Social Psychological Contributions to the Mitigation of Adolescent Depression

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Abstract

Depression is increasingly common among adolescents, and suicide stemming from depression is the third leading cause of death among 15 to 19-year-olds in the United States (Hallfors et al., 2004) and the second leading cause of death worldwide for 15 to 29-year-olds (World Health Organization [WHO], 2018). Adolescents with depression are at greater risk for serious episodes of depression in adulthood and are more likely to become involved in the criminal justice system (National Institute of Mental Health [NIMH], 2011). The thesis of this chapter is that a social psychological analysis of parent-child relations, coupled with study of factors that tend to exacerbate precarious mental states (e.g., drug use and attendant conflict, school failure, parental conflict, etc.) may provide information useful in ameliorating this problem, a major threat to the health of society (Crano & Donaldson, 2018). We review the epidemiological evidence, along with the parental monitoring literature in the chapter, with specific reference to drug misuse in youth. In addition, we review new findings linking parental monitoring and warmth with adolescent drug use and depression. Although parental influences on adolescent depressive symptoms and marijuana use have been examined independently, their interrelation remains seriously understudied. We contend and test the possibility that depressive symptoms have significant indirect effects on parental warmth, monitoring, and marijuana use. Our research suggests that parental influence may play an unintended facilitative role in marijuana use among adolescents, and marijuana use, in turn, appears linked to exacerbated depressive symptoms among youth.

Social Psychological Contributions to the Mitigation of Adolescent Depression

Social psychological research has contributed to the betterment of society in many ways, but its present contributions to the prevention of adolescent depression, a leading cause of adolescent and young adult suicide, have not yet made the desired impact. Clinical scientists and practitioners have been most involved in research and treatment of depression in adolescents and young adults, but this observation does not negate the possible contributions of social psychology in preventing the harm involved with this crucial issue, which falls, at least to some degree, in the realm of social psychology. In this chapter, we will review the ways in which social psychologists can, and to some degree have contributed to the amelioration of depression and subsequent suicide of youth. In addition, we will consider research on the of role psychotropic substances in the deadly dance and attempt to integrate findings on the evidence arising from the application of well-established theories of persuasion to drug prevention, which might moderate the terrible losses incurred when individuals take their own lives.

Significance

There is little need to establish the significance of adolescent depression-related suicide in contemporary society. Even trivial rates of depression-linked suicide are unacceptable, and today's research indicates the frequency of adolescent self-destruction is far from trivial. Establishing significance in this instance, and the potential role of social psychology, rather is concerned more with a cost/benefit analysis than in establishing the profundity of the problem. For social psychology, the issue becomes whether or not the field's potential contribution to moderating the solution of teen suicide justifies the direct or indirect (i.e., opportunity) costs involved in the attempt. Is not clinical psychology and psychiatry better equipped to deal with extraordinary interventions designed to treat acute manifestations of extreme depression? Would

not resources be applied more wisely to the treatment of depressive teens, rather than some far-fetched social psychological attempt at prevention? In our view, the answer to the first of these questions must be stated in the affirmative. When the house is burning, the need for a good dousing is clearly preferable to recondite speculation on the concept of fire. However, the answer to the second question is moot. Social psychological contributions to the solution of severe teen depression, apart from clinical interventions, may prove a wise line of attack on this perplexing and complex problem. We discuss some possible social psychological contributions to the problem of adolescent depression and invite the open-minded reader to consider them carefully in assessing or suggesting alternatives that might add to their potential utility. However, before we begin, it is reasonable to gauge the severity of the problem. Afterwards, we will consider social psychology's role in its solution, with special emphasis on the application of persuasive prevention, and that of parents and drug use by both children and their parents, which have been shown to have a powerful bearing on likelihood of adolescent drug initiation and its attendant outcomes, which may include teen suicide. Effects of both parents and drugs have been implicated in research on adolescent suicide, and in this context social psychology may play its strongest hand.

Adolescent Depression and Suicide

Depression is a mental health condition resulting in persistent sadness and loss of usual interests. It can influence how an individual thinks, feels, and behaves, resulting in serious emotional, physical, and functional problems. Depression is widespread in the United States and beyond. Worldwide, depression is the second most common illness following anxiety disorders. Among adolescents, depression is increasingly widespread. The National Institute of Mental Health (NIMH, 2011) found that teens with depression are at substantially greater risk than those

without this condition to experience serious episodes of depression in adulthood, and are more likely to become involved in the criminal justice system as adults.

Mental Health America (2010) estimated that 12.5% of teenagers experienced clinical depression, and 67% reported major depressive episodes that had caused issues with school, work, friends, or family. Changes in attitudes or behaviors about school and social activities, as well as problems at home, may be indicators of depression in youth. Compared to adults, adolescents' depression may manifest in remarkably different ways. Youth in this age group tend to have issues not faced by adults, such as powerful and highly relevant peer pressures, academic expectations, and hormonal and bodily changes. Although depressive symptoms may vary widely among individuals, emotional and behavioral changes in teenagers can be warning signs of depression or impending depression. According to findings reported by the Mayo Clinic (Hall-Flavin & McKean, 2018), some emotional changes include, among others, feelings of sadness, hopelessness, worthlessness, guilt, and pessimism. Teenagers experiencing depression also may have crying spells, frustration or anger disproportionate to the situation, irritability, loss of interest or pleasure in usual activities, conflict with friends or family, low self-esteem, rumination or fixation on failures and self-blame, trouble concentrating, poor decision making or trouble making decisions, and frequent thoughts of death or dying. Behavioral changes may include tiredness, changes in sleep patterns, changes in appetite with accompanying weight change, restlessness, choosing social isolation, poor school performance or truancy, less attention to self-appearance, disruptive behavior, use of alcohol or drugs, self-harm, and suicidal behaviors (Hall-Flavin & McKean , 2018).

