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The influence of viewing a headline about ecstasy/Molly adulteration on future intentions to use

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Abstract

Background: Ecstasy (3,4-methylenedioxymethamphetamine [MDMA]), commonly referred to as Molly in the US, is commonly adulterated with drugs potentially more dangerous than MDMA. Synthetic cathinones (“bath salts”) are common adulterants, and use of these compounds tends to be stigmatized. We investigated whether presenting information on the extent of ecstasy being adulterated with “bath salts” affects intentions to use.

Methods: A total of 1,025 adults entering electronic dance music parties were surveyed in 2018. Using an experimental posttest-only design with random assignment, half were randomly assigned to view a published Vice headline about ecstasy/Molly commonly being adulterated with “bath salts.”

Results: Overall, 30.5% of the sample reported past-year ecstasy use, and before viewing the headline, 16.4% agreed that ecstasy/Molly commonly contains “bath salts.” While controlling for pre-test knowledge of “bath salt” adulteration, viewing the headline reduced the odds of intention to use ecstasy/Molly only among non-past-year ecstasy users (Odd ratio [OR] = 0.54; $p = .048$). Viewing the headline increased the odds (OR = 1.81, $p = .030$) of past-year ecstasy users’ intention to test their ecstasy for adulterants.

Conclusions: Knowledge that ecstasy is commonly adulterated may help reduce the risk for future use among non-recent users and increase the willingness of users to test their ecstasy. This information can be used to target those at risk for ecstasy/Molly use.

Keywords

Ecstasy; synthetic cathinones; drug education; harm reduction

Introduction

Ecstasy has been one of the most prevalent “club drugs” for decades. Ecstasy is a common street name for 3,4-methylene-dioxymethamphetamine (MDMA), although, historically, ecstasy has also commonly contained different MDMA-like drugs (such as MDA) or other psychoactive drugs (Parrott, 2004). In the early 2000s, powder and crystalline ecstasy gained popularity and became marketed as “pure” MDMA (Palamar, 2017), commonly referred to as Molly in the US. Although Molly is commonly marketed as pure MDMA, ecstasy/Molly is still commonly adulterated in the US – perhaps most commonly with synthetic cathinones (a.k.a.: “bath salts”) (Oliver et al., 2018). While it is unknown to what extent ecstasy users are aware that ecstasy/Molly is commonly adulterated with other drugs, research is needed to examine whether providing high-risk individuals with knowledge of extensive adulteration influences future intention to use this drug or to engage in harm reduction behaviors related to use.

Although the prevalence of ecstasy use has decreased in the general population over the past decade (Miech et al., 2018), ecstasy use is still prevalent in the electronic dance music (EDM) scene where the drug is commonly used to enhance music and light shows at such parties. A national survey of Australian dance festival-attending adults found that 78% used an illegal drug at their last-attended dance festival, and of these users, 85% reported using ecstasy (Hughes, Moxham-Hall, Ritter, Weatherburn, & MacCoun, 2017). Studies of EDM attendees in New York City (NYC) have estimated that at least 4 out of 10 have ever used ecstasy and that a quarter has used in the past year (Palamar, Acosta, & Cleland, 2017, 2019).

While MDMA use is associated with its own unique dangers (Parrott, 2013), synthetic cathinones, commonly referred to as “bath salts” in the US, appear to be some of the most common adulterants or replacements for drugs sold as ecstasy/Molly (Oliver et al., 2018). Although drug-testing studies are lacking in the US, such studies throughout Europe have often detected “bath salts” such as methylone, mephedrone, 4-MEC, and ethylone in drugs sold as ecstasy (Brunt et al., 2016; Brunt, Poortman, Niesink, & van Den Brink, 2011; Hondebrink, Nugteren-van Lonkhuyzen, Van Der Gouwe, & Brunt, 2015; Vidal Gine et al., 2016). These studies have also detected a variety of other stimulants in ecstasy such as 2C-B, 5/6-APB, BZP, 4-FA, and PMMA (Brunt et al., 2016; Hondebrink et al., 2015). Most of these compounds are relatively new, underresearched, and potentially as dangerous, or more dangerous, than MDMA (Oliver et al., 2018; Vevelstad et al., 2012). Aside from potential danger associated with “bath salt” use, use of these compounds also appears to be particularly stigmatized in the EDM scene. For example, among EDM party attendees who have heard of “bath salts,” three quarters (76%) disapprove of use (with almost half [47.6%] strongly disapproving) and 30% believe that use has turned individuals into cannibals, as has been falsely reported by some media sources (Palamar, 2018; Palamar et al., 2017).

