



HHS Public Access

Author manuscript

Subst Use Misuse. Author manuscript; available in PMC 2022 January 01.

Published in final edited form as:

Subst Use Misuse. 2021 ; 56(2): 238–244. doi:10.1080/10826084.2020.1857408.

Shifts in Drug Use Behavior Among Electronic Dance Music Partygoers in New York During COVID-19 Social Distancing

Joseph J. Palamar^a, Austin Le^{a,b}, Patricia Acosta^a

^aDepartment of Population Health, New York University Grossman School of Medicine, New York, NY;

^bNew York University College of Dentistry, New York, NY

Abstract

Background: Little is known about how COVID-19-related social distancing has affected illegal drug use. We surveyed electronic dance music (EDM) partygoers—a population known for high levels of drug use—to determine whether their drug use patterns had changed during state-mandated social distancing in New York.

Methods: Individuals were recruited online and screened for eligibility throughout April and May 2020. We surveyed 128 eligible adults and queried, retrospectively, whether their drug use behavior had changed during COVID-19-related social distancing.

Results: Most participants reporting past-three-month use reported decreased frequency of use during COVID-19-related social distancing. Specifically, 78.6% reduced frequency of use of cocaine, 71.1% reduced frequency of use of ecstasy/MDMA/Molly, and 68.0% reduced frequency of use of LSD. Although some participants reported increased frequency of use of cocaine (7.1%), ecstasy (7.9%), or LSD (12.0%), 35.0% reported increased frequency of cannabis use. Most (66.7%) of those reporting cocaine use reduced the amount used. The majority of those reporting use of cannabis, ecstasy, cocaine, and/or LSD reported that drug cost (80.0–84.0%) and drug quality (84.2–92.0%) did not change during social distancing. Having a college degree was associated with higher odds for decreasing frequency of cannabis use. Older participants (ages 23) were at lower odds for decreasing frequency of cocaine use, as were those earning >\$500 per week, and participants who attended EDM events biweekly or more often were at higher odds for decreasing frequency of LSD use.

Conclusions: Participants in this sample tended to reduce party drug use during COVID-19-related social distancing.

Keywords

COVID-19; cannabis; ecstasy; cocaine

CONTACT Joseph J. Palamar joseph.palamar@nyulangone.org Department of Population Health, 180 Madison Avenue, Room 1752, New York, NY 10016.

Declaration of interest

The authors declare no conflict of interest. The authors alone are responsible for the content and writing of this paper.

Introduction

Efforts to control the coronavirus disease 2019 (COVID-19) pandemic have resulted in unprecedented widespread implementation of containment measures throughout the United States (US) and elsewhere. Included in the recommendations for states released by the Centers for Disease Control and Prevention (CDC) were temporary bans on large gatherings and closures of nightlife venues such as bars and nightclubs (Centers for Disease Control & Prevention, 2020). In New York, for example, a nightlife ban began in mid-March 2020 and was accompanied by a general stay-at-home order (Evelyn, 2020; Ferré-Sadurní, 2020). However, little is known about how such social distancing measures could potentially affect drug use behavior, particularly among nightlife-attending populations that have typically demonstrated a high prevalence of recreational drug use.

While social distancing measures appear to be effective in controlling the spread and incidence of COVID-19 infections (Matrajt & Leung, 2020), they can also lead to adverse social effects such as increased feelings of social isolation (Cudjoe & Kotwal, 2020). Social isolation typically refers to a lack of contact, social interaction, and/or relationships with family, friends, or neighbors (Berg & Cassells, 1992); it is closely associated with loneliness, which is characterized by feeling alone, separated, or apart from others (Golden et al., 2009; Weiss, 1973). Previous studies have investigated changes in drug use owing to social isolation, though most tended to focus on elderly populations and reported mixed results (Raz & Berger, 2010; Tani et al., 2001). For example, findings from several studies have demonstrated that people who felt socially isolated were at higher risk for drug use, which typically occurred as a form of self-medication in order to alleviate negative emotions (Copeland et al., 2018; Osgood et al., 2014; Stickley et al., 2014; Theeke, 2010; Volkow, 2020). However, others have found that socially isolated individuals demonstrated lower levels of drug use due to lack of peer ties (Kobus & Henry, 2010). Of course, there may very well be other factors at play with respect to the COVID-19 pandemic, such as limited time or opportunities to actually acquire and use drugs, socially, with others. It is also worth noting, however, that traditional definitions of social isolation are now complicated by digital and ubiquitous forms of communication through modern means such as the Internet or smart devices. Moreover, drugs can now be ordered over the Internet or *via* the darknet (Barratt et al., 2016), so people who desire drugs no longer need direct contact with those who sell.