Suicide rates are increasing. It is important to treat depression at any age to ameliorate and prevent progressive worsening of ongoing problems. Fortunately, most teenagers who

receive treatment overcome depression. However, left untreated, adolescents are at substantially greater risk for suicide than older adults. In the United States, suicide is the second leading cause of death among individuals aged 10 to 34 (NIMH, 2018). In adolescents and young adults, suicide is more common than cancer, heart disease, birth defects, pneumonia, and influenza combined (Kann et al., 2018).

Suicide obviously is not confined to adolescents; it occurs across the lifespan. Globally, suicide is the second leading cause of death among those aged 15 to 29. In this age group, it is the second leading cause of death for males, lagging behind only road accidents. For females, suicide is second only to childbirth related deaths (WHO, 2016). Across all age groups in the United States, the total suicide rate increased 31% from 2001 to 2017, with males experiencing a suicide rate four times that of females (NIMH, 2018). Suicide increased in almost every state during this time period. Worldwide, an estimated 793,000 known suicides occur annually in people of all ages. By this measure, a suicide occurs across the globe every 40 seconds (WHO, 2016).

Cross-sectional data from one of the longest ongoing investigations on suicide rates in U.S. adolescents are available in the archives of the national Youth Risk Behavior Survey (YRBS: Kann et al., 2018), which since 1991 has monitored health behaviors of American youngsters using nationally representative samples of adolescents in grades 9–12 in public and private schools (Kann et al., 2018). Data have been available from this source every other year since its inception. Let us consider recent data from the 2017 survey, which found that in the previous year, roughly one-third of all high school students in this nationally representative sample felt sad or helpless almost every day for at least one two-week period, so much so that they stopped their usual activities. This figure accounts for just over 20% of the sampled males

and 40% of the females. This result also is reflected in variations in self-reported depression severity. Among these same students, 17.2% of the sample had seriously considered attempting suicide. Divided by sex, this number included 11.9% of all male respondents and 22.1% of all female respondents. Considerable research indicates that making a suicide plan is highly predictive behavior of impending suicide or attempted suicide. It was found that 13.6% of all students in the U.S. made a suicide plan. Across the total sample, 9.7% of all males and 17.1% of all females sampled made suicide plans, and suicide attempts were made by 7.4% of students. Across the sample, 5.1% of all males and 9.3% of all females made an attempt at ending their lives. In the U.S., 2.4% of teens were injured, poisoned, or overdosed, requiring medical attention due to a suicide attempt. It is noteworthy that among these students, males accounted for 1.5% and females for 3.1% of serious injuries. Although females are more likely to consider suicide, make suicide plans, attempt suicide, and be injured from an attempt, males have higher rates of suicide completion (NIMH, 2018).

Unfortunately, rates of sadness and helplessness increased significantly in the adolescent population from 2009 to the present (Kann et al., 2018). Over a ten-year-period from 2007–2017, the YRBS indicated an increase of about 3% in adolescents seriously considering suicide. Data suggest that rates of attempted suicide and attempts that resulted in serious injury have remained relatively stable since 1991, with minor variations across the years. Remarkably, *on an average day in the United States*, 3,041 students in grades 9 though 12 attempt suicide.

Eighty percent of adolescents who attempt suicide give clear warnings before they commit to this action (Kann et al., 2018). Many of these warning signs have been mentioned, including symptoms of severe depression; other signs include talking, writing, or drawings about death, distributing belongings, displaying aggressive behavior, running away from home, risky

behaviors, or drastic changes in personality (HealthLinkBC, 2018).

Drug Involvement in Depression and Suicide

Several factors can contribute to the decision to take one's life, including severe mental health problems and high levels of psychotropic substance use. It has been estimated that nearly 30% of individuals who die by suicide have problems involving substance use (CDC, 2018). According to the Substance Abuse and Mental Health Services Administration (SAMHSA, 2009), suicide is the most common cause of death for individuals with substance use disorders. Furthermore, mental illness coupled with substance use disorders materially increases the risk of suicide. In 2011 alone, more than 200,000 emergency room visits were attributed to drug-related suicide attempts, and between 2004 and 2011, such attempts rose 41% (SAMHSA, 2013). Depression was found to be a precursor to both substance misuse and suicide, and continued substance misuse exacerbates depression.

The connection of depression and substance use problems practically compels the attention of social psychological research to contribute to understanding and perhaps help ameliorate depression leading to suicide. The field has proved highly relevant in research designed to help combat the use of dangerous psychotropic substances (e.g., Crano, Alvaro, Tan, & Siegel, 2017; Lac, Crano, Berger, & Alvaro, 2013; Griffin & Botvin, 2000; Hawkins, Catalano & Miller, 1992; Lochman & van den Steenhoven, 2002; Newcomb & Locke, 2005; Siegel et al., 2014; Sloboda, Petras, Hingson, & Robertson, 2019; Sussman & Ames, 2008). Social psychological theory and research designed to provide greater understanding of the dangers of such use are commonplace and informative, and the field's contribution to understanding is impressive. This research has been used extensively to develop applications that moderate or eliminate the potential dangers involved in misuse of dangerous psychotropic substances. The

transfer of social psychological principles and research into important areas involving the public good is not new (e.g., see Lewin, 1943, 1946, 1947), and over the years the application of social psychological principles to important issues has become ever more intense, after a brief hiatus following the second World War (Crano & Lac, 2012; McGuire, 1973; Prislin & Crano, 2012).

