Decision-Support Tools

PREVENTING YOUTH MARIJUANA USE:

Factors Associated with Use

PREVENTION SOLUTIONS@EDC

EDC Education Development Center

RESOURCE OVERVIEW

Preventing Youth Marijuana Use: Factors Associated with Use provides a summary of research findings on 26 major factors (and 101 sub-factors) associated with marijuana use among youth. Identified factors were distilled from 63 studies. Factors are organized according to the socio-ecological model, a multi-level framework that allows us to consider the different contexts in which risk and protective factors exist. Key findings include the following:

- Fifty of the 63 studies used longitudinal data and analyses to demonstrate that the factors in question preceded youth marijuana use.
- Several studies confined their investigations to specific population groups which affects how we generalize findings to other populations. For example, eight studies were conducted with populations of color and four with emerging adults. Most notably, 13 studies were confined to populations considered high risk or selective, including adolescent children of substance-dependent fathers, youth hospitalized in a psychiatric facility, newly arrested juveniles, and children at risk for conduct disorder.
- Eleven individual-level factors were found to be associated with youth marijuana use, including aggression, attitudes and beliefs (such as those favorable to use), education, fluid gender identity, general delinquency, mental health, physical health, self-regulation, sensation seeking, spirituality or religion, and other substance misuse.
- Thirteen relationship-level factors were found to be associated with youth marijuana use, including discrimination, experiencing violence, family mental health, family routines and rituals, family substance use, foster care placement, friends' deviant behavior, friends' spirituality, friends' substance use, parent or family resources, parental expectations, parental monitoring, and relationship quality.
- Two community-level factors were found to be associated with youth marijuana use—neighborhood and school climate.
- Only one societal-level factor emerged as being associated with youth marijuana use—macroeconomic environment of high unemployment higher than regional average during infancy.

Very few protective factors emerged. The few that did included positive mental health and personality—specifically, positive youth development (defined as youth confidence, competence, connection, character, and caring)—religious participation, family rituals such as family dinners, parental monitoring, close and supportive relationships, and school engagement.

Developed under the Substance Abuse and Mental Health Services Administration's Center for the Application of Prevention Technologies task order. Reference #HHSS283201200024I/HHSS28342002T. Updated October 2017.

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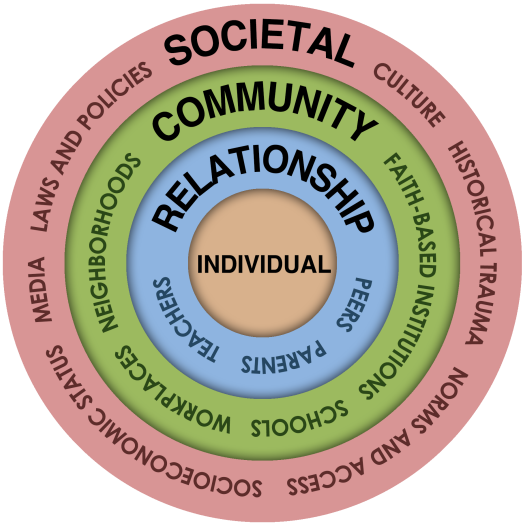
INTRODUCTION

This document provides a summary of research findings on factors associated with marijuana use among youth. Understanding those factors associated with marijuana misuse helps prevention planners know how to assess, plan for, and select interventions designed to address them.

These factors included in this tool have been organized according to the **socio-ecological model**, a multi-level framework that allows us to consider the different contexts and settings in which factors exist, and with which a person interacts. The model is based on the premise that we are influenced not only by traits specific to us or what we think and believe, but by our relationships with others, the institutions and communities to which we belong, and the broader society in which those institutions are embedded.



The four levels of the socio-ecological model include:[1,2,3]

- **Individual Level:** Includes factors specific to the individual, such as age, education, income, health, and psychosocial problems, which may correspond with substance use and misuse.
- **Relationship Level:** Includes an individual's closest social circle—family members, peers, teachers, and other close relationships—that contribute to their range of experience and may influence their behavior.
- **Community Level:** Includes the settings in which social relationships occur, such as schools, workplaces, and neighborhoods. These factors can have both negative and positive associations with substance use and misuse.
- **Societal Level:** Includes broad societal factors, such as social and cultural norms. Other significant factors operating at this level include the health, economic, educational, and social policies that contribute to economic and/or social inequalities between populations.