Widespread social distancing measures may also affect prevalence of use drugs that are typically context dependent. For example, use of cocaine and MDMA (ecstasy)—each commonly considered party drugs—tend to be somewhat limited to nightlife settings and may consequently decline as a result of the COVID-19 pandemic (Palamar & Keyes, 2020). Recent reports published by the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) indicate that demand for or opportunity to use common party drugs, particularly cocaine and MDMA, has diminished throughout Europe in response to temporary closure of nightlife venues and cancellation of large dance festivals (EMCDDA, 2020; EMCDDA & Europol, 2020). However, demand for cannabis has not been substantially influenced by the COVID-19 pandemic, with preliminary data suggesting that use has decreased among occasional users and increased among more frequent users (who may be using more to alleviate boredom and/or anxiety) (EMCDDA, 2020).

Finally, extensive social distancing measures may also indirectly affect prevalence of drug use through their impact on drug availability, cost, and purity. For example, the aforementioned EMCDDA reports found that the general availability of drugs such as cannabis, cocaine, heroin, amphetamine, ecstasy, and methamphetamine have also decreased while prices have increased (EMCDDA, 2020; EMCDDA & Europol, 2020). Furthermore, a decrease in the purity of drugs such as cocaine has also been observed and appears to be a result of COVID-19-related disruptions to supply chains and drug trafficking routes, and distribution-level social distancing measures (EMCDDA, 2020; EMCDDA & Europol, 2020; Warren & Suarez, 2020). Drugs still remain available through the Internet and darknet, and home delivery of drugs are becoming more common (EMCDDA & Europol, 2020).

Ultimately, epidemiological data focusing on the potential effects that social distancing measures may have on drug use behavior in the US, within the context of the COVID-19 pandemic, are needed in order for public health experts to identify problems and continue to promote prevention and harm reduction efforts where appropriate. In order to determine whether social distancing measures affect drug use behavior among populations that are known to demonstrate high prevalence of use, we surveyed electronic dance music (EDM) partygoers in New York who reported recent drug use. EDM party attendees are at high risk for use of a variety of drugs such as ecstasy, cocaine, and LSD (Palamar et al., 2015), and this population commonly uses these drugs to enhance the lights, music, and socialization during party experiences (White, 2014). A recent study of EDM partygoers in New York City estimated that almost half (48.4%) have used cocaine in the past year, 41.1% have used ecstasy/MDMA/Molly in the past year, nearly a quarter (23.1%) have used LSD in the past year, and 16.1% have used ketamine in the past year (Palamar et al., 2019). We focused on this population in this study as it provides a unique opportunity to determine whether COVID-19-related social distancing measures affect drug use behavior among people who typically use drugs in party settings.

In this study, participants from this population were surveyed between April 18 and May 25, 2020 and reported (retrospectively) how their use of various drugs changed during COVID-19 social distancing (which was defined as beginning on March 16, 2020). Our analysis had two aims. First, we sought to determine whether frequency or amount of use of various drugs changed during COVID-19 social distancing, and whether the cost or perceived quality of drugs used changed. Second, we sought to determine whether demographic characteristics, previous EDM party attendance, past-month loneliness, and having tested positive for COVID-19 (or suspecting one had COVID-19) were related to decreased frequency of use during social distancing.

Methods

Study procedures and participants

The study flyer was posted on social media sites and geared toward EDM partygoers. It advertised that we were seeking to research drug use during the COVID-19 crisis among EDM party-going adults who live in NYC. The flyer also noted that eligible individuals who completed the full survey would be compensated with a \$10 USD online gift certificate from

an online vendor such as Amazon. Interested individuals accessed a URL that linked to a two-minute screener survey used to determine eligibility as well as to flag potential overreporting and mischievous responses, which was anticipated owing to compensation being offered for survey completion (Palamar & Acosta, 2020). To be eligible, individuals had to 1) report being at least 18 years of age; 2) report attendance to an EDM party within the past six months; 3) report residing in New York; 4) provide an email address where they can receive the full survey; and 5) report past-3-month use of at least one drug queried (i.e. cannabis, cocaine, ecstasy/MDMA/Molly, LSD, ketamine, heroin) or report past-3-month vaping (of any substance including nicotine). The study was conducted from April 18 to May 25, 2020 and the New York University Langone Medical Center institutional review board approved all study procedures.

Screener

Informed consent was obtained at the beginning of the screener, and participants were asked questions on demographic characteristics and inclusion criteria described above. The screener also included questions gauging overreporting and mischievous or careless responses (Palamar & Acosta, 2020). For example, the screener queried legal deafness and blindness, participant weight, and number of siblings. Such questions can facilitate detection of patterns of extreme responses (e.g. weight of <75 lbs. or >400 lbs. or having >10 siblings) (Furlong et al., 2017). Similarly, use of a fictitious drug called nadropax was queried to further detect overreporting (Fernandez-Calderon et al., 2018).

