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An Exploratory Study Of College Students' Attitudes About Ecstasy

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Table of Contents

Abstract

In a recent survey of 18-35 year olds, 15% reported using ecstasy (Businelle et al., 2009) and many emerging adults viewed it as "safer" than other illicit drugs, with limited negative consequences (Bahora et al., 2009). Although numerous quantitative studies have explored the topic of ecstasy use in college students, there is limited qualitative research, most of which is limited to users. Thus, in the current study, we used a focus group methodology to better understand users' and nonusers' knowledge, expectations, and perceived risks of ecstasy use, for the purpose of informing prevention efforts on college campuses. Twenty-four college students participated in three focus groups. Results of a thematic analysis suggested that both users and nonusers of ecstasy hold specific, positive expectations related to the effects of ecstasy; this supported the first hypothesis that college students' attitudes about ecstasy would be characterized by more positive rather than negative effects. Compared to nonusers, users identified more positive and negative effects, as well as risks associated with ecstasy use. This supported the second hypothesis that users would view ecstasy more positively than non users; however, users also reported more negative effects and risks than non users. Results of the quantitative portion of the study showed that students regarded ecstasy to be just as risky as cocaine, but more risky than both alcohol and marijuana; interestingly, there was no significant difference in perceived risk of ecstasy between users and non users. Implications of these findings for prevention efforts with college students are discussed.

Introduction

Numerous studies point to the need for continued and more in-depth research on predictors of ecstasy use among adolescents and emerging adults. In 2002, Dennis and Ballard reported that over 5% of 10th graders and 8% of 12th graders reported a lifetime use of ecstasy. More recently, it was reported in the National Survey on Drug Use and Health that the average age of first use for ecstasy was 20.3, with approximately 1 million new users in 2012. This same survey also found an increase in ecstasy use between 2007 and 2010, with the rate stabilizing in 2011. Fifteen percent of individuals age 18–35 reported using ecstasy, with a subset of this age group evidencing a 123% increase from 2004 to 2009 in emergency room visits related to ecstasy. Bahora and colleagues (2009) implied that the recent increase in ecstasy use could be because many young adults viewed ecstasy as "safer" than other illicit drugs, and as having limited negative consequences.

In popular literature, a plethora of MDMA and Ecstasy related deaths have been reported. It was described in the *New York Post* that, "New York club kids who use the party drug molly because they think it's pure ecstasy are often being pedaled what resembles deadly bath salts by ruthless dealers, the DEA told The Post" (Italiano, Schram, & Babcock, 2013). Further in the article, it was described how, "'kids think 'molly' is a pure, safe ecstasy, but it's not,' said DEA Special agent Erin Mulvey. 'It's not pure, it's not safe and it's not even ecstasy'" (Italiano, Schram, & Babcock, 2013).

While there is a substantial body of literature focused on outcomes of ecstasy use (Cole & Sumnall, 2003), associated mood states while under the influence of ecstasy (such as elation or agreeableness) (Parrot & Stuart, 1997), and neurotoxic effects of the drug (Maxwell, 2003; Morgan, 1998; Reneman et al., 2001), several gaps in the literature remain. First, the majority of

studies have focused on users of ecstasy; specifically users' beliefs and attitudes surrounding ecstasy use (Gamma et al., 2004; Martins et al., 2011; McMillan & Conner, 2002; Puente et al., 2008; Walters et al., 2002). However, in studying college students' general attitudes towards ecstasy use, it is imperative to include both users and non-users. This study aims to describe a wider range of college students' attitudes on a drug that has reached heightened levels of abuse within this generation. Secondly, a majority of these studies focused on quantitative data (Businelle et al., 2007; Yacoubian et al., 2003; Walters et al., 2002; Gamma et al., 2004; Martins et al., 2011; Puente et al., 2008). The current study focused on qualitative data so as to provide a more nuanced view of students' ideas of ecstasy. By obtaining qualitative data through a focus group methodology, participants may offer a more complex picture of their views on the drug. That is, their responses will not solely be dependent on fitting the constraints or molds of surveys, questionnaires, or close-ended questions regarding ecstasy use. Instead, students will be provided with a blank palette to paint an image of attitudes surrounding ecstasy use within this generation. This, along with the inclusion of both users and non users, will presumably provide a wide range of responses that have yet to be reported in prior research. The current study will help to enrich certain areas of ecstasy research including students' positive and negative connotations, knowledge, and perceptions of ecstasy risk through focus group discussions. This will provide an inclusive approach to analyzing current views on ecstasy that are held by college students.

Composition of Ecstasy

Ecstasy, or Methylenedioxymethamphetamine (3, 4- MDMA) is a "synthetic amphetamine derivative" with a wide range of consequences on various neurochemicals (Parrot & Stuart, 1997). This drug dates back to 1914, where it was discovered in Germany, and is now referred to as *ecstasy* in tablet form, or *molly* in powder form (which could be ingested in a

capsule). Street names such as ecstasy, molly, X, and more, generalize any pill, capsule, or substance containing 3,4 methylenedioxymethamphetamine (MDMA) (Cuomo et al., 1994; Murphy et al., 2006). MDMA can be taken orally as a tablet or capsule and effects last somewhere between three and six hours. MDMA is not usually present in its pure form, but is mixed with lysergic acid diethylamide (LSD), psilocybin (magic mushrooms), bath salts, or heroin (DeFalco & Italiano, 2013; Maxwell, 2003). In a study of the response to club drug use, Maxwell (2003) reports how,

"Drug Enforcement Administration tests of large seizures of pills have found that all tablets contained some MDMA. In addition, some tablets were found to contain other controlled substances such as methylenedioxy-ethylamphetamine, methylenedioxy-amphetamine, amphetamine, methamphetamine, or ketamine. Some MDMA tablets were found also to contain other noncontrolled substances including caffeine, ephedrine, dextromethorphan, caffeine and ephedrine, ephedrine and dextromethorphan, or antihistamines such as diphenhydramine" (p. 281).

This statement furthers the idea that ecstasy tablets and molly capsules do contain traces of MDMA, yet have a high chance of being contaminated. Interestingly, molly is often portrayed as being in its pure form. However, as discovered by Drug Enforcement Administration, it is more often a cocktail of substances.

Psychological, Physiological, and Neurochemical Effects of Ecstasy

MDMA's stimulant properties heighten energy levels and prolong involvement in activities such as dancing. It simultaneously suppresses thirst sensations, which can lead to severe dehydration (Cole & Sumnall, 2003). Reports on the moods associated with MDMA found increased elation, agreeableness, energeticness, and confidence (Parrot & Stuart, 1997). In

addition to these cognitive and physical responses to the drug, studies have found neurological effects of MDMA on the central nervous system. MDMA raises extracellular levels of certain monoamine neurotransmitters such as serotonin (5HT), dopamine (DA), and norepinephrine (NE). It does this both by increasing the release of these neurotransmitters, and inhibiting their re-uptake. It also inhibits the production of monoamine oxidase (MAO), a brain chemical responsible for decreasing levels of norepinephrine, serotonin and dopamine (Morland, 2000). In a prior animal study, squirrel monkeys given MDMA, and studied over a 7-year span of time, evidenced depleted serotonin (5-HT) levels (Hatzidimitriou et al., 1999).