Although drug-testing studies are lacking in the US, recent US studies have tested biological specimens of EDM party attendees for unknown exposure to “bath salts.” Mohr, Friscia, Yeakel, and Logan (2017), for example, tested blood, urine, and/or saliva samples from EDM festival attendees in Florida, and “bath salt” exposure was prevalent. For example, in

saliva samples, 14% tested positive for ethylone, 7% tested positive for methylone, and 3% tested positive for alpha-PVP (“Flakka”). While it is unknown what drugs these attendees thought they had used, the prevalence of “bath salt” exposure was higher than the prevalence of MDMA exposure, and we hypothesize that most exposures to these compounds were via adulterants in or replacements of ecstasy/Molly. Another study in the US examined (unknown) exposure to “bath salts” among ecstasy users in NYC in 2015. EDM party attendees were surveyed and hair-tested upon entering parties, and samples from 48 lifetime ecstasy users were analyzed. Nearly half (46%) tested positive for one or more “bath salts” (i.e., methylone, butylone, alpha-PVP) (Palamar, Salomone, Vincenti, & Cleland, 2016). In February of 2016, Vice, a popular online media source geared toward younger readers, featured these hair test findings in an online article (Iadarola, 2016).

Little, however, is known regarding the extent to which ecstasy users are aware of drug adulteration (e.g., with “bath salts”) and are concerned or willing to cease use upon learning about adulteration. Mass media anti-drug campaigns are commonly used in the US in attempt to prevent drug use, but such campaigns have consistently been shown to be ineffective and in some cases shown to be associated with increased risk for use (Werb et al., 2011). However, specific drug-related information (derived from research studies) published by media outlets might show promise as a method of influencing decisions to use drugs. Although research study results are not always accurately portrayed by media (Haber et al., 2018), some coverage leads to large effects on health-related behavior. For example, coverage of celebrity endorsement of screening for breast cancer or BRCA gene testing has led to increased rates of screening in the general population (Desai & Jena, 2016; Kelaheer et al., 2008). More information is needed regarding whether specific drug-related information has the potential to influence drug-using behavior among those at risk. In addition, while preventing use is commonly the main focus of anti-drug campaigns, there has been little to no focus on drug-related behaviors other than initiation and abstinence. For example, drug checking (a.k.a.: pill testing) is a common harm reduction practice among ecstasy users to detect the presence of “bath salts” and other adulterants (Barratt, Bruno, Ezard, & Ritter, 2018; Palamar & Barratt, 2019), but little is known regarding whether presenting users with information about adulteration affects decisions to apply such measures to decrease risk.

To determine whether information on the extent of adulteration shared by the media has value in influencing intentions to use ecstasy/Molly or to influence harm reduction behavior related to use, we utilized an experimental posttest-only design with random assignment to determine whether viewing the published Vice headline reduced the intention to use ecstasy in the future. We hypothesized that intentions to use would be reduced as “bath salts” are typically viewed as a dangerous and stigmatized class of drugs. We also hypothesized that users exposed to the headline who still intended to use would be more likely to engage in harm reduction behaviors. We believe results will help inform whether information about ecstasy/Molly being commonly adulterated with such potent and stigmatized drugs may be usefully targeted to those at risk for use (e.g., people who attend EDM parties and festivals).

Methods

Procedure

Each week, EDM parties in NYC were randomly selected to survey attendees entering parties using time–space sampling (MacKellar et al., 2007). The weekly party selection list was based on parties listed on popular EDM party websites and through recommendations of key informants in the scene. Recruitment typically occurred two nights per week on Thursday through Sunday. While most parties were held at nightclubs, we also surveyed participants outside of two large daytime EDM festivals which were not randomly selected. To be eligible, passersby must have been (1) ages 18–40 and (2) about to enter the selected party. Passersby (who were alone or in groups) were approached by recruiters and, if eligible, were asked if they would be willing to take a survey about drug use. Surveys were taken on tablets after informed consent was provided. A total of 1,025 participants completed the survey and were compensated US\$10 upon survey completion. Recruitment was conducted from June through September of 2018, and the response rate was 73%. This study was approved by the first author’s institutional review board.