Depression and self-medication. When dealing with the problem of depression-linked suicide, contemporary applied research on the relevance of social psychological theory makes clear the field's potential to contribute to the wellbeing of youth. Research has found that teenagers under stress often seek ways to self-medicate with marijuana; in the case of depression, however, marijuana uptake appears to intensify, rather than mollify the underlying problems of depression (Shrier, Ross, & Blood, 2014; Wilkinson et al., 2016). Research in a young adult population supports this finding. It indicates that marijuana use to self-medicate reduced negative anxiety symptoms, but in turn resulted in more marijuana use problems (Buckner, Bonn-Miller, Zvolensky, & Schmidt, 2007).

Marijuana has been shown a risky and ineffective solution to teen depression. Although research is limited in populations of participants under 18 years of age, considerable research on adults consistently reports linkages between depression, suicide, and substance use disorders. These results suggest strong, if not necessarily causal associations among these factors. Understanding the relation between drug use and suicide is important, insofar as that more than 90% of people who die by suicide are found to have been dealing with either depression or psychotropic substance use issues, or both (Juergens & Hampton, 2018). Self-medication with psychoactive substances often appears to be used as a means to deal with depression, to numb pain, or to reduce negative emotions. Suicide is rarely caused by a specific ailment or circumstance. However, a number of co-occurring variables have been identified as commonly

found in suicide, including such factors as depression, suicidal thoughts, past suicidal attempts, drug abuse, alcohol abuse, poor familial connections, or a troubled familial past (Juergens & Hampton, 2018). The relations among these co-occurring features deserve close scrutiny.

Adolescent Depression, Marijuana Use, and Legalization

The association of marijuana with adolescent depression is of particular interest, both because of the drug's popularity with youth and the fact that many states have recently medicalized, legalized, or decriminalized use of the substance. These recent changes render marijuana more accessible than ever before to adults, and indirectly, youth. Coincident with these changes are the past decade's moderation in adolescents' perceptions of the risk posed by marijuana usage, and the disapproval rates of associating with consistent users of the drug (Johnston, O'Malley, Miech, Bachman, & Schulenberg, 2016; Siegel, Alvaro, Patel, & Crano, 2009).

Researchers and policy makers have become increasingly concerned with the ways increased accessibility of marijuana might affect adolescents (e.g., Hayatbakhsh, Williams, Bor, & Najman, 2013). It is our position that legalization has raised the risk of marijuana-involved depression in youth substantially, and as such, deserves close attention. For example, Johnston, and colleagues (2016) identified marijuana as the illicit substance most commonly used by U.S. adolescents in the 8th, 10th, and 12th grades. Roughly 14% of adolescents report using marijuana between the ages of 14 and 16 (Wilkinson et al., 2016), and the average age of marijuana initiation is 15 years-old (Hayatbakhsh et al., 2013). Heavy and consistent marijuana usage can affect cognitive development, hindering associative learning processes and short-term memory (National Academies of Sciences, Engineering, and Medicine, 2017; WHO, 2014). Furthermore, marijuana use in teenagers has been associated with significantly higher odds of non-medical use

of stimulants and opioids, if marijuana is adopted early and is used consistently (Nakawaki & Crano, 2015). Like adolescents with depression, those who initiate marijuana early also are likely to underperform educationally and are more susceptible to delinquency and other behavioral and mental health conditions (Copeland, Rooke, & Swift, 2013; Siegel et al., 2014). Because adolescents experiencing depression are twice as likely to use marijuana as those without depression (Office of National Drug Control Policy [ONDCP], 2008), it would seem almost obligatory that social psychologists explore this relation more fully. In a major review of the literature on the relation of marijuana use and psychosis, Radhakrishnan, Wilkinson, and D'Souza (2014, p. 5) found, "Acute exposure to both cannabis and synthetic cannabinoids (Spice/K2) can produce a full range of transient psychotomimetic symptoms, cognitive deficits, and psychophysiological abnormalities that bear a striking resemblance to symptoms of schizophrenia… Exposure to cannabinoids in adolescence confers a higher risk for psychosis outcomes in later life and the risk is dose-related."

Radhakrishnan and colleagues' research indicating a strong and consistent linkage between depression and marijuana use has been bolstered by later studies (e.g., Gobbi et al, 2019; Hser et al., 2017; Ketcherside & Filbey, 2015; Wilkinson et al., 2016). Although these studies cannot be interpreted causally with high certainty, nor do they implicate or identify a path between marijuana-to-depression-to-suicide in adolescents, there can be little doubt of the association between high levels of marijuana use and depression. Whether marijuana antedates or follows depression remains an open question, but the importance of the question requires an attempt at an informed evidence-based answer, and we will present one such attempt in the pages that follow.

Depression and Self-medication

Once thought to be used primarily to fit in with friends or as a form of rebellion, current research indicates that marijuana and alcohol often are used by adolescents to self-medicate in attempting to reduce symptoms of depression (Grunberg, Cordoba, Bidwell, & Ito, 2015; Wilkinson et al., 2016). These findings and observations render the marijuana-depression linkage all the more interesting and ominous. Research in this area has been confined largely to adults, rather than adolescent populations (Buu et al., 2009; Consoli et al., 2013; Pacek, Martins, & Crum, 2013), but the extension of research into adolescent use seems pertinent and justified. Its goal is to uncover the psychological processes involved in the self-medicating process, and the temporal relation linking marijuana use and depression. Do teens use marijuana in response to a depressive episode, or are users more prone to progress from quotidian sadness that seems to be a part of normal adolescent life to more serious depression? Both temporal sequences are plausible, but the *self-medicating hypothesis* suggests that symptoms of mental illness occur first, and substance use is adopted to alleviate its symptoms (Khantzian, 1985; Womack et al., 2016). Some evidence supports this hypothesized sequence. Individuals who become regular users of marijuana have reported that a major motive for consuming the substance is to relieve affective symptoms such as depression and anxiety (Bottorff et al., 1999). Repetto and colleagues' (2008) longitudinal study found depressive symptoms predicted later marijuana use in a sample of ninth-grade African American students, even after controlling for several earlier-implicated factors including prior use, other substance use, grade point average, and socioeconomic status.