Subsequent studies have provided evidence that long lasting, and potentially permanent dysregulation or depletion of serotonin levels also may be present in humans. Those who used MDMA were exposed to neurotoxic effects on the serotonergic system (Ricourte et al., 2000). A few days following an overwhelming influx of serotonin levels (induced by MDMA), a short period of depression occurs. This is hypothesized to be due to the body's natural reaction to the disruption of the serotonin system (Curran & Travill, 1997). These errors in extracellular serotonin levels (such as heightened, or depleted serotonin levels) have been shown to be a biological root of a range of mental illnesses such as depression, anxiety, panic disorder, and disorders of impulse control (Reneman et al., 2001). The discovered depletion of serotonin from MDMA use may be a pathological component in future mood disorders (depression), anxiety (panic disorders), and other mental disorders. These neurotoxic effects have also led to impulsiveness, memory deficits, mood shifts, and other negative impacts on cognition (Reneman et al., 2001; Maxwell, 2003; Morgan, 1998). More detrimental effects of MDMA use include restlessness, trismus (i.e. limited ability to open the mouth due to excessive jaw clenching), hyperthermia, hyponatremia, liver dysfunction, cardiovascular disturbance, coma, and death.

These physiological responses may be, in part, a result of the impurity of MDMA (Green et al., 1995; McGuire, 2000; Morland, 2000).

Ecstasy Use in College Students

College students place a heightened focus on their new social life, while simultaneously adjusting to their new independence. Students usually live in dormitories, houses, or apartments surrounded by friends and other same-age pears (Shinew & Parry, 2013). Those in college defined drinking alcohol or doing drugs as social behaviors that allowed them to enjoy time with friends. They were found to spend two to three days out of a week pursuing these specific "leisure" activities (Shinew & Parry, 2013). As Chen and Kandel described in their 1995 study, "the major period of risk for initiation into the use of cigarettes, alcohol, and marijuana is mostly over by age 20. The risk period for initiating the use of illicit drugs other than marijuana and of prescribed drugs lasts longer than that" (p. 44). They later explained how emerging adults reported the most frequent illicit drug use (Chen & Kandel, 1995). The ease with which those 18 years and older have access to illicit drugs likely explains Chen and Kandel's finding. Moreover, access or availability of substances has been found to correlate with drug use (Feldman et al., 2011), further supporting this idea. In McMillan and Conner's 2002 study of drug use and attitude changes over the university career, the most experimentation in college students occurred with marijuana as the first most tried drug, and ecstasy as the second. They attributed these drug behaviors to "increased liberal views towards drug use" and a decrease in "perceived social disapproval" (p. 227). They found a rise in both intentions to take ecstasy, and ecstasy use, from the first year of attending the university to the second year. Their findings suggested that attitudes associated with ecstasy became more positive from the first year of higher education to the second (McMillan & Conner, 2002). College age students were found to be the most likely

population to participate in first time MDMA use (Cuomo et al., 1994).

The prominence of ecstasy use initiation in college is notable given that the brain is still forming in these developmental years. In Silveri's (2012) work, she describes brain growth over the span of college-aged young adults, stating:

"Despite reaching nominal adulthood or the 'age of majority' at the age of 18, 'emerging adults'—those aged 18 to 24, a range that takes in most 'traditional' college students—have been characterized as having greater functional independence and competence than adolescents but less than adults. Since emerging adulthood is a period of ongoing brain development and consequently of unique neurobiological vulnerability, patterns of alcohol use during this period raise significant questions for public policy" (p. 189).

Silveri further describes research conducted by Bennett & Baird (2006) that portrayed distinct transformations in the frontal lobe, which plays a dominant role in executive functioning. Primarily, because the frontal lobe is still undergoing a process of formation, decision-making abilities are not fully developed. This could be problematic when college students are faced with the decision of whether or not to use drugs (Silveri, 2012). Secondly, these studies further illustrate the brain's susceptibility to neurotoxic effects of drug use. Because ecstasy has neurotoxic consequences, such as disrupting or depleting proper neurotransmitter levels (including dopamine and serotonin), these effects can have a detrimental impact on healthy brain development. While the formation of higher-level neuronal connections takes place at this time, neurotoxic effects of drugs can lead to "decreased cognitive function, memory and attention." (Beck, 2012).

Theoretical Foundations of Substance Use

Expectancy theory. In 1963, Victor Vroom defined expectancy theory as a theory of motivation. This theory has since been applied to explain licit and illicit substance use. Specifically, the theory explains how people believe that certain actions (taking ecstasy, in this case) will lead to various outcomes (such as experiencing a high) that are deemed desirable or undesirable. One study concluded that those who were more prone to drug and tobacco use usually lacked true knowledge of detrimental effects of these substances. (O'Callaghan et al., 2006). Regardless of the accuracy of an individual's preconceived notions, expectancy theory suggests that perceived positive outcomes, or positive expectancies, make it more likely that the behavior will occur (Jones et al., 2001).

Albert Bandura's work on modeling and social learning theory is important in understanding how expectancies are formed in relation to drug use. In his in-depth discussion of this theory, Bandura (1977) states: "According to social learning theory, behavior is learned, at least in rough form, before it is performed. By observing a model of the desired behavior, an individual forms an idea of how response components must be combined and temporally sequenced to produce new behavioral configurations" (Bandura, 1977, p. 8). In this, he is suggesting that people may choose to emulate behaviors they have observed in others. He continues, "to function effectively a person must be able to anticipate the probable consequences of different events and courses of action and regulate his behaviors accordingly" (Bandura, 1977, p. 11-12). While not addressing expectancy theory directly, Bandura explains the mechanisms by which people come to have preconceived notions about their environments. People's observations of other's positive experiences may increase the likelihood of them replicating that behavior subsequently. In applying Bandura's model to explain substance use, when an individual observes others using drugs, if the witnessed drug use has a positive outcome, the

observer may decide to take the drug, expecting a similar outcome. Thus, modeling also helps to explain how expectancies develop and how they influence substance use.

Empirical Findings

Expectancy theory applied to drug use. Many years after Vroom's explication of expectancy theory, a large body of empirical research has shown that participation in various behaviors (including illicit drug use) has been associated with holding more positive expectancies in regards to these behaviors (be it drinking alcohol, smoking marijuana, etc.) (Fulton et al., 2012). For example, in Christiansen and colleague's 1982 study on alcohol expectancies in adolescence, the authors explained how these ideations of substance use are present even before an alcoholic beverage has been ingested. Alcohol expectancies were found in younger participants who had not even experienced drinking alcohol yet. However, these beliefs become stronger and more complex over the course of an individual's involvement with alcohol (Christiansen et al., 1982). They continued to explain how these views associated with drinking could estimate how much and how often alcohol is consumed, and if this drinking can transform into problematic drinking habits (Christiansen et al. 1982). This is parallel to Fabricius and colleagues' 1993 study describing how expectancies of alcohol, including the changes that may take place in one's cognitions or actions, have been discovered to be strongly telling of future alcohol use. Anything from amount of alcohol consumed by average drinkers, to differentiating between alcoholics, binge-drinkers, heavy drinkers, and average drinkers, often can be predicted by an individual's expectancies (Fabricius et al., 1993). This study explains how strong the influence of expectancy theory may be. Prior to taking a drug, a person may seek the drug due to the positive ideas that the person holds. During the drug experience, a person may behave according to their perceived expectations on how one should act on that drug. And after drug use,

a person might play the role expected of someone who had just used (such as noting feelings of sociability while drunk, or expressing expected positive and negative outcomes such as the enjoyment of a drug experience). In its simplicity, Jones and colleagues (2001) explain, "that positive expectations (such as 'I expect to be the life and soul of the party if I have a few drinks') represent an important component of motivation to drink while negative expectations (such as 'I expect to have a hangover if I have a few drinks') represent an important component of motivation to restrain" (p. 59).