[1] The Centers for Disease Control and Prevention. The social-ecological model: A framework for prevention. Available online: http://www.cdc.gov/violenceprevention/overview/social-ecologicalmodel.html

[2] The World Health Organization. The ecological framework. Available online: http://www.who.int/violenceprevention/approach/ecology/en/

[3] Domains and sub-domains of the socio-ecological model often overlap or are nested within each other. For example, bulling is an individual-level risk factor that falls under the interpersonal behavior sub-domain however, bullying in a school setting could also be considered a community-level risk factor, that falls under the school sub-domain.

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Factors that influence future behavior are often categorized as either risk or protective factors. Here, a *protective factor* is a characteristic operating at the individual, relationship, community, or societal level that is associated with a lower likelihood of youth marijuana use or that reduces the negative impact of a risk factor on use. Conversely, a *risk factor* is a characteristic at each level of the socio-ecological model that precedes and is associated with a higher likelihood of youth marijuana use.[4]

RELATED TOOLS

Other CAPT tools that support the prevention of youth marijuana use, and which we suggest reviewing in addition to this tool, include:

- ***Preventing Youth Marijuana Use: Programs and Strategies***, which presents detailed descriptions of substance misuse prevention strategies and associated interventions that have been evaluated to determine their effects on youth marijuana use.
- ***Preventing Youth Marijuana Use: Data Resources***, which offers a comprehensive listing of available data resources and surveys developed by and for a range of federal agencies and that collect data on marijuana use and its consequences.
- ***Preventing Youth Marijuana Use: National Survey Measures***, which provides information on how national surveys measure youth marijuana use, as well as factors and consequences associated with such use.

THE FINE PRINT: SEARCH METHODS AND INCLUSION CRITERIA

We conducted a thorough search of the academic literature to identify those factors that protect against or increase the risk for marijuana use during adolescence or emerging adulthood. Searches were conducted in EBSCO databases, including PsychInfo, Medline, PsychArticles, and SocIndex, for studies published between 2006 and 2016 using these keywords:

- **Factor**: Risk, "Risk factor*", Protect*, "Protective factor*", "Contributing factor*", Influence, Associat*, Correlat*, Moderat*, Mediat*
- **Age**: Child*, Adolescen*, Youth, Teen*, "Emerging adult*"
- **Substance**: Marijuana, Cannabis, Hashish, Weed, Pot, THC
- **Use**: Misuse, Abuse, Addict*
- **Precede**: Longitudinal, Panel, "Time series", trend, "cohort stud*", prospective

[4] National Research Council & Institute of Medicine. (2009). Using a developmental framework to guide prevention and promotion. In: Preventing mental, emotional, and behavioral disorders among young people: Progress and possibilities (pp. 71–112). Washington, DC: National Academies Press.

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Our criteria for inclusion included:

- The study was published in a peer-reviewed journal.
- The full text was available.
- Individual studies included clearly articulated methods for establishing associations between specific risk or protective factors and marijuana use/abuse.
- At least one of the main outcomes (dependent variables) assessed was specifically related to marijuana use/abuse. Studies focused on the consequences of marijuana use/abuse were excluded.
- Outcomes were measured during adolescence or young adulthood.

USING THIS RESOURCE TO GUIDE PREVENTION PRACTICE

Although there are several ways to approach and use these tables, the following are suggested steps or guidelines:

- **Start with a needs assessment**. It's important to examine local quantitative and qualitative data to identify the risk and protective factors that drive youth marijuana use in your community, as these factors may differ from those factors that drive use in another community. For example, high school students in your community may have low perceptions of the risks associated with youth marijuana use, while a more salient factor for another community may be easy access to the drug.
- **Once you have identified local risk and protective factors, use the matrix to determine which of those factors are addressed in the literature.** Targeting factors supported by evidence-based research will increase the likelihood that the strategies you select will prevent youth marijuana use in your community. Note that the risk and protective factors in your needs assessment may be labeled differently from what is in the table. The labels used in the matrix reflect the language used in the related articles.
- **Once you have determined that your identified risk or protective factor is addressed in the literature, learn more**. Read the research article(s) included in the matrix, under 'citation,' to explore the population and setting for the study. Assess the degree to which it is similar to, or different from, your focus population and setting. The article will also provide detailed information on the study design, including the instrument and time frame, outcomes measured, key findings, and study limitations. This information will help you assess the strength of the findings and the degree to which they support the risk or protective factor(s) in which you are interested.