As described elsewhere (Palamar & Acosta, 2020), we also conducted checks for repeated submissions (those from the same email or IP address) and we examined suspicious clusters of submissions with similar email addresses and submissions with nearly identical text box responses. Our system allowed us to detect an abundance of suspicious screener submissions. Only those deemed eligible were invited to take the full survey. We received 773 screener submissions between April 18 and May 25, 2020. However, given the eligibility and screening criteria, only 156 (20%) participants that submitted a screener were deemed eligible. While there are many combinations of reasons in which individuals were deemed ineligible, briefly, the majority ($n = 524$) of cases were deemed ineligible due to suspicious email addresses and/or IP addresses (138 of which also reported use of the fictitious drug). 144 in total reported use of the fictitious drug and 333 cases submitted identical type-in responses within short periods of time (often listing use of the fictitious drug). With regard to direct eligibility questions, only 37 reported no drug use, 28 reported not residing in New York, and 15 did not report recent EDM party attendance. Individuals deemed eligible were sent an email containing a URL to the full survey. Of those invited, 128 completed the survey.

The full survey

The survey invitation email contained a unique ID number which participants entered on the first page of the survey. The ID allowed us to link screener responses to full survey responses. Similar to previous studies (Palamar et al., 2019), demographic information (i.e. age, sex, race/ethnicity) had to match the responses provided on the screener for participants to be considered eligible for compensation. This was also explained to participants on the

consent form at the beginning of the survey. Participants were asked if they had used a variety of drugs in the past three months. Those reporting use of a specific drug were later asked if their use changed during the COVID-19 pandemic. We defined the start of COVID-19 social distancing as beginning the week of March 16, 2020, when Governor Cuomo requested the closure of nightlife venues and asked New York residents to stay home until further notice. Names of drugs reportedly used were piped into COVID-19-related questions which had ordinal response options. Those reporting cannabis use, for example, were asked how their use of cannabis changed during COVID with regard to 1) frequency (“I use less often”, “my frequency of use hasn’t changed”, or “I used more often”), 2) amount used (“I use smaller amounts”, “the amounts I use are the same”, or “I use bigger amounts”), 3) availability (“it is harder to get”, “availability is the same”, or “it is easier to get”), and 4) cost (“it costs less”, “it costs the same”, or “it costs more”). Responses were also recoded into binary variables to indicate whether or not decreases in frequency of use were reported. In addition, participants were asked about how lonely they were over the past month *via* the Revised UCLA Loneliness Scale (Russell et al., 1980). This measure queries loneliness *via* 20 Likert response items. The items had high reliability in this sample ($\alpha = 0.87$) and we coded sum scores to indicate a low (20–34), moderate (35–49), or moderately high or high (65–80) degree of loneliness (Jirka et al., 1996). Finally, participants were asked if they either suspected or learned (*via* a test) that they have or had COVID-19.

Statistical analysis

We first examined participant characteristics through frequencies and percentages, and then calculated frequencies and percentages of response options regarding self-reported frequency of use, amount used, and cost and quality of drugs used. We focused on the most prevalent drugs used in this population (Palamar & Le, 2020), which are cannabis, cocaine, ecstasy, and LSD. Finally, using bivariable logistic regression, we determined whether participant characteristics were related to changes in odds of reporting decreased frequency of use of each drug. All analyses were done using Stata SE 13.

Results

Table 1 presents demographic characteristics of the sample ($n = 128$). The majority of the sample was female (61.7%), with most participants holding a college degree or higher (55.5%) and earning <\$500 per week (60.2%). In terms of past-three-month use, 78.9% of participants reported use of cannabis (78.9%), 32.8% reported cocaine use, 30.5% reported ecstasy use, and 19.5% reported LSD use.

Table 2 presents summary data regarding whether drug use behavior reportedly changed during COVID-19 social distancing. The majority of participants reporting past-three-month use reported decreased frequency of use during implementation of COVID-19-related social distancing measures. Specifically, among those reporting recent use, 78.6% reported reduced frequency of use of cocaine, 71.1% reported reduced frequency of use of ecstasy, and 68.0% reported reduced frequency of use of LSD. However, among people reporting cannabis use, a greater proportion of participants reported an increase in frequency of use compared to those reporting decreased frequency of use (35.0% vs. 32.0%). Most of those reporting use

of cannabis (52.0%) or ecstasy (52.7%) reported using the same amount during COVID-19 social distancing, but most (66.7%) of those reporting cocaine use reduced the amount used. The majority of those reporting use of cannabis, cocaine, ecstasy, and/or LSD reported that drug cost (80.0–84.0%) and drug quality (84.2–92.0%) did not change during social isolation.