Expectancies surrounding drug use have been studied in application to various other illicit drugs including marijuana. Those who had intentions to try marijuana have been found to maintain expectancies that no detrimental consequences would follow drug use, and were also found to concur with statements including marijuana "leads to a good time" (Fabricius at al. 1993). Adolescents who reported using marijuana also endorsed marijuana expectancies containing more items on a global positive scale, such as marijuana makes one "more relaxed, happy and funny." Non-users, in contrast, held more negative expectancies such as, "feeling addicted, unhealthy, and slow" (Alfonso & Dunn, 2007). These findings are similar to Gaher and Simon's 2007 study on college students' expectancies of marijuana and alcohol use. They also measured expectancies of participants who used marijuana and concluded that they tended to believe that there were few negative results of smoking marijuana (Gaher & Simons, 2007). In Fulton et al.'s 2012 study, positive Outcome Expectancy Liking (or OEL) was evaluated for both alcohol and marijuana use. They concluded that those who held a higher positive OEL for either drug during the primary year of the study were later discovered to have experimented or become a consistent user of alcohol or marijuana.

In 1994 Jaffe and Kilbey constructed and tested their creation of a Cocaine Expectancy Questionnaire (CEQ). In their pilot study of the questionnaire, they discovered that both users and non-users of cocaine in a college population held certain expectancies about the drug. These were measured by their questionnaire and included, "grandiosity and euphoria, enhancement of cognitive, social, and physical abilities, anxiety and anxiety related physiological sensations, depression, improved mood, sexual enhancement, antisocial and aggressive behavior, paranoia, tension reduction, increased energy and arousal, desire for other drugs, and decrements in sexual performance" (p. 23). Consistent with research on other substances of abuse, positive expectancies in both the social and physical realms were found to correlate with higher levels of cocaine use (Hayaki et al., 2007).

Expectancy theory applied to MDMA. All of the literature aforementioned suggests that expectancy theory can help to explain the use of a wide range of substances, however, few studies have explored the applicability of this theory to MDMA. People hold vastly different expectancies in relation to the previously mentioned drugs (alcohol, marijuana, and cocaine). However, the similarity amongst all substances is that some kind of expectancy (be it positive or negative) is always present for users and non users and influences one's decision to use. In applying the findings of studies on alcohol, marijuana, and cocaine expectancies to ecstasy, it is important to see the connections and disconnections within the findings.

With the commonality of studying users' and non users' expectancies of a drug (prior, during, and after drug consumption), many of the above studies find overlapping data of expectancies playing an active role in drug use. For instance, in Christiansen and colleague's 1982 study of alcohol expectancies, a large portion of their study suggested that more positive expectancies about alcohol predicted whether or not a person would try alcohol, frequency of

use, and if this drinking would become harmful (Christiansen et al., 1982). The idea that expectancies acted as predictors for drug use is a pattern throughout the other studies (Fabricius et al., 1993; Jones et al., 2001). Similarly in the ecstasy literature, positive expectancies are noted as precursors for future ecstasy use in much of the literature described bellow (Businelle et al., 2007; Eiserman & Schensul, 2014; Peters et al., 2005; Puente et al., 2008; Smerdon & Francis, 2011). Another similarity is how users tend to hold more positive expectancies than negative expectancies, while non users hold more negative than positive expectancies in alcohol (Fulton et al., 2012), marijuana (Alfonso & Dunn, 2007; Gaher & Simons, 2007), cocaine (Hayaki et al., 2007), and ecstasy (Businell et al., 2007; Cole & Sumnall, 2003; Eiserman & Schensul, 2014; Gamma et al., 2004; Levy et al., 2005; Yacoubian et al., 2003) literature.

However, there is a disconnect present when comparing literature on illicit drug expectancies. While expectancies of illicit drug use (be it alcohol, marijuana, or cocaine) are also present in terms of ecstasy use, the expectancies themselves differ greatly. Substances such as alcohol, marijuana, and cocaine carry a wider range of expectancies. Alcohol, marijuana, and cocaine hold strong and widespread connotations due to their abundant nature in society. These drugs are thoroughly researched, popularly commented on within the media, taught through health education programs, and have hundreds of intervention programs to address each drug specifically. Thus on account of socialization and education, people are able to form a wide range of positive and negative expectancies for alcohol, marijuana, and cocaine.

In comparison, ecstasy is not discussed with the same prevalence as the other aforementioned substances. Ecstasy's presence in the literature, media, and education systems has been stagnant, potentially due to the relatively new popularity of ecstasy within the drug scene. After ecstasy use peaked in the 1990's, a larger effort has been made to publicize its

dangers. Most research on ecstasy is dated in the mid to late nineties, while limited current media focuses on the detrimental nature of this drug. However, with a recent increase of use (National Survey on Drug Use and Health), alongside reported drug contamination and deaths associated with ecstasy (DeFalco & Italiano, 2013; Italiano, Schram, & Babcock, 2013), only recently have negative expectancies regarding ecstasy use been made public. Therefore, the public would be expected to hold inherently different expectancies of alcohol (a drug that has been a focal part of society over the course of history) versus ecstasy (which made its debut in the 1990's).

This study seeks to address which expectancies regarding ecstasy are held by college students at large. These expectancies are presumably going to be more positive and uninformed in comparison to the expectancies described in the alcohol, marijuana, and cocaine expectancy research. It is suspected that because of the limited educational and scientific resources encompassing ecstasy, most of students' attitudes about ecstasy will show evidence of faulty conceptions and facts about this drug. By analyzing students' ideas about ecstasy, I hope to determine what students' expectancies are, who holds these attitudes (users in comparison to non users), where these expectancies are coming from, and what could act as a potential intervention for ecstasy use. By doing so, this study seeks to provide the scientific world with additional knowledge and insight in terms of the specific expectancies (or lack thereof) of ecstasy.

In 2002, Walters and colleagues described how, "in addition to the euphoric and carefree feeling ecstasy produces, belief in the 'cleanness' of the substance appears to be another reason for its continued use" (p. 140). Further, in Yacoubian et al.'s (2003) study, they explain how non-ecstasy users "were significantly more likely than past-year ecstasy users to perceive risks associated with the regular use of ecstasy and more likely to perceive harmful long-term physical and psychological effects associated with ecstasy use. Those who perceived less harm with

ecstasy use were those who reported use within the 12 months preceding interviews" (p. 194). Further in Peters et al. (2005) meta-analytic review of determinants of ecstasy use, they found that perceived attitudes of ecstasy were the biggest predictors of ecstasy use (if the attitudes were positive) and non-use (if the perceptions were negative).