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A FEW CAUTIONARY NOTES REGARDING USE

Please use prudence when interpreting information included in this table for three main reasons:

1. **The findings are limited to the time frame, libraries, and search parameters described above.** Expanding the time frame or examining risk and protective factors associated with other substances may uncover additional or conflicting factors. For example, many studies establishing a link between acculturation and marijuana use were published prior to 2006. Since these publications are outside the established time frame, the prevalence of acculturation as a risk factor would not be represented in this review.
2. **Our review did not focus on the quality or type of research methods employed.** For example, we included studies using cross-sectional (rather than longitudinal) data and analyses, which does not allow us to determine whether the risk or protective factors preceded marijuana use, marijuana use preceded the risk or protective factor, or the two co-occurred.
3. **With the exception of systematic literature reviews and meta-analyses, we do not feature studies demonstrating insignificant or negative findings related to the risk or protective factors featured here.** It is possible that for every study demonstrating a positive finding on any given factor, there is a study showing no findings—suggesting that the relationship between the contributing or associated factor and the outcome is inconclusive. For this reason, you may want to consider only those risk or protective factors supported by two or more studies.

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INDIVIDUAL-LEVEL FACTORS
How to read this table: *"Factor* increases the *Risk* for OR *Protects* against *Outcome(s)* among *Study Population*."*

INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Aggression					
Aggression		Adolescent substance use	African American students in Southside Chicago	L	Doherty et al., 2012
Relational aggression *(for females)*		Marijuana use (and cigarette use)	High school students in southern California	L	Skara et al., 2008
High levels of aggressive/ disruptive behavior		Marijuana exposure opportunities and marijuana use	African-American urban middle-school students	L	Reboussin, Hubbard, & Ialongo, 2007
Hostility		Early onset of marijuana use	Adolescent children of substance-dependent fathers	L	Ohannessian & Hesselbrock, 2009
Exhibiting externalizing behavior		Transition from no marijuana involvement to being offered marijuana at high school entry	African America youth from low-income, urban living families	L	Reboussin, Ialongo, & Green, 2015

[5] C = Cross-sectional analysis in which outcome and risk/protective factors were assessed at the same point in time. L = Longitudinal analysis in which risk/protective factors and outcomes may be assessed at multiple points to examine change over time in both risk/protective factors and outcomes or to determine whether risk/protective factors precede outcomes.

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INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Exhibiting externalizing behavior (cont.)		Advance from no marijuana involvement to marijuana use and marijuana problems between 7th and 8th grades			
Childhood bullying (at 5th grade)		Marijuana use at 21 years old	Public elementary school students from the Pacific Northwestern region	L	Min Jung et al., 2011
Perpetrator of violence at the age of 18 years old		Risk of marijuana use at 19 years old	Mexican- and European-American youth	L	Brady et al., 2008
Attitudes & Beliefs					
Having non-normative attitudes		Developing cannabis use disorder	Oldest son of a family	L	Tarter et al., 2011
Beliefs about the positive consequences of substance use at baseline		30-day and lifetime marijuana use	Middle school students	L	Clark, Ringwalt, & Shamblen, 2011
Having a preference for evening activities		Marijuana use	Adolescent girls	C	Negriff et al., 2011
Perceived rejection response upon disclosure of sexual orientation (e.g. lesbian, gay, or bisexual)		Marijuana use	Lesbian, gay, and bisexual adolescents ages 14 to 21 years old	C	Rosario, Schrimshaw, & Hunter, 2009

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INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Education					
	Academic achievement	Odds of lifetime marijuana use	Full sample: Racially and ethnically diverse adolescents Subsample: Asian American adolescents	C	Thai, Connell, & Tebes, 2010
Poor academic performance (among white students)		Marijuana use	Black and non-Hispanic white high school students	C	Respress, Small, & Francis, 2013
Having academic and attention/concentration problems		Transition from no marijuana involvement to marijuana use and marijuana problems between 7th and 8th grades Transition from being offered marijuana to marijuana use and marijuana problems between 8th and 9th grades	African America youth from low-income, urban living families	L	Reboussin, Ialongo, & Green, 2015
Truancy		Higher odds of marijuana initiation compared to non-truants	Youth from households in high-risk neighborhoods in Denver, CO	L	Henry & Huizinga, 2007
Dropping out of high school		Moderate cannabis use	Elementary school students from suburban MN	L	Lee, Winters, & Wall, 2010
Attending a continuation high school		Marijuana use (and cigarette use)	High school students in southern CA	L	Skara et al., 2008