Bivariable associations with respect to participant characteristics and self-reported decreased frequency of drug use are presented in Table 3. Participants with a college degree were at higher odds for decreasing frequency of cannabis use compared to those with less than a college degree (OR = 2.56, 95% CI: 1.03–6.32). Older participants (ages ≥ 23) were at lower odds for decreasing frequency of cocaine use compared to younger participants (ages 18–22; OR = 0.07, 95% CI: 0.01–0.64), and those earning more than \$500 per week were also at lower odds for decreasing frequency of cocaine use compared those earning under \$500 per week (OR = OR = 0.07, 95% CI: 0.01–0.64). Finally, those who attend EDM events biweekly or more often were at higher odds for decreasing frequency of LSD use compared to those who attend less often (OR = 0.10, 95% CI: 0.01–1.00). No independent variables were significantly related to decreased frequency of ecstasy use, and sex, race/ethnicity, loneliness, and confirmed or suspected COVID-19 infection were not significantly related to decreased frequency of use of any drug examined.

Discussion

To our knowledge, this study is among the first to investigate changes in drug use behavior with respect to widespread implementation of social distancing measures to contain COVID-19. Specifically, the chosen sample consisted of drug-using EDM partygoers who reside in New York in order to better determine whether individuals with recent drug use experience have altered use during this time.

Although some participants reported increased frequency of use of cocaine, ecstasy, and LSD, our findings overall suggest that the majority of those reporting recent drug use decreased frequency of use of these three drugs during social distancing. However, over one-third (35%) of those who use cannabis reported increased frequency of use, which compares to 32% reporting a decrease and 33% reporting no change in frequency of use. It should be noted that cannabis was the one drug examined in our study that is not typically considered a party drug, so it is not unexpected that results here diverged compared to the other drugs examined. Our findings appear to align with recent EMCDDA findings that party drug use may indeed be less likely to occur in nonsocial settings during periods of mandated isolation (EMCDDA, 2020; EMCDDA & Europol, 2020). However, an additionally important consideration is the social acquisition of these drugs, that is to say, a large portion of people who engage in recreational use of party drugs, like ecstasy, obtain them *via* social supply from friends rather than formal ‘dealers’ or sellers (Palamar, 2020; Smirnov et al., 2013; Vuolo & Matias, 2020). As such, social distancing measures may have also affected drug use behaviors insofar as it may have been difficult for participants to acquire party drugs from friends, even if the desire to use these drugs at home was present. In contrast, social distancing measures and stay-at-home orders may be conducive to more frequent cannabis use and may be further evidenced by the fact that over twenty states formally

recognized medical or recreational cannabis dispensaries as essential businesses permitted to remain open (Kary, 2020). Moreover, many Americans have anecdotally reported turning to cannabis in order to tackle COVID-19-related boredom or anxiety (Adams, 2020; Kary, 2020).

While the frequency of use of most drugs examined appeared to change during social distancing measures, our findings showed that the amounts of use of cannabis, ecstasy, or LSD used stayed relatively consistent. In contrast, two-thirds (66.7%) of participants reported using cocaine in smaller amounts during COVID-19 social distancing. While it is uncertain why lesser amounts of cocaine tended to be used, one potential reason may be reduced availability, as suggested by recent EMCDDA reports (EMCDDA, 2020; EMCDDA & Europol, 2020). Alternatively, individuals may feel less inclined to use as much, given the lack of nightlife events that may have otherwise taken place for many hours. Contrary to findings from the EMCDDA reports (EMCDDA, 2020; EMCDDA & Europol, 2020), the majority of our participants reported that the cost and quality of cannabis, ecstasy, cocaine, and LSD did not change during COVID-19-related social distancing.

In addition, upon examining potential correlates of reporting decreased frequency of drug use, our findings show that participants with a college degree were at higher odds for reporting a decrease in frequency of cannabis use during the current period of social distancing measures compared to those with less than a college degree. Although not a direct comparison, data based on educational attainment from the National Survey on Drug Use and Health in recent years also show that Americans that were college graduates already had consistently lower prevalence of cannabis use than those who were only high school graduates or obtained associate degrees (Substance Abuse & Mental Health Services Administration, 2019). In addition, preliminary European data has shown that cannabis use during COVID-19 has decreased among occasional users and increased among more frequent users (EMCDDA, 2020). Within the context of the COVID-19 pandemic, then, it is possible that our findings reflect the fact that those with a college degree were more likely to have had gainful employment going into the pandemic and were perhaps less susceptible to the negative economic consequences such as furloughs and layoffs. As such, these individuals likely have had less leisurely time or felt less of a need (e.g. due to boredom or anxiety) to use cannabis during the pandemic compared to those with lower levels of educational attainment.