Michael Businelle and colleagues (2007) created the MDMA Beliefs Questionnaire (MDMA-BQ) explicitly "to measure individuals' beliefs about the effects of MDMA." Within this questionnaire were "five scales (i.e. Global Positive Effects, Safety, Health Risks, Psychological Consequences, and Dose/Mixing Effects)" all of which helped to gauge general attitudes about ecstasy. In line with expectancy research on other substances, MDMA users expressed more positive expectancies and fewer negative expectancies about the drug. Users rated statements of the MDMA Belief Questionnaire on the "Global Positive Effects" subscale including, "parties are more enjoyable when I'm on ecstasy," and the "Safety" subscale, with statements such as "ecstasy is a natural drug that is unharmful" more highly than non-users. Non-users showed the opposite, and expressed less positive expectancies and more negative expectancies (such as Health Risks, Psychological Consequences, and Dose/Mixing effects).

All of these findings suggest an underlying foundation of expectancy theory at work. In these studies, ecstasy users' perceptions of ecstasy likely shaped their patterns of use, similar to alcohol (Christiansen et al., 1982; Fabricius et al., 1993), marijuana (Alfonso & Dunn, 2007; Fabricius at al. 1993; Gaher & Simons, 2007), and cocaine (Hayaki et al., 2007; Jaffe & Kilbey, 1994) use.

Another study investigated the online survey responses of 900 ecstasy users and the views they held of other illicit drugs. They found that a broad range of illegal substances, including cocaine and heroin, were perceived to be more dangerous than the use of ecstasy

(Gamma et al., 2004). When asked if ecstasy would lead to long-term health problems, a majority of users responded "unlikely," "maybe," and "definitely not." Very few recognized the potential for this drug to have a detrimental health effect over time. These users maintained a more positive view of ecstasy, and reported a lower number of expected risks suggesting they view ecstasy as a "safer" drug than non users (Gamma et al., 2004). This finding positively correlated with perceptions of how dangerous ecstasy is to these users, and the amount of ecstasy use of this sample. These findings were consistent with those of Businelle and colleagues (2007), Peters et al. (2005), and Yacoubian et al. (2003). Similarly, in Cole and Sumnall's 2003 study, MDMA users cited positive outcome expectancies of MDMA use including euphoria, reduction in defensiveness, relaxation, increased talkativeness, and changes in perception. These positive expectancies were found to predict the frequency with which ecstasy was consumed (Puente et al., 2008; Smerdon & Francis, 2011).

Several qualitative studies on ecstasy use have also shed light on factors influencing people's motivations to use ecstasy and their expected effects of the drug. In Eiserman and Schensul's 2014 study, interviews were conducted with inner city African American and Puerto Rican youth between the ages of 16 and 24, all of whom were users of ecstasy from low-income areas. Participants expressed numerous positive expectancies including happiness, higher energy levels, increased sociability and connectivity, and to enrich sensual pleasures of music, dancing and touch. Other results captured the idea that users were not specifically concerned with the risks associated with using ecstasy, and expressed more positive motivations for both using ecstasy for the first time and prolonged drug use. This finding is parallel to various other studies with samples differing on the dimensions of race, ethnicity, age, and geographical location (Businelle et al., 2007; Cole & Sumnall, 2003; Gamma et al., 2004; Walter et al., 2002),

suggesting that this study hones in on the attitudes of this specific group, yet the findings remain consistent with a wide range of populations. The authors concluded that drug patterns among youth, "are shaped by the interaction of users with their social and cultural environment as well as the drug's availability and cost" (Eiserman & Schensul, 2014, p.33). In relation to expectancy theory, the increased availability of ecstasy provides youth with more instances to be exposed to the drug. Additionally, as reported by this inner city population, positive expectancies were more heavily reported when discussing ecstasy use. When these users are enjoying the drug experience, while maintaining a low-risk attitude, a positive expectancy regarding ecstasy use is perceived by their surrounding peers. Thus, the availability paired with the positive reviews of ecstasy use lead to an implementation of expectancy theory in terms of influencing new users to experiment with ecstasy.

In Levy and colleagues' 2005 work, a focus group methodology was implemented in order to investigate emerging themes within the "ecstasy experience". The sample consisted 18-25 year old college students participating in 60-minute focus groups of six to ten users of ecstasy. Within these sessions, ten main ideas were addressed: pill ingredients, mechanism of MDMA effects, reasons for initiating ecstasy use, risky behaviors and ecstasy use, sexual activity and ecstasy, positive effects from ecstasy use, negative effects related to ecstasy use, ecstasy and polysubstance use, perceived risks of ecstasy use, and motivational factors related to quitting ecstasy use. Within these topics, most users were aware of contaminated ecstasy pills, yet this did not prevent them from using. Most users reported using ecstasy for the first time due to, "positive effects on mood, social pressure, curiosity, availability, boredom, desire for an altered state of mind, desire to escape, self-medication, desire to have fun, and the ease of use of ecstasy in comparison to other drugs" (p. 1427). Levy et al. also reported, "When sober and surrounded

by ecstasy-using peers whom they perceived to be 'having a blast,' participants described feeling the urge to experience what they thought of as 'rolling' in their friends" (p. 1436). Users consisted predominantly of those who had previously witnessed their friends exhibiting positive effects of ecstasy. Lastly, the negative expectancies were minimal. Most participants viewed ecstasy as somewhat harmful. However, very few were aware of the extent of the dangers of using ecstasy. Participants described that, "as long as their friends who were using ecstasy were 'Ok,' then they felt that too would be 'Ok.'" (Levy et al., 2005, p. 1437). The perceptions of their friends' drug use resulting in positive outcomes verified the user's decision to continue use of this drug.

These in-depth responses illustrate that expectancy theory may be an underlying factor for why people begin to use ecstasy. While differing in populations, methodologies, and empirical approaches, almost all of the aforementioned literature largely supports Victor Vroom's expectancy theory of human behavior. In each case mentioned, participants have been found to hold certain positive or negative expectations surrounding the ecstasy experience. These ecstasy specific expectations were deemed significant predictors of drug use patterns or lack thereof (Cole & Sumnall, 2003; Businelle et al., 2007; Gamma et al., 2004; Peters et al.,2005; Puente et al., 2008; Smerdon & Francis, 2011;Yacoubian et al., 2003), and helped to elucidate motivations for ecstasy use in various populations (Eiserman & Schensul, 2014; Levy et al., 2005; Walters et al., 2002). However, not one study sought to explore the richness within these expectancies through a focus group methodology of a population of both users and non users. In combing users and non users in a focus group setting, this study seeks to obtain a wide range of college students' attitudes on ecstasy, while extracting the nuances through a qualitative focus group setting.

In summary, the extant quantitative and qualitative literature has offered a comprehensive picture of the types of positive effects MDMA users expect and, furthermore, has demonstrated that MDMA users hold numerous positive expectancies for the drug. However, research generally has focused on MDMA users, as opposed to a more heterogeneous population of users and nonusers. Learning about both users' and non users' perceptions about ecstasy may provide health educators with a better sense of the collective population's image of the drug, which, in turn, can affect the development and targeting of intervention programming and potentially curb MDMA initiation and use. Investigating perceptions about ecstasy in college students may be particularly important given that the average age of first use is typically later in a college career.

Another limitation of the existing research is that many studies have employed surveys and questionnaires with close-ended response choices and thus, there has been little room for subjects to digress into their unchartered perceptions of the drug. That is, the structured methods used in the existing quantitative studies may have been limited by the measures employed and the researcher's agenda. By implementing a focus group methodology, I hope to invite richer and more diverse subject responses to provide insight into undiscovered, or unexpected perceptions of ecstasy use in both users and non users on a college campus.