Although this evidence lends some credence to the self-medicating hypothesis, other studies have found no relation when examining the association of depression and marijuana use over the long term. As a result, some psychologists examining the interrelatedness of depression and marijuana use developed the concept of the *cannabis effect* (Womack et al., 2016), which

holds that persistent and heavy use of marijuana may lead to the development of depression, not just to its exacerbation. Considerable research supports this possibility (e.g., Radhakrishnan et al., 2014). Many disparate factors have been implicated in the development of adolescent depression. Evidence from a neurological perspective indicates that frontal lobe white matter abnormalities in adolescents with regular marijuana use can predict depressive symptoms (Medina et al., 2007). Shonesy and colleagues (2014) suggest that depressive symptomology may be caused by an "endocannabinoid deficiency," which may drive individuals to use marijuana to satiate symptoms. The neurological evidence is intriguing, but it is clear that much remains to be done on this front before effective solutions are reached. However, given the pace of research in this area, these solutions may arrive more quickly than anticipated.

An alternative to the self-medication hypothesis suggests that marijuana usage leads to social problems (e.g., isolation, poor peer and parental relations, low school achievement) that can result in subsequent depression in adolescents. However, much of this research has been considerably less directional, suggesting a correlational rather than causal relation between heavy marijuana use and depression. Perhaps the most scientifically acceptable interpretation of the available data is that these factors may act as mediators that link heavy marijuana usage and depression in early adulthood. Data are consistent with this possibility. For example, a comprehensive meta-analysis on the issue found that marijuana consumption in adolescence was related to the development of depression as well as suicidal ideation in young adulthood (Gobbi et al., 2019). The researchers suggested that more than 400,000 cases of adolescent depression could be a result of marijuana use. Fairman and Anthony (2012) found that early marijuana use in adolescence and early adulthood led to a 10% increase in depression during adulthood, even after controlling for several other plausible risk factors, and the ONDCP (2008) reported that

adolescents with depression who were regular users of marijuana were at higher risk for other mental illnesses. Marmorstein and Iacono (2011) reported complementary results. They identified significant correlates of lower educational attainment, employment, and legal issues with cannabis use disorders in adolescence with subsequent adult depression. This temporal sequence suggests a sequential ordering in which marijuana use affects later mental states. Consistent with this possibility, Hser and colleagues (2017) found in research with an adult sample that reducing marijuana intake was associated with improvements in anxiety, depression, and sleep quality in individuals with these ailments. These results lend support to the idea that marijuana may exacerbate later tendencies toward depression.

As there is evidence for both a *self-medicating hypothesis* and a *cannabis effect*, Womack and associates (2016) suggested the relation between depression and marijuana use may be bidirectional, fueling a vicious cycle of marijuana use to cope with depression, and depression becoming more severe as a result of marijuana use (see Pacek et al., 2013 for evidence of a bidirectional relationship in adults). Taylor (2011) found that marijuana use was a result of attempts to cope with feelings of sadness, and Moreira's (2007) research showed amounts of marijuana consumed was monotonically associated with severity of depression.

It seems reasonable to conclude that attempts to self-medicate with marijuana are likely to result in a worsening of depression as well as an increase in marijuana usage in an attempt to cope with resultant increases in depressive symptoms. The cyclical nature of this process would confound many of our standard non-experimental methods designed to identify causal priority (e.g., structural equation models, path analysis, etc.), as outcomes of the analyses would be largely a function of an arbitrary identification of the starting point of the process. Practical and ethical restraints on assigning adolescent subjects with and without depression randomly to

heavy marijuana use or a control (no use) condition has retarded our capacity to pinpoint the preponderant cause via experimentation (i.e., does heavy marijuana use induce depression in adolescents, or does adolescent depression lead to heavy use in the attempt to self-medicate?).

Our relative inability to crack the causal priority puzzle in the marijuana-depression association may not be as encumbering as might appear at first glance. We believe a definitive identification of the causal sequence may not be needed if we focus instead on approaches that might attenuate marijuana use. If marijuana use is prevented or curtailed, then an important link in the causal marijuana-depression or depression-marijuana chain may broken, and for practical purposes this may be sufficient to interrupt its ultimate and tragic outcome. Social psychological research is ideally suited to this task. It is in this way that social psychology can make a strong, perhaps its strongest contribution to a major and heretofore intractable and mounting social issue. On the pages that follow, we consider some social psychological approaches designed to understand the relation between marijuana use and depression in adolescents.

Parental Influences on Marijuana Use and Depression

Parental influences are crucial factors in adolescent development (Castro-Schilo et al., 2013; Crano & Donaldson, 2018; Donaldson et al., 2016). Two key parental influences that have been studied at length are parental warmth and parental monitoring. Parental monitoring involves surveillance. It refers to parents knowing where their children are, what they are doing, and whom they are with (Dishion & McMahon, 1998; Donaldson et al., 2015). Lac and Crano's 2(009) meta-analysis examining marijuana use prevention revealed that parental monitoring was highly predictive of lower marijuana use. The research also identified larger effect sizes for females than males, suggesting that parents monitored their girls more closely than boys. This result supports speculation regarding males' greater likelihood of engaging in delinquent

behaviors because they are not as heavily monitored (Pedersen et al., 2001; Peters, 1994). In Lac and Crano's (2009) research, more intense monitoring was related to less marijuana use across 23 different samples, involving more than 35,000 independent observations – regardless of the age of adolescents. Thus, parental monitoring is viewed as a protective factor for marijuana usage in adolescent samples. Research on adolescent marijuana use found that high parental knowledge was associated with less positive attitudes toward marijuana in teens. As well, the belief that they had behavioral control over using marijuana, and subjective norms that proscribed marijuana use, also supported lower pro-marijuana use (Lac et al., 2009).