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INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Fluid Identity					
Mobility in sexual orientation identity		Marijuana use in past year	Children of female registered nurses	L	Ott et al., 2013
General Delinquency					
Delinquency		Lifetime and current marijuana use	Community youth sample	C	Fettes, Aarons, & Green, 2013
			Child welfare sample		
Inclination to exhibit deviant behavior (delinquency)		Marijuana use	Boys	L	Tarter et al., 2006
Exhibiting delinquent behavior at 17 years of age		Odds of marijuana use at 18 years old	Youth in out-of-home care in Los Angeles county, CA	L	Shpiegel, Lister, & Isralowitz, 2016
Delinquent behavior exhibited at 9 months post psychiatric hospitalization		Marijuana use at 18 months post psychiatric hospitalization	Youth hospitalized in a psychiatric facility	L	Becker et al., 2012
Level of seriousness of arrest charge		Testing positive for marijuana use	Newly arrested juveniles ages 12 years and older living in FL	C	Childs et al., 2011
Mental Health & Personality					
	Positive youth development[6]	Odds of marijuana use initiation (for girls not boys)	Nationally representative adolescent students	L	Schwartz et al., 2010
	Having feelings of guilt	Early onset of marijuana use	Adolescent children of substance-dependent fathers	L	Ohannessian, & Hesselbrock, 2009

[6] Positive youth development was assessed as youth confidence, competence, connection, character, and caring.

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Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Shyness		Adolescent substance use	African American students in Southside Chicago, IL	L	Doherty et al., 2012
Social anxiety disorder		Odds of developing cannabis and alcohol dependence	High school students in Western Oregon	L	Buckner et al., 2008
Post-Traumatic Stress Disorder (PTSD)		Cannabis use disorder	Youth	L	Cornelius et al., 2010
Depression		Odds of marijuana use	Female college students in the southeastern US region	L	Chu, 2012
Poor emotional health/depression		Current marijuana use	Community youth ages 12–14	C	Fettes, Aarons, & Green, 2013
Negative affect (level of depression, sadness, and loneliness)		Odds of marijuana initiation	Nationally representative adolescent students	L	Stogner & Gibson, 2011
Having depressive symptoms *(for males)*		Marijuana use	African America adolescents living in a Midwestern city	L	Repetto, Zimmerman, & Caldwell, 2008
Higher baseline levels of depressed mood (for those with positive beliefs about the consequences of substance use)		Lifetime marijuana use	Middle school students	L	Clark, Ringwalt, & Shamblen, 2011
Having an undercontrolled ego personality profile[7]		Cannabis abuse	Adolescent participants of a summer camp research program	L	Oshri, Rogosch, & Cicchetti, 2013
Slow decline in impulsivity		Marijuana use	Youth	L	Quinn & Harden, 2013

[7] This personality type is characterized by low agreeableness and conscientiousness.

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INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Physical Health					
General strain[8]		Odds of marijuana initiation	Nationally representative adolescent students	L	Stogner & Gibson, 2011
Prenatal cocaine exposure		Marijuana initiation	Adolescents	L	Richardson et al., 2013
Sleep problems during childhood (ages 3–8 years old)		Onset of marijuana use during adolescence in boys	Caucasian-American children	L	Wong, Brower, & Zucker, 2009
Having insomnia during adolescence		Cannabis use and mental health problems (e.g. depression and suicidality)	Nationally representative sample of adolescents	L	Roane & Taylor, 2008
Early perceived pubertal timing		Risk of recent *(past 3 months)* use of marijuana, cigarettes, and alcohol	Youth from rural NC	L	Cance et al., 2013
Self-Regulation					
Past year conduct disorder		Marijuana use initiation	Boys enrolled in Pittsburgh, PA public schools	L	Cerdá et al., 2013
Cumulative conduct disorder from ages 0–2 years old					
Early conduct problems		Early marijuana use	First-year college students ages 17 to 19 years old	C	Falls et al., 2011
Behavioral dysregulation		Marijuana use			