The Current Study

Everyone, even nonusers, has expectancies about MDMA. In the present literature, numerous quantitative studies have explored the topic of ecstasy use in college students and are largely focused on users. In our study, we implemented a focus group methodology to illustrate nuances of users' and nonusers' knowledge, expectations, and perceived risk/prevalence of ecstasy use. Doing so allowed us to discover the underlying sources for students' perceptions on the use, risks, and effects of this drug (be it through the media, peers, or education). Our first

specific aim was to obtain a clear understanding of students' positive and negative expectancies about ecstasy. It was hypothesized that students would generate more specific positive than negative perceptions of ecstasy. We examined how closely students' responses mapped onto existing quantitative measures. Our second aim was to measure differences in users' and non-users' attitudes regarding ecstasy use. We expected that users would present more positive views of ecstasy than non-users. The final aim of our study was to compare students' perceptions of ecstasy with those of other drugs including alcohol, marijuana, and cocaine, using a quantitative scale. It was hypothesized that students' perceptions of ecstasy would be less risky than cocaine but more risky than marijuana and alcohol.

Method

Participants

A total of 24 male (n = 12) and female (n = 12) students from a small, residential private college in the northeastern United States participated in the focus group sessions and concluding questionnaire. The mean age for participants was 20.54 years (SD = 1.56). The sample consisted of 88% Caucasian, and 12% Minority/Mixed Race. The population contained 25% freshmen, 8% sophomores, 12% juniors, and 55% seniors.

Measures

Focus group script. We utilized a script to maintain congruency within the three separate focus group sessions (Appendix C). The script consisted of four main questions adapted from the subscales of Businelle et al.'s (2007) MDMA Belief Questionnaire. The sub-scales included "Global Positive Effects" such as, "I enjoy dancing more when I'm on ecstasy" that inspired questions such as "what are some of the positive connotations you think of regarding ecstasy?" Within the four main questions, follow-up questions allowed for additional information

to be evoked from participants. For example, the third broad question was, "what are some of the negative connotations of ecstasy?" However, to further probe participants, additional questions included, "what are some of the potential health risks of taking these drugs?" or "how often do you think ecstasy is used in combination with other drugs such as alcohol or marijuana?"

Post-discussion questionnaire. A questionnaire was administered to each participant upon the conclusion of each focus group (Appendix D). This questionnaire included questions about demographic information (i.e., age, race, gender, class year, and Greek life participation). The next section included questions about participants' substance use, specifically, how many times participants used ecstasy, marijuana, alcohol, or cocaine. This allowed respondents to answer "0," "1-3," "4-6," "6-9," or "more than 9" times that they used each specific drug. The last section of the questionnaire included questions about participants' perceptions of risks posed by ecstasy, marijuana, alcohol, or cocaine. Specifically, participants ranked how risky each of these drugs were on a 0-100 scale, with 0 being no risk and 100 being the most risky.

Procedure

Students were recruited through in-class announcements and flyers (Appendix A) on campus. In each of the three focus groups, participants congregated in a common room allocated as a consistent research location for this study. Upon arrival, students were asked to sign in and were handed a consent form to review (Appendix B). After collecting all of the signed consent forms, and verifying that each participant provided permission to be recorded, the group began. At the start of the recorded sessions, the researchers reiterated the fact that the group was being recorded, the fact that the participants would remain anonymous, the various risks of disclosing one's identity and/or substance use behavior, and the importance of intergroup confidentiality. Each participant was then assigned a code number (such as "participant one") and was instructed

to state their assigned code, and restate their consent to the study on the tape recorder. Once all participants consented, the focus group began with the first question of the script, and followed the script throughout. Respondents were asked to answer by stating their participant code number, and then responding accordingly. In a few instances, additional and sporadic clarification, questions, or probing was used with the researchers' discretion. Upon the conclusion of this focus group, the recorders were turned off, and each participant completed the post-discussion survey.

Data Analysis

Braun and Clarke's (2006) approach to thematic analysis was used as an organizing framework for analyzing this study's qualitative data. These researchers outlined a systematic method for qualitative data analysis (Table 1) that allowed us to maintain structure and consistency throughout data analysis. In the following section, we describe our implementation of thematic analysis, highlighting the various steps we took to identify both overarching themes and subthemes as specified by Braun and Clarke (2006).

An inductive approach was taken to code a wide range of sub themes across all three of the focus group's transcriptions. When discussing the inductive approach, Braun and Clarke explained, "the themes identified may bear little relation to the specific questions that were asked of the participants. They would also not be driven by the researcher's theoretical interest in the area or topic. Inductive analysis is therefore a process of coding the data without trying to fit it into a pre-existing coding frame, or the researcher's analytic preconceptions" (p. 83). The present data was scanned and coded for any theme of importance, whether or not a discovered theme was applicable to the research questions or the discussion questions. Accordingly, the inductive method allowed for a broad spectrum of interesting themes to surface. For example, when asked,

"why would someone take ecstasy?" one participant said: "To experiment, have a better time at parties, clubs, or concerts." In this specific instance, "to experiment" and "have a better time" were coded under "Positive Psychological Effects of ecstasy," while "parties, clubs, or concerts" were coded under "Location" of drug use. The two Positive Psychological themes in this statement were substantial and relevant to the research questions related to positive and negative expectancies. However, the location of drug use was an additional theme for which there were no specific hypotheses. Additionally, a semantic view of the responses was used. Meaning, most of the statements recorded during the focus group were taken at face value, and not further interpreted for underlying meaning (Braun & Clarke, 2006). Because most of the discussion consisted of students' direct observations or candid attitudes about the drug, we believed that these frank responses contained very limited subtext to be analyzed.

Braun and Clarke (2006) present a summary of their step-by-step procedure (Table 1), which we followed in the current study. The primary step in our data analysis was to transcribe the focus group scripts, and to review the transcriptions to become familiar with the focus groups' responses (Table 1). In the initial viewings of the focus group transcriptions, extensive notes were taken to capture similarities and differences across focus groups. Similarities existed in ecstasy terminology, location of use or presence of the drug, etc. However, each focus group maintained a certain sense of uniqueness in various themes that arose within the specific group such as connotations of wealth of the drug, or how limited ecstasy research is. Meaning, many participants noted the lack of information regarding ecstasy either in the scientific world, or in the public media.

The next step in organizing the findings was to devise various codes representing certain responses within the transcriptions. As previously mentioned, the implementation of an inductive

method captured all of the content, not just the codes relating to the research questions and hypotheses. We read and re-read the transcription to connect certain words for the purpose of creating initial sub themes. Collaboration between researchers allowed for the transformation of various words into one specific theme. For example, while reading the transcription, words such as "happy," "enjoyable," "confident," or "fun" surfaced and re-surfaced. These were determined to all be psychological mood states with a positive connotation, and were subsequently placed into a "Positive Psychological Effect of ecstasy" sub theme. Some responses were placed into two or more categories of themes, while most stood on their own as a representation of a certain theme. For example, a statement such as, "there is a connection with methamphetamine and bath salts in ecstasy pills" was placed into the "Contamination" of ecstasy subtheme and also in the overarching theme of "Knowledge of Ecstasy." A statement such as, "coming down the next day, being depressed, not being able to obtain that level of happiness again" was categorized as "Negative Psychological Effect" of ecstasy. A similar pattern was followed in formulating the other themes.