A second factor that determines parental influence is warmth, which describes how adolescents interpret their parents' feelings toward them. Warmth includes perceived love and care, as well as responsiveness to their needs (Lowe & Dotterer, 2013). Parental warmth also can be categorized as perceived acceptance, support, positive reinforcement, affection, and involvement from parents, as well as setting reasonable limits for behavior (Donaldson et al., 2016; Morrill, Hawrilenko, & Córdova, 2016). Adolescents' perceptions of parental warmth foster higher levels of life satisfaction and wellbeing (Schwarz et al., 2011) and may work as a buffer against delinquency (Menting, Van Lier, Koot, Pardini, & Loeber, 2016), factors associated with adolescent depression. Parental warmth also has been associated inversely with pro-marijuana attitudes and subjective norms. Youth who perceived their parents as cold were more likely to favor of marijuana consumption and felt other important people in their life also were pro-marijuana (Lac, Alvaro, Crano, & Siegel, 2009). In our research on adolescent substance use prevention, participants usually are divided into users, vulnerable nonusers, and resolute nonusers. We have found this categorization useful in developing research to prevent initiation or continuance of substance use (typically, marijuana). Operationally, our

categorization system distinguished *resolute nonusers*, who have never used an indicated substance (e.g., marijuana, inhalants, etc.) and who state that they would *definitely not* initiate usage, from *vulnerable nonusers*, who also have never used an indicated substance, but who do not respond *definitely not* when asked if they might initiate use someday. This classification has proved useful in identifying adolescents who are likely to begin substance use from those who are likely to maintain abstinence. Research on marijuana use has indicated that resolute nonusers reported significantly higher levels of parental warmth than vulnerable nonusers and users (Crano, Siegel, Alvaro, Lac, & Hemovich, 2008; see Figure 1).

Although research on adolescent risk behaviors has long indicated the importance of parents' influence on their children's outcomes, more recent studies have focused on the growing influence of peers, certainly a proper focus of attention. However, the emphasis on peers often comes at the expense of underrating parental influences. Considerable research indicates that for good or ill, parental influences throughout the lifespan are considerably more powerful than might be inferred from an over-focus on peer influence, and this has prompted attempts at developing more refined understanding of parental effects.

The work of Kerr, Stattin, and their associates remains a beacon of excellent research in this field (Kerr & Stattin, 2000; Kerr, Stattin, & Burk, 2010; Kerr, Stattin, & Engels, 2008; Stattin & Kerr, 2000). This research suggests that it is not monitoring, per se, that affects adolescent behavior, but rather the quality of monitoring. Knowing how children behave can be observed by simple surveillance. However, whether knowledge born of surveillance is of much value was called into severe question by Kerr and associates (2010), who found in a two-year longitudinal investigation of more than 900 parent-child dyads that simple control (surveillance) or solicitation did not predict accurate parental knowledge of their children's behavior.

However, youths' disclosures of their activities when out of earshot (or sight) of their parents was significantly linked to accuracy of parental knowledge.

What would motivate a children's disclosure of their *private* actions when *unobserved by parents*? The answer arising from considerable research is simple – parental warmth, combined with reasonable and reasonably enforced guidelines for proper behavior (Donaldson, Handren, & Crano, 2016). In a number of recent studies, the importance of children's perceptions of parental warmth, or the strength of the parent-child bond, has been identified as a powerful predictor of their behavior, at least as it reflects the use of dangerous substances (alcohol, inhalants, marijuana, etc.). For example, Donaldson and associates (2016) identified crucial and continuing effects of early parental warmth in controlling adolescents' use of alcohol (see also Crano & Donaldson, 2018; Handren, Donaldson, & Crano, 2016; Lac et al., 2009). A series of longitudinal path analyses by Hemovich and colleagues also showed the crucial effects of parental warmth, along with simple surveillance, as indirect influences on children's use of a variety of proscribed substances (Hemovich & Crano, 2009; Hemovich, Lac, & Crano, 2011). These path analytic studies showed the indirect influence of parental monitoring and warmth on children's attitudes toward various substances and their friendship choices, which were directly implicated in substance use.

This research was reinforced by findings showing the importance of child-parent relations and their children's initiation of marijuana use. Considerable research indicates that the initial use of proscribed substances is in reaction to an offer of the substance by a friend or acquaintance. This *exposure opportunity* has been implicated as a strong precursor of substance use initiation (Frost, 1927; Wagner & Anthony, 2002). Beyond opportunity, those predisposed to initiate usage also are more likely to accept an offer of a drug (Voelkl & Frone, 2000). Siegel,

Tan, Navarro, Alvaro, and Crano (2015) found adolescents engaged in close positive relations with their parents were significantly less likely to initiate substance use as a result of opportunity exposure. The reason for this strong parental influence effect is quite plausible in retrospect, but not one that comes immediately to mind. Positive parental monitoring mitigated the opportunity effect in adolescents' marijuana initiation by attenuating the number of offers the adolescent received. The friendship choices of well-monitored adolescents mediated the likelihood of being offered a proscribed substance, because their friendship groups were less likely to include users. This finding fits well with those of Hemovich and colleagues (2011), who found that the effects of parental monitoring and warmth indirectly affected adolescent substance use through adolescents' attitudes toward the substance *and their choice of friends.* Children with friends who got into trouble were more likely to get into trouble themselves. Your mother was right when she warned you about the dangers of associating with delinquent friends.