[8] Here, general strain is defined as one's perceived: failure to achieve positively valued goals; loss of positively valued inspirations; and aggravations or hassles (Agnew, 1992)

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Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Exhibiting childhood conduct problems in kindergarten		Marijuana use	Community-based sample of children at high risk for conduct disorder	L	Wu et al., 2010
Conduct problems in 8th grade		High school marijuana use	Urban youth in Baltimore, MD	L	Lynne-Landsman, Bradshaw, & Ialongo, 2010
Transmissible intergenerational risk for substance use disorder (SUD) in childhood[9]		Age at time of first cannabis use	Adolescents with biological fathers with substance use disorder	L	Kirisci et al., 2013
Cannabis use (among those with transmissible SUD risk during childhood)		Development of cannabis use disorder	Adolescents and young men	L	Kirisci et al., 2013
Sensation Seeking					
Sensation seeking		Cannabis dependence	Freshman college students at a public university in the mid-Atlantic region	C	Kaynak et al., 2013
High levels of sensation seeking		Marijuana use	Youth ages 12–18 years old living in a non-institution residential housing unit	C	Martins et al., 2008
Spirituality/Religion					
	Importance of religion	Cannabis dependence	Freshman college students at a public university in the mid-Atlantic region	C	Kaynak et al., 2013

[9] Indicative of biopsychological self-regulation and includes externalizing behaviors as well as, for example, self-harm, poor sleep, irregular appetite, adapting to new situations.

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Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
	Religiosity (participation and importance)	Odds of marijuana use	Female college students in the southeastern US region	L	Chu, 2012
	Religiosity (heterosexual youth only)	Marijuana use	Community youth sample	L	Rostosky, Danner, & Riggle, 2007
	Religious involvement	Marijuana use initiation and persistence	Adolescents	L	Ulmer et al., 2012
Irregular or no religious participation		Lifetime marijuana use	Students at colleges and universities in the Southern US region	L	Suerken et al., 2014
Irregular or non-participation in religious groups		Marijuana use	First-year college students ages 17 to 19 years old	C	Falls et al., 2011
Substance Use Behavior					
Early onset of cannabis use		Cannabis dependence or abuse	Youth	L	Behrendt et al., 2009
Cannabis use onset in late adolescence		Rapid transition to cannabis abuse			
Relatively young age at time of first cannabis use		Development of cannabis use disorder	Adolescents	L	Kirisci et al., 2013
Relatively young age at time of first alcohol use					
Early age of cannabis use initiation		Moderate cannabis use	Elementary school students from suburban areas	L	Lee, Winters, & Wall, 2010
Use of other illicit drugs					
Marijuana use at baseline		Marijuana use 7 years post study baseline	Adolescent girls who placed in out-of-home care due to delinquency	L	Leve, Kerr, & Harold, 2013

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INDIVIDUAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Marijuana use during adolescence		Marijuana substance use disorder in young adulthood	Pairs of adolescent twins in CO	L	Palmer et al., 2009
Adolescent's lifetime use of marijuana		Current (30-day) marijuana use	Youth who were involved in Child Protective Services as children	L	Cheng & Lo, 2011
High school cannabis use		Cannabis dependence	Freshman college students at a public university in the mid-Atlantic region	C	Kaynak et al., 2013
Adolescent substance use		Young adult substance use	African American students in Southside Chicago, IL	L	Doherty et al., 2012
Current substance use *(cigarette, hookah, and alcohol)*		Lifetime marijuana use at college entry	Students at colleges and universities in the Southern US region	L	Suerken et al., 2014
Lifetime illicit substance use					
Current alcohol and cigarette use		Marijuana initiation during freshman year			
Tobacco use during adolescence		Marijuana use during early adulthood	Middle school students from the Pacific Northwest region	L	Van Ryzin, Fosco, & Dishion, 2012
Alcohol use during early adulthood					

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Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design[5]**	**Citation**
Using marijuana for social/recreational reasons (to have good time with friends, to get high, and because of boredom)	Using for experimental reasons	Frequency of marijuana use at age 18	Students who were high school seniors between 1976 and 1990	L	Patrick et al., 2011
Using to cope with negative affect (to relax, get away from problems, and due to anger/frustration)					
Using for compulsive reasons (to get through the day and because of being hooked)					
Using for drug effect (seek insight and to increase or decrease the effect of concurrent substance)					

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RELATIONSHIP-LEVEL FACTORS

How to read this table: *"Factor* increases the *Risk* for OR *Protects* against *Outcome(s)* among *Study Population*."