In the third step, the subthemes we identified were sorted and synthesized into overarching themes of interest. For example, sub themes such as "Use of Ecstasy With Other Drugs" and "Contamination" of ecstasy were both placed under an overarching theme of "Risks of Ecstasy." Interestingly, during this process many subthemes maintained their independence as larger themes, and were therefore not categorized into a main theme, while other subthemes were eliminated from the analysis. Here, is when the creation of webs and flow charts assisted in organizing the wide array of themes that surfaced in the data. Additionally, if a new theme arose during this process, the inductive approach was implemented to create novel themes throughout this step. This captured the fluidity of this process, and how this is, "not a linear process of

simply moving from one phase to the next. Instead, it is more recursive process, where movement is back and forth as needed, throughout the phases" (Braun & Clarke, 2006, p. 86).

In the fourth portion of this systematic approach, themes were reanalyzed, and reevaluated to determine the importance and substance of each topic. In doing so, several themes were collapsed, while others were eliminated due to their lack of substance. To decide whether or not to collapse or eliminate a theme meant that the transcriptions had to be closely analyzed in terms of the raw data itself. If the data that was originally categorized into a certain theme was closely related to another theme, they were combined. For example, a statement like, "club drugs, umm like stimulants" originally was under the "Names for Ecstasy" category, while, "I don't really ever group it with like meth or heroine, but I'd say it's common like cocaine" was placed in "Classification" of ecstasy. In this instance, participants were describing ultimately what kind of a drug ecstasy is considered. So, the "Names for Ecstasy" was combined into the "Classification" of ecstasy theme. It was also in this stage that a theme called "Sociability" of ecstasy was discarded due to a lack of substantive data to support this topic. Here, is where a finalized version of a thematic web began to take a more concrete form. By filtering out themes, and solidifying other themes, a more refined picture of related themes and subthemes began to take shape.

In moving onto Braun and Clarke's fifth level of analysis, our final themes were elaborated in an effort to begin to connect the themes to the research questions at hand. In this stage, it was important to implement the overarching themes such as "Positive Effects of Ecstasy" in terms of encapsulating the maximum amount of subthemes, while avoiding generalization within themes. In this stage, the detailed analysis of the overarching themes was written, and their importance to the research questions was identified. In this step, we examined

specific associations between the themes, subthemes, and hypotheses. In the final step, results were reported by presenting crucial themes and subthemes that surfaced within the data.

Quantitative aspects of a qualitative study. We diverged from Braun and Clarke (2006) slightly in that all themes were counted and recorded for both frequency and association to participant. That is, we identified and counted the number of themes raised by each participant. Total frequencies of both subthemes and overarching themes were calculated. Additionally, the percent of utterances by users and non users was determined for each subtheme and overarching theme. Doing so allowed us to determine whether the participant's status as an ecstasy user or non user might be associated with the specific subthemes he or she raised (e.g. "Positive Psychological Effects" of ecstasy).

To analyze the questionnaire data, we entered all of the data into SPSS program and conducted a between-within subjects ANOVA to examine whether participants rated ecstasy as being more or less risky than alcohol, marijuana, and cocaine. Lastly, a 4 (Substance) X 2 (User/Non user) repeated measures ANOVA was conducted to determine if there was a significant difference reported by users versus non users for riskiness of ecstasy, alcohol, cocaine, and marijuana.

Results

Of the sample population, 62% were users (n = 15) and 38% (n = 9) were non users of ecstasy. Participants reported substance use of various other drugs including marijuana, alcohol, and cocaine. For marijuana, 92% were users (n = 22), and 8% were non users (n = 2). For alcohol, 100% were users (n = 24). Lastly, for Cocaine, 58% were users (n = 14) and 42% were non users (n = 10). In looking back at the three group's participants, ecstasy users and non users were equally distributed across all three focus group sessions.

Major themes and their prevalence. In analyzing the full data set of the focus group sessions, four major themes surfaced as a product of categorizing smaller subthemes. These four themes were: Positive Effects of ecstasy, Negative Effects of ecstasy, Risk of ecstasy, and Knowledge of ecstasy. Positive Effects characterized 37% of the total utterances (Table 2). Positive Effects about ecstasy were more prevalent than Negative Effects of ecstasy, which characterized just 17% out of the total (Table 2). The higher apparent prevalence of Positive Effects as compared to Negative Effects was consistent with my first prediction. Risk of ecstasy characterized 7% of the utterances (Table 2), which was the lowest percentage of all the overarching themes. Lastly, Knowledge of ecstasy characterized 39% of the utterances suggesting it was the most frequent theme overall (Table 2).

Themes and Subthemes

Positive effects of ecstasy. Positive Effects of ecstasy (Figure 1) surfaced as a reoccurring and overarching theme. Participants showed a strong propensity to identify various positive associations to this drug through utterances that were categorized into the following subthemes: Positive Psychological (separated into Intrapersonal and Interpersonal Psychological Effects of ecstasy), Positive Physiological (including Intrapersonal and Interpersonal Physiological Effects of ecstasy), Music/Dancing, and Wealth. Both Psychological and Physical subthemes of Positive Effects of ecstasy were further broken down into Intrapersonal or Interpersonal themes. Overall, Positive Psychological and Physiological aspects of ecstasy use (Table 3) were similarly discussed by users (52%, 56% respectively) and non users (48%, 44% respectively). Phrases such as, "maybe to open your mind to new things," or, "to experiment, have a better time at parties, clubs, or concerts," reflected more positive Intrapersonal Effects for taking this drug (users reported 42%, while non users were 58%). Statements such as, "gets rid

of inhibitions, makes you more outgoing," or, "you love everyone around you," would be responses that were more Interpersonal in terms of Psychological Effects. In the more Interpersonal reasons behind ecstasy use, users held a higher percentage (61%) than non users (39%).

Similarly, positive Physiological responses to ecstasy were noted in statements such as, "it's supposed to like heighten your senses – like visually, and your like, physically, and that's the idea behind it," for a more Intrapersonal effect. Users reported the majority of responses within this theme with 80%, while non users captured 20% of these utterances. In responses such as, "you have a tendency towards physical interaction," users and non users only had a slight difference in Interpersonal Physiological Effects (56%, 44% respectively). Some attitudes on ecstasy acted as a combination of both positive Interpersonal and Intrapersonal Effects of ecstasy including, "it's just everything it supposed to be better like your supposed to perceive everybody. It's like you just see the happiness instead of negatives. It has a positive effect on you and people around you." This point of both gaining happiness on a personal level, but also creating a sense of belonging, love, and interconnectedness is captured by this participant's description.

For the last two subcategories of "Positive Effects of ecstasy," Music/Dancing, and Wealth captured positive associative words that have a connection to ecstasy use. For the Music and Dancing subtheme, ecstasy was most commonly placed in locations (raves, concerts, and festivals) where the music scene was a dominating factor. A trend in connecting ecstasy to fast-paced, popular music was mentioned repetitively as a desirable aspect of ecstasy use. For example, "when you first go to rave events or concerts that's when you are first physically right there with it, in that environment," places ecstasy in an environment that has an appealing connotation. Additionally, two statements, "I think the music has a lot to do with the fact that

molly, in particular, has become more and more popular," and, "I feel like a lot of people do it for spring weekend cuz it's like there's a concert and stuff," reflect the influence that this music scene has on the popularity of ecstasy use. Because popular techno and electronic music, large festivals, and concerts are all at a peak in today's college-aged generation, the desire of a person to participate in this scene may also bring about opportunities to use ecstasy. Within this category, another common effect of ecstasy was prolonged and or enjoyable dancing. Many agreed with one of the scripted questions asking if dancing would be more pleasurable while on ecstasy. For these instances, users were more apt to describe the association between this drug and the new music scene (68%) than non users (32%).