Parents' own substance use also has proven a strong predictor of their children's usage (Miller, Siegel, Hohman, & Crano, 2013). Past parental marijuana use, and their recency of use, significantly predicted their children's marijuana use. This effect was mediated by three critical factors implicated in prior research on adolescent marijuana use – expectation of punishment for use, expectations of the positivity of the experience of marijuana, and attitudes toward marijuana.

A telling example of parents' behavior on their children's substance use, which clearly is associated if not causative of depression and its sequelae, was provided in research by Lamb and Crano (2014) in their research on a nationally representative sample of U.S. adolescents. The study was designed to test effects of parental self-fulfilling prophecies on their children's substance use. The researchers asked children if they had ever used marijuana. Separately, they also asked the children's parents to report their speculations on the child's use of the substance.

One year later, the children were asked if they had used marijuana in the prior 12 months. The results were striking. The odds of a self-described abstinent child initiating marijuana use in the second year were 4.4 times greater if the parent voiced the impression that the child had used drugs in data collection session one year earlier. The ascription of this result to social desirability response effects (i.e., the parents in year 1 were correct, the children merely gave a socially desirable answer to the interviewer) begs the question of why the child became honest in year 2. A better way of answering the question of a potential self-presentation bias in the children's year 1 self-report is to consider the year 2 responses of those adolescents who in year 1 admitted to having used drugs in the past. These respondents apparently were not particularly concerned with presenting a positive (i.e., socially desirable) image in the initial interview. In this analysis, results showed that children whose parents ventured the guess one year earlier that their child had never used drugs were 2.7 times less likely to continue marijuana use as their peers whose parents at year 1 believed their child had already initiated drug use (which their child had admitted in a separate interview one year earlier).

This research, and the others reviewed to this point, are examples of the futility of the "don't do as I do, do as I say" approach to parenting, as if another example is needed, in addition to showing how subtle cues emitted by parents can have important implications for children's behavior. In this case, the implications of parental actions over parental advice carry a heavy weight. If children's usage is affected by parents' behaviors, even very subtle behaviors, and if usage has an effect on their offspring's mental health, then the conclusion is inescapable that parental drug-related actions are implicated in children's likelihood of experiencing depression and its attendant dangers. We do not dismiss the possibility that there are many factors that may incline an adolescent toward use of dangerous substances, nor do we dismiss the possibility that

genetic predispositions may affect the likelihood that an individual will initiate dangerous drug use, and that this use may well prove exceptionally disruptive psychologically. But we strongly suggest that the research on parental behavior and its impact on children's mental health be viewed with serious consideration

Positive relations between parents and adolescents reduce risky behaviors, promote wellbeing (e.g., Hemovich et al., 2011; Lac et al., 2009), and lower levels of stress in children (Lippold, Davis, McHale, Buxton, & Almeida, 2016). With respect to depression, parental indifference toward adolescents has been associated with more severe depression (Long et al., 2014), whereas greater parental warmth has been associated with lower depression levels in adolescents (Ozer et al., 2013). Poor parental-child relationships also have been associated with more suicidal ideation in teens with clinical depression (Field, Diego, & Sanders, 2001). Parent-child discussions about substance use have been linked to reduced use in teens (Huansuriya, Siegel, & Crano, 2014; ONDCP, 2008). Stattin and Keer (2000) have argued that knowledge-based monitoring, based on a child's self-disclosure, one outcome of warm parent-child relations, is a critical factor for positive child behaviors as well. Individuals with depression who had poor parental relationships also consumed more marijuana than their counterparts without depression (Field et al., 2001). The increase in research on parental influences is likely to improve our understanding of the depression-marijuana link and how parents can serve as buffers against negative outcomes (Consoli et al., 2013; Lac et al., 2009; Ozer et al., 2013). The upshot of all of this is that parental behaviors play a major role in their children's mental health. Even subtle interactions powerfully influence their children's behaviors, for good or ill. Prevention of adolescent substance use may depend heavily on proper parental responses to their children. This means not only providing proper models of behavior, but actively creating and

maintaining a clear set of reasonable requirements for proper behavior and providing an environment that is both warm and attentive to the child's needs and behaviors. Parental substance use has been shown in the studies reviewed here to have a deleterious effect on children's own actions. Lack of proper monitoring, which involves not only attention to the child's actions but also a warm environment in which children feel free to disclose issues of importance to them, put the child at risk for substance use and the attendant psychological effects of usage on mental health. Social psychology can provide the kinds of persuasive information useful in facilitating parents' proper behavior vis-à-vis their children.

An attempt to identify the structural relationships linking parental monitoring, warmth, and depression is found in research by Ruybal and Crano (2019). This path analytic study made use of data from the National Survey on Drug Use and Health (NSDUH). Youth from 12-17 years of age were included in the analysis (N = 12,115). These respondents, who were operationally identified as having had a major depressive episode in the past year, had experienced lower levels of parental warmth and monitoring, and an increased use of marijuana (see Figure 2). All of the paths in the model were statistically significant, which exhibited good fit with the obtained data. The results indicated that parental warmth and monitoring were related significantly. Parental warmth was not associated directly with marijuana use, but parental monitoring was; low monitoring was linked to greater marijuana use. The predicted indirect effect of depression on parental warmth and parental monitoring on marijuana use was statistically significant. As shown in Figure 2, low levels of parental warmth and monitoring have a significant influence on depression, which in turn is associated with marijuana use. These results must be interpreted with caution, insofar as the NSDUH provides only cross-sectional data. If longitudinal data were available, causal inference could be made with greater confidence

(Crano, Brewer, & Lac, 2015).