RELATIONSHIP-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
Experiencing Discrimination					
Teacher discrimination		Marijuana use	Black and non-Hispanic white high school students	C	Respress, Small, & Francis, 2013
Experiencing Violence					
Victim of peer violence at the age of 18 years old		Risk of marijuana use at 19 years old	Mexican- and European-American youth	L	Brady et al., 2008
Victim of sexual abuse by peers or adults Victimization by caregiver		Odds of marijuana use at 18 years old	Youth in out-of-home care in Los Angeles county	L	Shpiegel, Lister, & Isralowitz, 2016
Being a victim of child abuse		Marijuana use	Adolescents in Chicago, IL	L	Wright, Fagan, & Pinchevsky, 2013
Victim of childhood and adolescent sexual abuse		Odds of marijuana use	Female college students in the southeastern US region	L	Chu, 2012
Family Mental Health					
Having a sibling with schizophrenia		Risk of developing cannabis use disorder	Adolescents and young adults (ages 14 to 30 years old) with DSM-IV schizophrenia and their siblings (and control group)	C	Smith et al., 2008

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RELATIONSHIP-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
Having a father diagnosed with antisocial personality disorder		Early onset of marijuana use	Adolescent children of substance-dependent fathers	L	Ohannessian & Hesselbrock, 2009
Family Routines/Rituals					
	Frequent family meals (for females)	Marijuana, alcohol, and cigarette use	Middle school students living in metropolitan Twin Cities, MN	L	Eisenberg et al., 2008
	Family dinners	30-day marijuana use	Nationally representative sample of adolescents ages 12–14 years old	C	Hoffmann & Warnick, 2013
Less adequate home environment[10]		Marijuana initiation	Adolescents	L	Richardson et al., 2013
Family Substance Use					
Family history of alcohol problems		Marijuana initiation	Adolescents	L	Richardson et al., 2013
Parental marijuana use disorder symptomatology		Development of Marijuana use disorder during adolescence	Male children of fathers with drunk-driving records and alcoholism	L	Buu et al., 2009
Parental nicotine dependence					
Parent with substance use disorder (non-adopted youth)		Cannabis use disorder	Adopted and non-adopted youth and their respective families in MN	C	Marmorstein, Iacono, & McGue, 2012

[10] Home environment was assessed, for example, based on availability of reading materials, frequency of television viewing, and types of discipline tactics.

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RELATIONSHIP-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
Foster Care Placement					
Legal emancipation from foster care by 18 years old		Odds of marijuana use at 18 years old	Youth in out-of-home care in Los Angeles county, CA	L	Shpiegel, Lister, & Isralowitz, R. 2016
Friends' Deviant Behavior					
Affiliation with deviant peers in middle school		Marijuana exposure opportunities and marijuana use	African-American urban middle school students	L	Reboussin, Hubbard, & Ialongo, 2007
Associating with deviant peers during early and/or late adolescence		Marijuana use at age 17	Middle school students from the Pacific Northwest region	L	Van Ryzin, Fosco, & Dishion, 2012
Friends' Spirituality					
	Friends' born-again Christian identity	Odds of marijuana initiation	Youth	L	Adamczyk & Palmer, 2008
Friends' Substance Use					
Affiliation with substance-using friend in 7th grade		High school marijuana use	Urban youth in Baltimore, MD	L	Lynne-Landsman, Bradshaw, & Ialongo, 2010
Drug use of close friends		Marijuana use	Youth ages 12–18 years old living in a residential housing unit	C	Martins et al., 2008
Peer substance use		Odds of lifetime marijuana use	Subsample: Asian American adolescents	C	Thai, Connell, & Tebes, 2010
Parent/Family Resources					
Lower family socioeconomic status during childhood		Development of marijuana use disorder during adolescence	Male children of fathers with drunk-driving records and alcoholism	L	Buu et al., 2009