Measures

Participants were asked about their sex, age, and race/ethnicity, whether they had ever used ecstasy/MDMA/Molly in the past year, and about whether they agree that “Drugs called ‘bath salts’ are commonly found in ecstasy/Molly.” The survey program then randomly assigned half of the participants to view a screenshot of a published Vice news headline (Figure 1) explaining how researchers recently found almost half of ecstasy/Molly users in their study unknowingly used “bath salts” instead of MDMA. On the following page, they were asked, “How likely are you to use ecstasy/Molly in the future?” and response options were “very likely,” “likely,” “neutral,” “unlikely,” and “very unlikely,” which were dichotomized into “likely” (very likely or likely) vs. all other responses. Past-year ecstasy users reporting intention to use in the future were also asked how likely they were to (1) use lower doses of ecstasy/Molly in the future, (2) use ecstasy/Molly less often in the future, (3) replace ecstasy/Molly with a different drug, (4) test their ecstasy/Molly to make sure it is pure MDMA, (5) avoid getting ecstasy/Molly from someone they do not know well, and (6) educate friends who use that ecstasy might be low purity. Answer options were presented on the same Likert scale ranging from “very unlikely” to “very likely” and we dichotomized responses into “likely” (very likely or likely) vs. all other responses.

Statistical methods

We first examined descriptive statistics and compared percentages of those reporting intention to use in the future according to whether the participant viewed the Vice headline. This was repeated, focused only on ecstasy users, comparing intention to utilize each of the six harm reduction behaviors according to whether the participant viewed the headline. Then, using logistic regression, we examined whether there was a main effect of viewing the Vice headline on intention to use ecstasy, controlling for whether participants agreed before viewing the headline that ecstasy/Molly commonly contains “bath salts.” We then expanded the model to determine whether ecstasy use was a modifier of the Vice headline effect. This was repeated for intention to engage in harm reduction behaviors among those reporting

ecstasy use. Since time–space sampling was used, selection probabilities were computed based on attendance frequency and response rates (Jenness et al., 2011; MacKellar et al., 2007), and probability weights were utilized and clustering of participants by party was taken into account in analyses (Heeringa, West, & Berglund, 2010).

Results

Most of the sample was male (61.2%, vs. 38.8% female) and white (43.7%, vs. 10.1% black, 22.2% Hispanic, 15.5% Asian, and 8.6% other/mixed race), and the average age was 25.8 years, standard error (SE) = 0.8, range: 18–40). Three-tenths (30.5%) reported past-year ecstasy use, 16.4% agreed that ecstasy/Molly commonly contains “bath salts”, and over a quarter (28.0%) of the sample reported intention to use ecstasy/Molly in the future. Among past-year ecstasy users, 76.4% reported willingness to educate friends that ecstasy may be of low purity, 75.3% reported that they intend to use lower doses in the future, 66.2% reporting intention to use less often in the future, 64.1% reported intention to avoid unknown dealers, 59.5% reported intention to test their ecstasy, and 31.7% reported intending to replace ecstasy with a different drug.

Among past-year ecstasy users, intention to use ecstasy in the future was similar among those who viewed the headline (60.6%) and those who did not view the headline (61.8%; $p = .890$). As shown in Figure 2, among non-past-year ecstasy users, intention to use ecstasy in the future was lower among those who viewed the headline (11.0%) than those who did not view the headline (16.3%; a 5.3% mean difference), but this difference only approached significance ($p = .075$). No main effect of viewing the headline was found (OR = 0.71, $p = .168$; 95% confidence interval [CI]: 0.43–1.17) for reporting future intention to use ecstasy/Molly compared to those not viewing the headline. However, while the interaction between viewing the headline and past-year ecstasy use was not significant ($p = .146$), subgroup analysis showed the Vice headline did not affect past-year users (OR = 0.96, $p = .901$), but viewing the headline was associated with modestly reduced odds of intention to use among non-past-year ecstasy users (OR = 0.54; $p = .048$; 95% CI: 0.29–0.99) (Figure 3).