Media Research

In research framed with Fishbein and Ajzen's theory of planned behavior (TPB), Huansuriya and colleagues (2014) investigated parents' exposure to substance prevention messages presented in a major mass media drug prevention campaign of four years duration. The research disclosed that parents who were more highly exposed to the campaign's anti-drug communications in the first year of the campaign had more favorable attitudes than less media-exposed parents about talking to their children about marijuana, felt significant others would value this behavior more positively, and hence, intended to have the "drug talk" with their offspring. When the parents' children were interviewed one year later, those whose parents were more heavily exposed to the campaign reported a higher frequency of drug discussions with parents, less positive attitudes toward drugs, and lower intentions to use marijuana.[1] When this analysis was conducted on data from the final two years of the campaign, the results were identical to the first analysis. If drugs are implicated in adolescent depression and suicide, then these results indicate a clear path for parents to help break the marijuana-depression cycle.

Attempts to directly persuade individuals experiencing depression to seek help have been unsuccessful on numerous occasions (Costin et al., 2009; Gulliver et al., 2012; Kilimes-Dougan & Lee; Lienemann & Siegel, 2016; Lienemann, Siegel, & Crano, 2013). Research devoted to processes of persuasion for individuals with depressive symptomatology is difficult due to the very nature of depression. Many individuals suffering from depression appear to have a negative bias toward attempts designed to convince them to seek help (Siegel, Lienemann, & Rosenberg, 2017). It appears that the more severe their depressive symptoms become, the less likely are

[1] In this sentence, "drugs" refer to marijuana, as this was the substance measured in the end of each year of the panel survey.

people to seek help (Keeler, Siegel, & Alvaro, 2013). Research has hypothesized that a negative bias characterizes depressed individuals' information processing when helpful information was offered. It was as if they concluded, "Yes, this treatment option may help most other people, but it will not help me" (see Beck, 2008; Bradley & Mathews, 1983; Watters & Williams, 2011).

A way to overcome this bias was inspired by Walster and Festinger's (1962) overheard communication technique. Crano, Siegel, Alvaro, and Patel (2007) assumed that directly targeted persuasive prevention communications would be met with some degree of resistance, especially by vulnerable nonusers or users. To overcome counter-argumentation, they hypothesized that a communication apparently directed to another would elicit less resistance, more openness to the persuasive communication, and would have a positive preventive effect. In a sample of nearly 900 middle school students, the researchers found that mass media messages dealing with inhalant prevention that were apparently meant for the children's parents were significantly more effective than directly targeted communications for vulnerable nonusers and users. These subjects evaluated the indirectly targeted messages more favorably, and message evaluation was significantly associated with inhalant usage intentions.

Siegel and colleagues applied this approach in research on depressed individuals. Their research showed that people with depression were resistant to offers of help, and the more severe the depression, the more resistant they were. They reasoned that to persuade people with elevated depressive symptomatology, public service announcements that appeared to be targeting a friend of someone with depression (e.g., "Do you have a friend who is depressed?") might have a better chance of success if the misdirection effect held, as it might circumvent counterargumentation, or negative self-biases (Siegel, Lienemann, & Tan, 2014). As such, people with depression, the true target of the message, would be more likely to process the help-

seeking information and to resist it less forcefully (Why counter-argue a message meant for one's mother, or a friend?) than they would if they were the directy target of the communication. Misdirection operated as hoped. In a media-based investigation, misdirection resulted in more positive attitudes about seeking help and intentions to seek help than a direct public service announcement (Siegel et al.). This approach has considerable appeal in persuasive prevention models. Its use will be seen with increasing frequency across a number of approaches designed to prevent the initiation or continance of self-destructive behaviors.

Where We Go from Here: Reading the Tea Leaves

Although confident causal interpretation of parental monitoring and warmth on depression is not possible at this time, nor is the sequence relating depression with substance misuse, there can be no doubt that these factors are intimately interrelated in a cycle that can bode ill for many adolescents. We will eventually unravel this riddle, but while we are attempting to do so, we face the social reality that a dangerous and destructive substance whose use we are attempting to attenuate has become the darling of a number of state legislatures in the United States. Whether or not the forces that have pushed for legalization of this substance, based on little if any compelling and scientifically credible evidence, will prove willing to accept the blame for which their rash judgment is responsible, in part, for many of the problems that youth face today, and the possibly more severe problems they will face in the future, is not immediately evident. Will the costs involved to a society in which daddy comes home and lights a joint at the end of a long work day be visited on their children? We have shown that even subtle parental behaviors affect their children; lighting up a joint is not subtle. The arguments that the law prohibits adolescent use are laughable. There can be no doubt that the greater availability occasioned by legalization will result in greater use by adolescents. Arguments to

the contrary are pure fantasy. In the face of a major report linking marijuana use in adolescents with serious problems, produced by the best and most credible scientists the country has, many state legislators have trotted happily to the trough of promised increased revenues. Their reprehensible actions are not informed by credible evidence; rather, they prove once again that money talks. The costs involved in attaining these revenues have yet to be paid, but they will be considerable.

What is the point of this rush to legalize a substance that we know can damage our youth? Over many years, research clearly has established strong associations between young persons' depression and substance misuse, along with a host of other behaviors that bode ill for the consistent user's life options. Legalization, which renders the substance considerably more available to youth, could not help but play into the sad outcomes that await many of our youth. Arguments regarding the direction of causation are beside the point. If marijuana causes adolescent depression, or if marijuana use is caused by depression is immaterial. The substance is part of the marijuana-depression-suicide cycle. Where one cuts into the cycle is not as important as the stark fact that the cycle may be broken or moderated if one of its central components, marijuana, is made unavailable or its availability is strongly circumscribed. Legalization does anything but this. Legislators who have not succumbed to the siren of legalization need to come to grips with this issue, and decide whether they are willing to sacrifice a number of their constituents' futures, perhaps lives, for the additional promised revenues that may or may not materialize.

The question becomes, in the starkest terms, how much are your kids' lives worth?