We also found that older participants and those with higher weekly income were at lower odds for reporting a lower frequency of cocaine use during social distancing related to COVID-19. We hypothesize that this may be related to the cost of cocaine. With cocaine typically commanding the most expensive street prices (United Nations Office on Drugs & Crime, 2019) and many Americans having lost jobs or reduced sources of income during the COVID-19 pandemic, it is primarily those with lower income that had to reduce their use.

Finally, our findings show that those reporting more frequent past-year EDM party attendance were at higher odds for reporting decreased frequency of LSD use, which may suggest that people who were less involved in the EDM party scene are more likely to reduce or cease use. Indeed, frequent attendance is a major predictor of use of various party

drugs (Abrahamsson & Hakansson, 2013; Palamar et al., 2015; 2017; Smirnov et al., 2013), not only to enhance party atmospheres (like lights and music), but also because many people who use acquire their drugs at these events (Palamar, 2020).

Limitations

Our sample was limited to EDM partygoers who use drugs so results may not be generalizable to other populations. Online recruitment and online survey methods have many limitations (Miller & Sonderlund, 2010); however, we believe we eliminated various pitfalls of online surveying through our new methodology (Palamar & Acosta, 2020). It should be noted, though, that a relatively high portion of females and participants identifying as Asian took the survey. Previous studies that utilize online surveys have also found that response rates are often higher among Asians and females (Sax et al., 2003; Yetter & Capaccioli, 2010). More research is needed, however, to determine whether more Asians and females came across the study flyer or whether people of these demographics were simply more likely to engage in the study screening. We believe this also makes results less generalizable to the NYC EDM scene as its partygoers are more likely to be male and/or white (Palamar et al., 2019). The sample size in our study was relatively small due to our strict inclusion criteria to limit mischievous reporters and over-reporters. This small sample size not only reduced power to detect associations but it also prevented us from being able to use multivariable models. Changes in drug use were examined retrospectively which can have limitations regarding recall. Prospective designs tend to more accurately assess changes in behaviors. Requiring an email address from interested individuals also likely led to concerns about confidentiality even though the informed consent explained that data were indeed confidential. Reporting recent use of a drug was an inclusion criterion and this could have further biased results. Finally, we only examined use of select drugs. Other (legal) drugs would have also needed to have been examined in order to more fully assess the overall impact on COVID-19 on participants' drug use.

Conclusions

Participants from our sample tended to reduce drug use during COVID-19-related social distancing. This suggests, that at least among people who attend EDM parties in New York, that party drug use tends to decrease when they are confined to nonsocial and non-nightlife settings. We thus believe prevention effects for party drug use should largely apply to use *in* nightlife settings. More research, however, is needed to determine how drug use behavior is affected by such social distancing measures in the general population.

Acknowledgements

The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

Funding

Research reported in this publication was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number R01 DA044207 (PI: Palamar).