In the last focus group session, an interesting theme of Wealth arose within the conversation. This topic surfaced when one participant stated the following, "it's also really like a wealthy drug. It has a connotation of being an upper class sort of drug whereas I think heroin, for the most part, you kind of think of smack and like, I don't know, not the best connotation." From this point in the group discussion, many participants further analyzed the influence that wealth has on creating a schema for ecstasy use. Another participant responded, "I like really agree with that because when you think of like drugs like heroin and like crack umm they're not like prevalent on college campuses. Umm and so I think that because it has kind of like a wealthier, I don't know, like connotation to it that people are more willing to do it." These observations of ecstasy use relate this drug to upper class populations. As both participants mentioned, the common use of ecstasy in these "wealthy" social circles and environments, such as festivals with expensive ticket prices, allows the drug to have this connotation among some students. In this nuanced reporting on wealth's association to ecstasy use, 71% of these respondents were users, while 29% were non users (Table 3).

Overall, the total number of reported instances of Positive Effects of ecstasy, users produced more of the responses than non users. The difference suggests that users tended to report more Positive Effects associated to ecstasy than non users. This supported the second aim of this study that suggested users would report more positive connotations about ecstasy than non users. When breaking this theme down into subthemes, it can be noted that users had higher percentages of utterances throughout all of the positive subthemes with the exception of Intrapersonal Psychological utterances (Table 3).

Negative effects of ecstasy. When discussing negative implications of ecstasy use (Figure 2), we identified three subthemes namely: Negative Psychological, Negative Physiological, and Social Pressures that are all Negative Effects of using ecstasy. In terms of Negative Psychological results of using this drug, "you could feel out of control, do something that you could regret," or how a "comedown a couple days later, supposedly you feel very bad," and "coming down the next day, being depressed, not being able to obtain that level of happiness again," all capture a stark contrast between the influx of serotonin levels (or the "high") followed by an acute state of depression (Curran & Travill, 1997). This low point was further explained, "you just feel depleted, you're supposed to feel depleted, the next day and everything's like out of your system. Umm and a lot of people have said they feel like dumb the next day or like less intelligent. So, I mean that may just be short term for the next day like when you feel hung-over you don't feel smart but…" In relating this next-day low, most participants associated it with the feeling of being hung-over, as with alcohol. Negative Physical Effects had reoccurring patterns such as, "it's bad for your brain, I've heard it's like taking a scoop out of your brain," along with, "the dehydration factor is definitely larger than most other drugs." "Taking scoops out of your brain" and "dehydration" were brought up as the most frequent physically detrimental effects of

ecstasy. In terms of who was reporting these statements, users and non users both uttered 50% of the Negative Psychological effects, while users stated 61% of the Negative Physiological Effects, while non users reported 39% (Table 4). This captured a similarity in amount of Negative Psychological responses, but also a prevalence of users to report more Negative Physiological responses than non users.

In terms of another Negative Effect, Social Pressures were described as strong implications for reasons to use this drug. One participant answered, "social pressure," when asked "why would someone take ecstasy?" Subsequently, participants expressed, "I wouldn't say pressure like hard pressure, but there have been events where I know a lot of people are doing it, so in that way it is persuading others to use." This participant's statement captured the idea that the "social pressure" to use ecstasy is very subtle in nature. The pressure to use this drug does not come from someone forcing or requesting you to use but rather, "in the sense that it diminishes the sense of it when you see it so often, you don't think of it as being so severe." The social pressures stem from the overuse of ecstasy at widely attended concerts and festival. It is further described how, "it's tough when you see a lot of people using it and you're not, you kind of wish you had what they had at that time," along with, "if someone is going to some sort of festival there's a lot more pressure to do it." In terms of reporting various Social Pressures surrounding ecstasy use, users discussed 63% of the total utterances, while non users presented 37% (Table 4).

In analyzing the total amount of descriptive Negative Effects mentioned, users reported 59% of the responses with non users representing 41% (Table 4). This percentage of utterances was not congruent with much of the current ecstasy research. It is generally presented that users

would report more positive expectancies than non users who would report more negative expectancies. Here, users had more prevalent negative responses on ecstasy.

Risks of ecstasy. In terms of Risks associated with ecstasy, participants posted Legal Risks, potentiality for Contamination, Prior Drug Use, and Use of Ecstasy With Other Drugs (Figure 3). One of the least discussed components of Risk was the issue of legality. Until a question asking about the legal risks of ecstasy was brought up, participants failed to address any legal consequences of drug use. Once asked, the responses were simple in nature, "you could go to jail probably. I don't know it's an illegal substance," and usually accompanied by nonchalant laughter (users held 20% and non users held 80% of the responses). However, more statements reflected risk in terms of Contamination. Substances such as, "speed," "baking powder," "methamphetamine," "bath salts," "ephedrine," and "PCP" all were mentioned to possibly be contaminants in ecstasy. A frequent idea encompassed by participants is reflect in the following: "I think there is a difference between ecstasy and molly, and as far as I knew it was that molly was strictly ecstasy whereas ecstasy could be laced with other things." In terms of purity levels, participants expressed a huge divide between molly and ecstasy, with molly being "pure," and ecstasy being a contaminated drug. These all captured an attitude that this drug has a potential to be contaminated, yet most participants were not entirely sure of just how contaminated ecstasy could be. Users identified Contamination risks more frequently than non users (Table 5).

A subtheme of Prior Drug Use was mentioned on multiple occasions when discussing the kind of person that partakes in ecstasy use. It was stated that, "usually people that do other drugs before hand, it is not usually the first drug you try, usually you escalate from weed, then pill popping, then ecstasy," and "someone who drinks regularly or has tried marijuana or cocaine or other drugs first," were indicators of what leads to ecstasy use. Users described prior drug use

40% of the mentioned theme, while non users described 60% (Table 5). In terms of which drugs are used simultaneously with ecstasy, or the subtheme Use With Other Drugs, alcohol was the most mentioned substance. It was described how, "I think alcohol and ecstasy like are often taken together. Maybe people will drink like less because they're on ecstasy but I know that people who are on ecstasy usually do mix it with alcohol, and maybe even cocaine." Similar statements enforced the commonality of alcohol and cocaine being used alongside with ecstasy. Users tended to address this subtheme more than non users in focus group discussion (73%, 27% respectively).

Overall, users represented 56% of the total responses of Risk associated with ecstasy use. Non users represented 44% of the total responses (Table 5). This finding suggests that users reported more utterances of risk in terms of ecstasy use.

A one-way repeated measures ANOVA was conducted to compare scores on the level of risk reported for ecstasy, cocaine, alcohol, marijuana. The means and standard errors are presented in Figure 5. There was a significant effect of substance $F(3,21)=47.36$, $p<.001$. Ecstasy and cocaine had the highest mean in terms of perceived risk. Marijuana had the lowest perceived risk; the perceived risks related to alcohol fell in between marijuana and ecstasy/cocaine. Post-hoc analyses revealed that there was no significant difference between perceived risks associated with ecstasy and those associated with cocaine.