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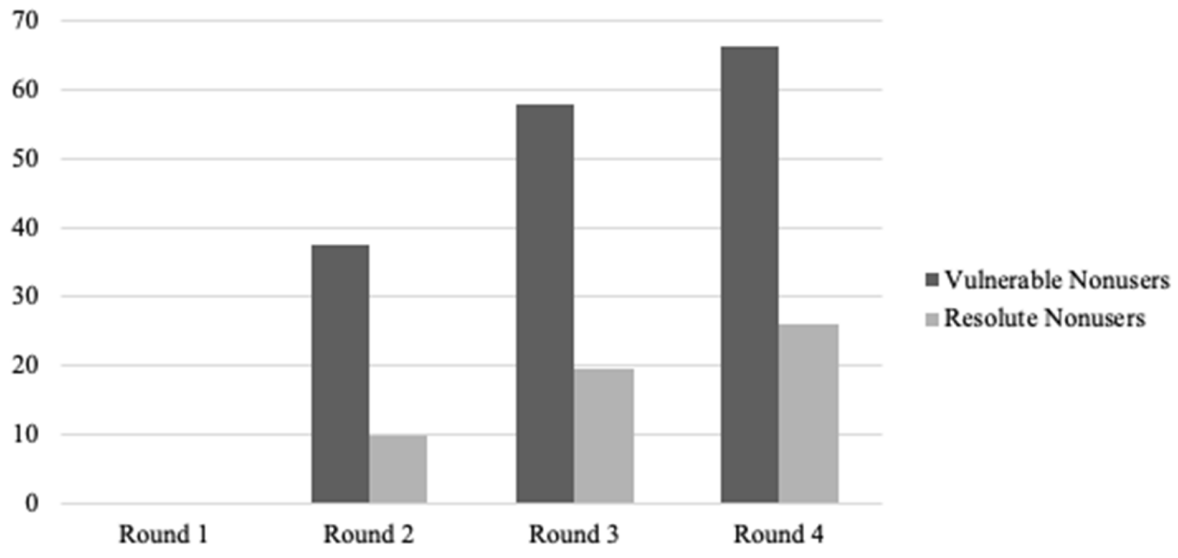

Figure 1. Percentage of marijuana use over a 3 year period (adapted from Crano et al., 2008).

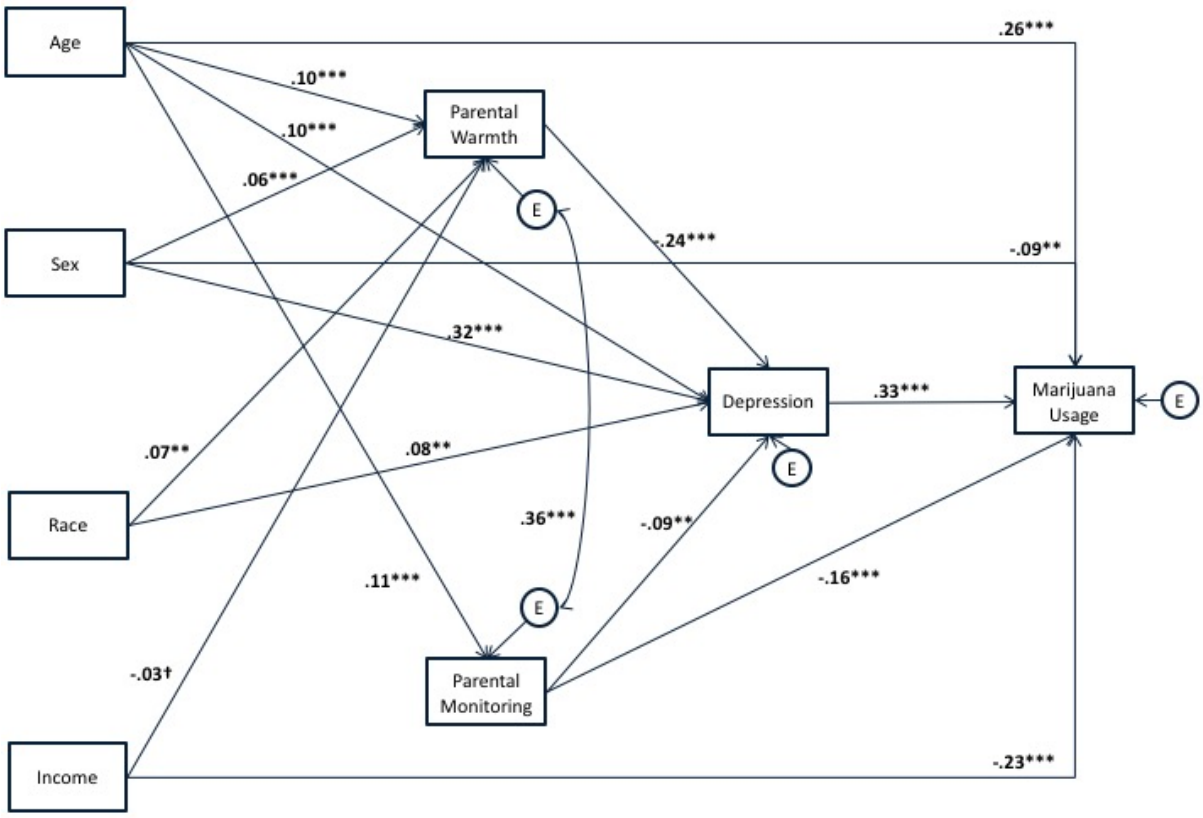

Figure 2. Path analytic model of relations involving parental warmth, parental monitoring, depression, and marijuana use with covariates age, sex, race, and income (N = 12,115). Non-significant paths were removed for clarity; $p = .07^{\dagger}$, $p < .05$*, $p < .01$**, $p < .001$***.