References

- Abrahamsson T, & Hakansson A (2013). Correlates of ecstasy use in the Swedish general population. *Substance Use & Misuse*, 48(4), 353–357. 10.3109/10826084.2012.763142 [PubMed: 23398568]
- Adams D (2020). Many look to marijuana to cope with coronavirus anxiety. That concerns health officials. *Boston Globe*. <https://www.bostonglobe.com/2020/05/27/marijuana/many-look-marijuana-cope-with-coronavirus-anxiety-that-concerns-health-officials/>.
- Barratt MJ, Ferris JA, & Winstock AR (2016). Safer scoring? Cryptomarkets, social supply and drug market violence. *The International Journal on Drug Policy*, 35, 24–31. 10.1016/j.drugpo.2016.04.019 [PubMed: 27241015]
- Berg RL, & Cassells JS (1992). *The second fifty years: Promoting health and preventing disability*. National Academies Press.
- Centers for Disease Control and Prevention. (2020). Considerations for events and gatherings. https://www.cdc.gov/coronavirus/2019-ncov/community/large-events/considerations-for-events-gatherings.html?CDC_AA_refVal=https%3A%2F%2Fwww.cdc.gov%2Fcoronavirus%2F2019-ncov%2Fcommunity%2Flarge-events%2Fmass-gatherings-ready-for-covid-19.html.
- Copeland M, Fisher JC, Moody J, & Feinberg ME (2018). Different kinds of lonely: Dimensions of isolation and substance use in adolescence. *Journal of Youth and Adolescence*, 47(8), 1755–1770. 10.1007/s10964-018-0860-3 [PubMed: 29774451]
- Cudjoe TKM, & Kotwal AA (2020). “Social distancing” amid a crisis in social isolation and loneliness. *Journal of the American Geriatrics Society*, 68(6), E27–e29. 10.1111/jgs.16527 [PubMed: 32359072]
- European Monitoring Centre for Drugs and Drug Addiction, & Europol. (2020). *EU drug markets — Impact of COVID-19*. https://www.emcdda.europa.eu/system/files/publications/13097/EU-Drug-Markets_Covid19-impact_final.pdf.
- European Monitoring Centre for Drugs and Drug Addiction. (2020). *EMCDDA Trendspotter briefing: Impact of COVID-19 on patterns of drug use and drug-related harms in Europe*. https://www.emcdda.europa.eu/system/files/publications/13130/EMCDDA-Trendspotter-Covid-19-Wave-2_1.pdf.
- Evelyn K (2020). Here’s what a ‘stay home’ order means for New York. *The Guardian*. <https://www.theguardian.com/us-news/2020/mar/20/new-york-90-day-stay-home-order-what-it-means>.
- Fernandez-Calderon F, Cleland CM, & Palamar JJ (2018). Polysubstance use profiles among electronic dance music party attendees in New York City and their relation to use of new psycho-active substances. *Addictive Behaviors*, 78, 85–93. 10.1016/j.addbeh.2017.11.004 [PubMed: 29128711]
- Ferré-Sadurní L (2020). New York City schools, restaurants and bars are shut down over coronavirus. *The New York Times*. <https://www.nytimes.com/2020/03/15/nyregion/coronavirus-nyc-shutdown.html>.
- Furlong MJ, Fullchange A, & Dowdy E (2017). Effects of mischievous responding on universal mental health screening: I love rum raisin ice cream, really I do!. *School Psychology Quarterly: The Official Journal of the Division of School Psychology, American Psychological Association*, 32(3), 320–335. 10.1037/spq0000168
- Golden J, Conroy RM, Bruce I, Denihan A, Greene E, Kirby M, & Lawlor BA (2009). Loneliness, social support networks, mood and wellbeing in community-dwelling elderly. *International Journal of Geriatric Psychiatry*, 24(7), 694–700. 10.1002/gps.2181 [PubMed: 19274642]
- Jirka J, Schuett S, & Foxall MJ (1996). Loneliness and social support in infertile couples. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, 25(1), 55–60. 10.1111/j.1552-6909.1996.tb02513.x
- Kary T (2020). Quarantined Americans embrace marijuana, reshaping an industry. *Boston Globe*. https://www.bostonglobe.com/2020/05/22/marijuana/quarantined-americans-embrace-marijuana-reshaping-an-industry/?p1=Article_Inline_Text_Link.
- Kobus K, & Henry DB (2010). Interplay of network position and peer substance use in early adolescent cigarette, alcohol, and marijuana use. *The Journal of Early Adolescence*, 30(2), 225–245. 10.1177/0272431609333300