With regard to intention to apply harm reduction measures, only intention to test ecstasy was affected by viewing the Vice headline in multivariable models (Figure 4). Specifically, we detected a significant main effect with those viewing the Vice headline at increased odds of reporting intention to test their ecstasy (OR = 1.81, $p = .030$). As shown in Figure 5, 66.1% of those viewing the headline reported intention to test their drugs in the future compared to 53.2% of those who did not view the headline.

Discussion

In this study focusing on a population at high risk for ecstasy use, we determined whether viewing a published Vice headline reduced the intention to use ecstasy in the future and whether viewing it increased the likelihood of intending to apply ecstasy-related harm reduction behaviors. Less than a fifth (16%) of those surveyed reported awareness that ecstasy is commonly adulterated with “bath salts,” so such information is needed to inform prevention and harm reduction behavior among potential users.

In this experimental posttest-only design with random assignment, we found that viewing the Vice headline was associated with reduced odds of non-past-year-ecstasy-using attendees reporting future intention to use ecstasy/Molly. However, we detected no effect for past-year ecstasy users. Results suggest presenting members of this population (who at-risk for drug use, but who have not used ecstasy in the past year) with a single straightforward statistic about the extent of ecstasy/Molly being adulterated with “bath salts” may have a modest, but immediate influence on intentions to use this drug in the future.

Among past-year ecstasy users who reported intention to use again in the future, those viewing the Vice headline were at higher odds for reporting intention to test their ecstasy for adulterants. A recent study estimated that close to a quarter (23%) of past-year ecstasy users in the EDM scene has tested their ecstasy, and over half of ecstasy users in that sample reported that they would be less likely to use again upon learning their ecstasy contains “bath salts” or methamphetamine (Palamar & Barratt, 2019). More information is needed, however, regarding the extent to which individuals who learn their ecstasy is adulterated still use it or dispose of it. Regardless, the results of this current study suggest that viewing the Vice headline is associated with an increased willingness to test one’s ecstasy for adulterants. No effects were detected, however, with regard to utilizing other harm reduction measures.

While young drug users may not fully trust messages from government sources about drugs, we believed providing this message through Vice, a popular media source read by Millennials and younger individuals, would be considered trustworthy by many of our young participants. Further research is needed to compare whether such effects would exist if the information is provided by other sources (e.g., major media, government sources). Likewise, it is important to determine which element(s) of this type of headline contribute to decreased intention to use again and to increased intention to test one’s ecstasy. We do not know, for example, whether participants merely trusted the source of the message or whether specific information about the drug was influential. Future research can help determine the extent to which such information affects users’ intentions to use (or to use in a certain manner) and further to determine whether being presented such information leads to actual behavior change rather than just intention to change.

Limitations

This study focused on EDM party attendees so results may not be fully generalizable to other populations. It was not feasible to conduct a pre-test on this cross-sectional survey, but we believe the experimental design using randomization allowed us to detect differences with minimal bias. We could not measure the extent to which participants paid attention to the headline, nor did we assess participants’ level of knowledge about adulteration after viewing the headline; however, we did assess and control for pre-test knowledge of “bath salt” adulteration. We also did not ask ecstasy users whether they have ever tested their ecstasy so we cannot determine whether users who reported intention to test their ecstasy are already experienced in testing their drugs.

Conclusion

This study demonstrates a lack of education about the extent in which ecstasy/Molly is adulterated in this high-risk population and that providing this information to those at risk for use can affect intentions to use or to apply harm reduction behaviors. While more research is needed, providing these individuals with facts from a media source they are likely to trust may be useful in preventing future use. Efficient ways of disseminating information about adulteration to this high-risk population are needed.

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Study Finds Many New York Clubgoers Are Unknowingly Using Bath Salts Instead of MDMA

A NYU study found that a significant amount of users of the club drug don't realize they're taking bath salts.

We recently found that almost **HALF** of ecstasy / Molly users who donated a hair sample had their hair test positive for Bath Salts.

VICE and other media outlets covered our findings.

We are going to ask you about your future intentions to use on the following page.

Figure 1.

Vice headline randomly assigned to be viewed by half the sample.

Figure 2.
Effect of viewing Vice ad on intention to use ecstasy in the future.

Figure 3.
Effect of viewing Vice ad on intention to use ecstasy in the future: subgroup analysis.

Figure 4.
Effect of viewing Vice ad on intention to apply harm reduction behaviors in the future.

Figure 5.
Proportions of those intending to test their ecstasy.