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RELATIONSHIP-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
	Two-parent household (*may be indicative of resources available for parenting)*	Lifetime and current marijuana use	Community youth sample derived from the National Longitudinal Study of Adolescent Health (Add Health)	C	Fettes, Aarons, & Green, 2013
	Higher parental education	Marijuana abstention	Urban youth in Baltimore, MD	L	Lynne-Landsman, Bradshaw, & Ialongo, 2010
Low parental education attainment (among black students)		Marijuana use	Black and non-Hispanic white high school students	C	Respress, Small, & Francis, 2013
Parental Expectations					
U. S. acculturation gap between Hispanic parents and children[11]		Marijuana use	Hispanic/Latino high school students in Los Angeles	L	Unger et al., 2009
Parental Monitoring					
Low parental monitoring		Marijuana use	Youth ages 12–18 years old living in a residential housing unit	C	Martins et al., 2008
	Parental monitoring	Current (30-day) marijuana use	Youth who were involved in Child Protective Services as children	L	Cheng & Lo, 2011
	Parental monitoring during early adolescence *(assessed at age 11)*	Likelihood of cannabis smoking initiation	Children born between 1983 and 1985 in MI	L	Bohnert, Anthony, & Breslau, 2012
	Parental monitoring (during early adolescence)	Marijuana use (during early adolescence)	Middle school students from the Pacific Northwest region	L	Van Ryzin, Fosco, & Dishion, 2012

[11] Children are more involved in U. S. culture than their parents.

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RELATIONSHIP-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
	High levels of parent monitoring (effect decreases through middle school years)	Marijuana use and problems	African-American urban middle school students	L	Reboussin, Hubbard, & Ialongo, 2007
	Parental knowledge of child's activities	Odds of marijuana use	African American adolescents	L	Tebes et al., 2011
Relationship Quality					
	Closeness to parent	Current (30-day) marijuana use	Youth who were involved in Child Protective Services as children	L	Cheng & Lo, 2011
	Parental closeness	Current marijuana use	Child welfare sample derived from the National Survey of Child and Adolescent Well-Being (NSCAW)	C	Fettes, Aarons, & Green, 2013
	Quality family relationship (in early adolescence)	Marijuana use at ages 15 and 17	Middle school students from the Pacific Northwest region	L	Van Ryzin, Fosco, & Dishion, 2012
	Being married or in a romantic relationship *(both cohabitating and non-cohabitating)*	Marijuana use as an emerging adult (~ 19 and 20 years old)	Students enrolled in public elementary schools in the Pacific Northwestern region	L	Fleming, White, & Catalano, 2010
	Romantic relationship quality				

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COMMUNITY-LEVEL FACTORS

How to read this table: *"Factor* increases the *Risk* for OR *Protects* against *Outcome(s)* among *Study Population*."

COMMUNITY-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
Neighborhood					
Neighborhood residential instability		Development of marijuana use disorder during adolescence	Male children of fathers with drunk-driving records and alcoholism	L	Buu et al., 2009
High levels of neighborhood disadvantage (effect decreases through middle school years)		Marijuana use and problems	African-American urban middle school students	L	Reboussin, Hubbard, & Ialongo, 2007
Living in a neighborhood with a high unemployment rate		Marijuana use initiation	Adolescents	L	Tucker et al., 2013
Neighborhood drug availability		Marijuana use disorder	Boys	L	Tarter et al., 2006
Exposure to community violence		Marijuana use	Adolescents in Chicago, IL	L	Wright, Fagan, & Pinchevsky, 2013
Cumulative exposure to violence					
Exposure to violence		Marijuana initiation	Adolescents	L	Richardson et al., 2013

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COMMUNITY-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
School					
School-level permissive normative climate		Marijuana use	Adolescent students in Nebraska	C	Thrash & Warner, 2016
Heterogeneous school-level normative climate					
Attending school located in (or adjacent to) an urban geographic location					
Living on campus		Marijuana initiation	Students at colleges and universities in the Southern US region	L	Suerken et al., 2014
	Recipient of out-of-home services	Current (30-day) marijuana use	Youth who were involved in Child Protective Services as children	L	Cheng & Lo, 2011
	Engagement with school environment				

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SOCIETAL-LEVEL FACTORS
How to read this table: *"Factor* increases the *Risk* for OR *Protects* against *Outcome(s)* among *Study Population*."*

SOCIETAL-LEVEL FACTORS					
Risk Factor	**Protective Factor**	**Outcome(s)**	**Study Population**	**Design**	**Citation**
Macroeconomic environment of high unemployment—higher than regional average—during infancy		Marijuana use	Nationally representative cohort of adolescents	L	Ramanathan, Balasubramanian, & Krishnadas, 2013

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