- Matrajt L, & Leung T (2020). Evaluating the effectiveness of social distancing interventions to delay or flatten the epidemic curve of coronavirus disease. *Emerging Infectious Diseases*, 26(8), 1740–1748. 10.3201/eid2608.201093 [PubMed: 32343222]
- Miller PG, & Sonderlund AL (2010). Using the internet to research hidden populations of illicit drug users: A review. *Addiction (Abingdon, England)*, 105(9), 1557–1567. 10.1111/j.1360-0443.2010.02992.x
- Osgood DW, Feinberg ME, Wallace LN, & Moody J (2014). Friendship group position and substance use. *Addictive Behaviors*, 39(5), 923–933. 10.1016/j.addbeh.2013.12.009 [PubMed: 24389068]
- Palamar JJ (2020). Diffusion of ecstasy in the electronic dance music scene. *Substance Use and Misuse*. In Press, 10.1080/10826084.2020.1799231
- Palamar JJ, & Acosta P (2020). On the efficacy of online drug surveys during the time of COVID-19. *Substance Abuse*, 41(3), 283–285. 10.1080/08897077.2020.1784362 [PubMed: 32697173]
- Palamar JJ, Acosta P, Le A, Cleland CM, & Nelson LS (2019). Adverse drug-related effects among electronic dance music party attendees. *International Journal of Drug Policy*, 73, 81–87. 10.1016/j.drugpo.2019.07.005 [PubMed: 31349134]
- Palamar JJ, Acosta P, Ompad DC, & Cleland CM (2017). Self-reported ecstasy/MDMA/”molly” use in a sample of nightclub and dance festival attendees in New York City. *Substance Use & Misuse*, 52(1), 82–91. 10.1080/10826084.2016.1219373 [PubMed: 27661470]
- Palamar JJ, Griffin-Tomas M, & Ompad DC (2015). Illicit drug use among rave attendees in a nationally representative sample of US high school seniors. *Drug and Alcohol Dependence*, 152, 24–31. 10.1016/j.drugalcdep.2015.05.002 [PubMed: 26005041]
- Palamar JJ, & Keyes KM (2020). Trends in drug use among electronic dance music party attendees in New York City, 2016–2019. *Drug and Alcohol Dependence*, 209, 107889. 10.1016/j.drugalcdep.2020.107889 [PubMed: 32050110]
- Palamar JJ, & Le A (2020). Self-correction of unreported marijuana use by participants taking a street intercept survey. *American Journal of Drug and Alcohol Abuse*, in Press, 10.1080/00952990.2020.1745219
- Palamar JJ, Le A, Acosta P, & Cleland CM (2019). Consistency of self-reported drug use among electronic dance music party attendees. *Drug and Alcohol Review*, 38(7), 798–806. 10.1111/dar.12982 [PubMed: 31523872]
- Raz S, & Berger BD (2010). Social isolation increases morphine intake: Behavioral and psychopharmacological aspects. *Behavioural Pharmacology*, 21(1), 39–46. 10.1097/FPB.0b013e32833470bd [PubMed: 19949320]
- Russell D, Peplau LA, & Cutrona CE (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology*, 39(3), 472–480. 10.1037//0022-3514.39.3.472 [PubMed: 7431205]
- Sax LJ, Gilmartin SK, & Bryant AN (2003). Assessing response rates and nonresponse bias in web and paper surveys. *Research in Higher Education*, 44(4), 409–432. 10.1023/A:1024232915870
- Smirnov A, Najman JM, Hayatbakhsh R, Plotnikova M, Wells H, Legosz M, & Kemp R (2013). Young adults’ trajectories of ecstasy use: A population based study. *Addictive Behaviors*, 38(11), 2667–2674. 10.1016/j.addbeh.2013.06.018 [PubMed: 23899430]
- Smirnov A, Najman JM, Hayatbakhsh R, Wells H, Legosz M, & Kemp R (2013b). Young adults’ recreational social environment as a predictor of ecstasy use initiation: Findings of a population-based prospective study. *Addiction (Abingdon, England)*, 108(10), 1809–1817. 10.1111/add.12239
- Stickley A, Koyanagi A, Kuposov R, Schwab-Stone M, & Ruchkin V (2014). Loneliness and health risk behaviours among Russian and U.S. adolescents: A cross-sectional study. *BMC Public Health*, 14, 366. 10.1186/1471-2458-14-366 [PubMed: 24735570]
- Substance Abuse and Mental Health Services Administration. (2019). 2018 National Survey on Drug Use and Health: Methodological summary and definitions. Rockville, MD. <https://www.samhsa.gov/data/sites/default/files/cbhsq-reports/NSDUHMethodsSummDefs2018/NSDUHMethodsSummDefs2018.htm>.
- Tani CR, Chavez EL, & Deffenbacher JL (2001). Peer isolation and drug use among white non-Hispanic and Mexican American adolescents. *Adolescence*, 36(141), 127–139. [PubMed: 11407629]

- Theeke LA (2010). Sociodemographic and health-related risks for loneliness and outcome differences by loneliness status in a sample of U.S. older adults. *Research in Gerontological Nursing*, 3(2), 113–125. 10.3928/19404921-20091103-99 [PubMed: 20415360]
- United Nations Office on Drugs and Crime (2019). *World Drug Report 2019*. Vienna, Austria. <https://wdr.unodc.org/wdr2019/>.
- Volkow ND (2020). Collision of the COVID-19 and Addiction Epidemics. *Annals of Internal Medicine*, 173(1), 61–62. 10.7326/M20-1212 [PubMed: 32240293]
- Vuolo M, & Matias J (2020). Sources of drug acquisition among females and males in the European Web Survey on Drugs. *The International Journal on Drug Policy*, 81, 102777. Jul. 10.1016/j.drugpo.2020.102777 [PubMed: 32454388]
- Warren B, Suarez K (2020). Mexican cartels stockpile drugs and money amid COVID-19 pandemic. *USA Today*. <https://www.usatoday.com/story/news/nation/2020/06/08/coronavirus-pandemic-mexican-cartels-stashing-drugs-money-prices-up/5317975002/>.
- Weiss RS (1973). *Loneliness: The experience of emotional and social isolation*. MIT Press.
- White CM (2014). How MDMA's pharmacology and pharmacokinetics drive desired effects and harms. *Journal of Clinical Pharmacology*, 54(3), 245–252. 10.1002/jcph.266 [PubMed: 24431106]
- Yetter G, & Capaccioli K (2010). Differences in responses to Web and paper surveys among school professionals. *Behav Res Methods*, 42(1), 266–272. 10.3758/BRM.42.1.266 [PubMed: 20160305]

Table 1.Sample characteristics ($n = 128$).

