M. (2021). Antecedents, concurrent correlates, and potential consequences of young adult solitary alcohol use. *Psychology of Addictive Behaviors, 35*, 553-564.
- Fleming, C. B., Mason, W. A., Thompson, R. W., Haggerty, K. P., & Gross, T. J. (2016). Child and parent report of parenting as predictors of substance use and suspensions from school. *Journal of Early Adolescence, 36*(5), 625-645.
- Guo, Y., Fleming, C. B., Patwardhan, I., James, T. D., Nelson, J. M., Espy, K. A., Nelson, T. D., & Mason, W. A. (2023). A comparison of task-based and questionnaire assessments of executive control aspects in relation to adolescent marijuana initiation. *Cannabis, 6*(1), 65-78.
- Guo, Y., Fleming, C. B., Stevens, A. L., Swaim, R. C., & Mason, W. A. (2021). Correlates of solitary alcohol and cannabis use among American Indian adolescents. *Drug and alcohol dependence, 221*, Part A, 109155.
- Kim, M. J., Mason, W. A., Herrenkohl, T. I., Catalano, R. F., Toumbourou, J. W. , & Hemphill, S. A. (2017). Influence of early onset of alcohol use on the development of adolescent alcohol problems: A longitudinal binational study. *Prevention Science, 18*, 1-11.
- Kosterman, R., Mason, W. A., Haggerty, K. P., Hawkins, J. D., Spoth, R., & Redmond, C. (2011). Positive childhood experiences and positive adult functioning: Prosocial continuity and the role of adolescent substance use. *Journal of Adolescent Health, 49*, 180-186.
- Leiker, E. K., Meffert, H., Thornton, L. C., Taylor, B. K., Aloi, J., Abel-Rahim, H., Shah, N., Tyler, P. M., White, S. F., Blair, K. S., Filbey, F., Pope, K., Dobbertin, M., & Blair, R. J. R. (2019). Alcohol use disorder and cannabis use disorder symptomatology in adolescents are differentially related to dysfunction in brain regions supporting face processing. *Psychiatry Research: Neuroimaging, 292*, 62-71.

- Mason, W. A., Chmelka, M. B., Howard, B. K., & Thompson, R. W. (2013). Comorbid alcohol and cannabis use disorders among high-risk youth at intake into residential care. *Journal of Adolescent Health, 53*(3), 350-355.
- Mason, W. A., Haggerty, K. P., Fleming, A. P., & Casey-Goldstein, M. (2012). Family intervention to prevent depression and substance use among adolescents of depressed parents. *Journal of Child and Family Studies, 21*, 891-905.
- Mason, W. A., Hawkins, J. D., Kosterman, R., & Catalano, R. F. (2010). Alcohol use disorders and depression: Protective factors in the development of unique versus comorbid outcomes. *Journal of Child & Adolescent Substance Abuse, 19*(4), 309-323.
- Mason, W. A., Hitch, J. E., Kosterman, R., McCarty, C. A., Herrenkohl, T. I., & Hawkins, J. D. (2010). Growth in adolescent delinquency and alcohol use in relation to young adult crime, alcohol use disorders, and risky sex: A comparison of youth from low- versus middle-income backgrounds. *Journal of Child Psychology and Psychiatry, 51*(12), 1377-1385.
- Mason, W. A., January, S-A. A., Fleming, C. B., Thompson, R. W., Parra, G. R., Haggerty, K. P., & Snyder, J. J. (2016). Parent training to reduce problem behaviors over the transition to high school: Tests of indirect effects through improved emotion regulation skills. *Children and Youth Services Review, 61*, 176-183.
- Mason, W. A., Patwardhan, I., Fleming, C. B., Stevens, A. L., James, T. D., Nelson, J. M., Espy, K. A., & Nelson, T. D. (2021). Associations of childhood executive control with adolescent cigarette and e-cigarette use: Tests of moderation by poverty level. *Addictive Behaviors, 119*, 106923.
- Mason, W. A., Patwardhan, I., Smith, G. L., Chmelka, M. B., Savolainen, J., January, S-A. A., Miettunen, J., & Järvelin, M-R. (2017). Cumulative contextual risk at birth and adolescent substance initiation: Peer mediation tests. *Drug and Alcohol Dependence, 177*, 291-298.
- Mason, W. A., Russo, M. J., Chmelka, M. B., Herrenkohl, R. C., & Herrenkohl, R. C. (2017). Parent and peer pathways linking childhood experiences of abuse with marijuana use in adolescence and adulthood. *Addictive Behaviors, 66*, 70-75.
- Mason, W. A., & Spoth, R. L. (2011). Longitudinal associations of alcohol involvement with subjective well-being in adolescence and prediction to alcohol problems in early adulthood. *Journal of Youth and Adolescence, 40*, 1215-1224.
- Mason, W. A., & Spoth, R. L. (2012). Sequence of alcohol involvement from early onset to young adult alcohol abuse: Differential predictors and moderation by family-focused preventive intervention. *Addiction, 107*, 2137-2148.
- Mason, W. A., Stevens, A. L., & Fleming, C. B. (2020). A systematic review of research on adolescent solitary alcohol and marijuana use in the United States. *Addiction, 115*, 19-31.
- Mason, W. A., Toumbourou, J. W., Herrenkohl, T. I., Hemphill, S. A., Catalano, R. F., & Patton, G. C. (2011). Early age alcohol use and later alcohol problems in adolescents: Individual and peer mediators in a bi-national study. *Psychology of Addictive Behaviors, 25*, 625-633.
- McCarty, C. A., Wymbs, B. T., Mason, W. A., King, K. M., McCauley, E., Baer, J., & Vander Stoep, A. (2013). Early adolescent growth in depression and conduct problem symptoms as predictors of later substance use impairment. *Journal of Abnormal Child Psychology, 41*(7), 1041-1051.
- Parra, G. R., Patwardhan, I., Mason, W. A., Chmelka, M. B., Savolainen, J., Miettunen, J., & Järvelin, M.-R. (2020). Parental alcohol use and the alcohol misuse of their offspring in a Finnish Birth Cohort: Investigation of developmental timing. *Journal of Youth and Adolescence, 49*, 1702-1715.
- Parra, G. R., Ross, J. R., Ringle, J. L., Sampson, N., & Thompson, R. W. (2016). Evaluation of Boys Town In-Home Family Services with families referred by child welfare. *Journal of Evidence-Informed Social Work, 13*, 401-411.
- Parra, G. R., Smith, G., Mason, W. A., Savolainen, J., Chmelka, M. B., Miettunen, J., Järvelin, M.-R., Moilanen, I., & Veijola, J. (2018). Profiles of contextual risk at birth and adolescent substance use. *Journal of Child and Family Studies, 27*(3), 717-724.
- Patwardhan, I., Guo, Y., Hamburger, E. R., Sarwar, S., Fleming, C. B., James, T. D., Nelson, J. M., Espy, K. A., Nelson, T. D., & Mason, W. A. (2023). Childhood executive control and adolescent substance use initiation: The mediating roles of physical and relational aggression and prosocial behavior. *Child Neuropsychology, 29*(2), 235-254.