	% (n)
Age, years, mean \pm SD	23.3 \pm 4.4
Sex	
Male	38.3 (49)
Female	61.7 (79)
Education	
High school or less	18.0 (23)
Some college	26.5 (34)
College degree	46.9 (60)
Graduate school	8.6 (11)
Race/ethnicity	
White	41.4 (53)
Black	1.6 (2)
Hispanic	5.5 (7)
Asian	43.0 (55)
Other/Mixed	8.5 (11)
Weekly income	
>\$500	60.2 (77)
\$500	39.8 (51)
Past-Year EDM party attendance frequency	
Once or twice a year	9.4 (12)
Every couple of months	25.8 (33)
Every month	32.0 (41)
Every other week	23.4 (30)
Weekly or more	9.4 (12)
Past-3-month drug use	
Marijuana	78.9 (101)
Cocaine	32.8 (42)
Ecstasy	30.5 (38)
LSD	19.5 (25)
Loneliness (past month)	
Low	27.3 (35)
Moderate	54.7 (70)
Moderately high or high	18.0 (23)
COVID-19: suspected or confirmed <i>via</i> test	
No	81.3 (104)
Yes	18.7 (24)

SD = standard deviation. EDM = electronic dance music.

Table 2.

Self-reported changes in drug-related behavior during COVID-19 social distancing.

	Marijuana (<i>n</i> = 100) % (n)	Cocaine (<i>n</i> = 42) % (n)	Ecstasy (<i>n</i> = 38) % (n)	LSD (<i>n</i> = 25) % (n)
Frequency				
Decreased	32.0 (32)	78.6 (33)	71.1 (27)	68.0 (17)
Stayed the same	33.0 (33)	14.3 (6)	21.0 (8)	20.0 (5)
Increased	35.0 (35)	7.1 (3)	7.9 (3)	12.0 (3)
Amount used				
Decreased	29.0 (29)	66.7 (28)	44.7 (17)	48.0 (12)
Stayed the same	52.0 (52)	28.5 (12)	52.7 (20)	48.0 (12)
Increased	19.0 (19)	4.8 (2)	2.6 (1)	4.0 (1)
Drug cost				
Decreased	7.0 (7)	4.8 (2)	7.9 (3)	12.0 (3)
Stayed the same	80.0 (80)	83.3 (35)	81.6 (31)	84.0 (21)
Increased	13.0 (13)	11.9 (5)	10.5 (4)	4.0 (1)
Drug quality				
Decreased	8.0 (8)	11.9 (5)	13.2 (5)	8.0 (2)
Stayed the same	85.0 (85)	85.7 (36)	84.2 (32)	92.0 (23)
Increased	7.0 (7)	2.4 (1)	2.6 (1)	0.0 (0)

Table 3. Unadjusted odds ratios of characteristics associated with reporting decreased frequency of drug use during COVID-19 social distancing.

	Marijuana (n = 100) OR (95% CI)	Cocaine (n = 42) OR (95% CI)	Ecstasy (n = 38) OR (95% CI)	LSD (n = 25) OR (95% CI)
Age				
18–22	1.00	1.00	1.00	1.00
23	0.68 (0.29–1.59)	0.07 (0.01–0.64)	0.35 (0.08–1.60)	0.23 (0.04–1.51)
Sex				
Male	1.00	1.00	1.00	1.00
Female	1.52 (0.65–3.56)	3.48 (0.38–31.63)	0.49 (0.12–2.03)	0.55 (0.10–3.00)
Race/Ethnicity				
Nonwhite	1.00	1.00	1.00	1.00
White	0.87 (0.37–2.03)	0.81 (0.18–3.60)	0.42 (0.10–1.74)	0.70 (0.13–3.79)
Education				
< College degree	1.00	1.00	1.00	1.00
College degree	2.56 (1.03–6.32)	0.19 (0.02–1.72)	0.53 (0.09–3.01)	-
Weekly income				
\$500	1.00	1.00	1.00	1.00
>\$500	1.04 (0.44–2.45)	0.07 (0.01–0.64)	0.30 (0.07–1.38)	0.89 (0.17–4.78)
EDM Party attendance				
Less than biweekly	1.00	1.00	1.00	1.00
Biweekly or more often	1.17 (0.48–2.86)	0.46 (0.10–2.04)	0.67 (0.16–2.73)	0.10 (0.01–1.00)
Loneliness (past month)				
Low	1.00	1.00	1.00	1.00
Moderate	0.49 (0.19–1.25)	0.14 (0.02–1.31)	1.78 (0.36–8.88)	0.64 (0.09–4.58)
Moderately high or high	0.35 (0.09–1.33)	0.20 (0.01–4.17)	0.30 (0.03–2.52)	0.14 (0.01–2.52)
COVID-19				
No	1.00	1.00	1.00	1.00
Yes	0.50 (0.15–1.67)	0.94 (0.16–5.58)	0.21 (0.04–1.03)	0.51 (0.08–3.16)

EDM = electronic dance music, OR = odds ratio. COVID-19 refers to the participant suspecting he or she had the infection or having tested positive for the infection.