A 4 (Substance) by 2 (User/Non user) repeated measures ANOVA was conducted to compare scores on the level of risk reported for ecstasy, cocaine, alcohol, marijuana for users versus non users. The means and standard errors are presented in Figure 6. There was no significant effect of users versus non users in levels of risk $F(1,22)=3.67$, $p = .07$, *ns*.

Knowledge of ecstasy. Many of the participants' attitudes on ecstasy use reflected responses that contained knowledgeable information, or lack thereof, in association to ecstasy. In noting various aspects of ecstasy as a drug, Frequency of use (both Frequent and Infrequent), Classification of ecstasy, Educationally or Socially Learned sources of information, Lack of Information, and Accessibility all captured a wide range of ecstasy knowledge. The Frequency of ecstasy use captured the perception that participants held in terms of how many people use ecstasy on the college's campus (either Frequently or Infrequently). Within these instances, participants responded to a question asking, "what is your perception of how many students use?" Many students estimated around ten percent have tried ecstasy, with both users and non users portraying very similar response frequencies to both Frequent use (56% for users, 44% for non-users), and Infrequent use (50% for users, 50% for non users) (Table 6).

While the subtheme Location was counted for frequency, the substantive value of this theme was more important to these findings. In terms of understanding where ecstasy is used most, the specific locations of use were noted. A majority of the responses revolved around common themes of use at "parties," "clubs," "raves," "college campuses," "music festivals," and "concerts." One participant explained, "I think later in high school/beginning of college when you first go to rave events and concerts that's when you are first physically right there with it, in that environment." Many first time exposures occurred in college as described: "I definitely wasn't around anyone I knew that had done it or was doing it until I was in college." One quotation mentioned the use of ecstasy to be, "big in colleges across the country and it's even leaking into like seniors and juniors in high school which is wild." Users accounted for 57% of these locations, while 43% were accounted for by non users (Table 6).

Just as users were slightly more knowledgeable about locations of ecstasy use, users also reflected a 64% of the utterances in terms of Classification of ecstasy (with non users reflecting 36% of the utterances). This encapsulated any statement that defined a drug as being ecstasy. This included names of ecstasy ("E," "molly," "X," "social drug," "happy drug," "club drug," "love drug," "stimulant," etc.), and more in depth categorizations of ecstasy. Many participants reflected ecstasy as an independent drug in declarations like, "I don't really ever group it with like meth or heroin but I'd say it's common, like cocaine." One participant ranked ecstasy on a spectrum of other illicit drugs, describing that ecstasy is on a, "totally different level than meth. And then like cocaine, and molly, and ecstasy, and then like marijuana." This subtheme provided a better understanding of where ecstasy falls in comparison to other drugs, and of the terminology associated to this drug. In this statement, ecstasy is seen as riskier than marijuana, but less risky than cocaine.

An interesting discrepancy occurred in terms of where participants were receiving their knowledge of ecstasy. In terms of Educationally Learned mechanisms of drug awareness and prevention (in terms of various health classes) both users and non users responded to the exact same amount of utterances (50% each). However, when discussing Social Learning (meaning picking up information from the media, experience, peers), users had more prevalent response rates (86%) than non users (14%) (Table 6).

Additionally, in terms of statements that expressed a strong Lack of Information, users also had higher frequencies of this subtheme (68%) than non users (32%). These kinds of responses included statements of uncertainty like, "are we just talking about ecstasy or are we talking about molly too? I just wasn't sure if they are synonymous," and reports of

misinformation such as outdated concepts that ecstasy "takes tablespoons out of your brain." In this subtheme, a participant made a very interesting point:

"I think that there is a ton of misinformation on college campuses about the difference between ecstasy, molly, mdma and what they do and why they are different. And, for my impression I feel in general that people feel that molly is in some ways better for you because it is pure, even though not that much research has been done on it, I just think that there's a lot of wrong opinions about what it does. My philosophy professor freshman year, the first thing he said to us on the first day of class was whatever you do don't take molly because there isn't enough research done on it."

This idea discussed embodies the core essence of the strong lack of understanding and research surrounding ecstasy use, and understanding of the drug itself. In terms of a gap of research in the drug world, ecstasy remains a mysterious party or club drug. In terms of what students know about ecstasy, a lot of misinformation was reported in these focus groups (a total of 25 instances). The desire to know more about ecstasy was expressed by this student and many others throughout these groups.

In the last subtheme, Accessibility, users participated in 80% of discussion referring to accessibility of ecstasy, while non users only contributed 20%. This subtheme was described in utterances such as, "someone usually has more than they need for just themselves." In this instance, ecstasy was deemed accessible to most college students both on campus and off campus at underground rave scenes or festivals.

In total, users provided more frequent responses to the overarching theme of Knowledge of ecstasy than non users. While misleading in terms of theme name, not all of this provided "knowledge" was accurate. However, all of the utterances reflected some sort of attitude, idea, or

"fact," that the participant held in association to ecstasy use. Users (62% of the utterances), more than non users (38% of the utterances), presented the focus groups with both accurate and inaccurate knowledge of ecstasy.

Discussion

College Students' Attitudes on Ecstasy

Of the overarching themes present in these findings, a focus of the current study is on the Positive and Negative Effects reported by students in the three focus groups. At large, Positive Effects of ecstasy were reported almost double than that of Negative Effects of ecstasy. This finding was consistent with the first aim of the study suggesting that ecstasy would be viewed more positively than negatively by all participants. This finding is consistent with McMillan and Conner's 2002 study on college students' attitudes surrounding initiation of ecstasy use. They described how positive views on ecstasy increase throughout years of higher education (McMillan & Conner, 2002). In this study they also discuss the idea that college students view illicit drugs in a more liberal way due to less social disapproval by peers. This kind of finding can be applicable while looking at the data set at large. Because this population consisted of both users and non users, yet still reflected more positive connotations than negative, it can be noted that college students in general may view this drug in a more positive light.

Before analyzing the variations of responses by either users or non users, it is essential to note that as an entire population, these college students harbored a majority of positive views on ecstasy. College students who are exposed to ecstasy both directly and indirectly build up a certain schema of the drug. Most of this study's findings placed ecstasy in desirable locations of high energy and sociability, along with underlying themes of wealth, popularity, and accessibility. Because of this, it became clear that this population is not discussing the simplicity

of ecstasy as a drug, but also addressing the complexity in how this drug embodies, and is associated with, a certain popular culture that is appealing. The positive connotations of ecstasy may stem from its common associations to "big parties" and popular "music," "festivals," and "concerts," all of which surfaced on many occasions throughout the focus groups. The differences in user and non user responses will be further discussed in the following paragraphs.

Discrepancies in User Versus Non User Responses

Positive characterizations. Within the overarching theme of Positive Effects of ecstasy, subthemes helped to further break down the data to be more specific in nature. In doing so, users' and non users' percentages were calculated to determine differences in response rates. It was found that users reported an overall higher frequency of positive utterances than non users. These results help to support the second hypothesis of this study. In speculating the outcomes of this research, it was suggested that users would reflect more positive attitudes than non users regarding ecstasy use. In these descriptive findings, this remained consistent. That users reported positive expected effects supports the concept of expectancy theory, or the idea that positive expectancies of drugs may lead to later drug use.

These findings also are parallel to a majority of the literature in MDMA expectancies. The idea that users reflect more positive views on ecstasy was also discussed in two other qualitative studies, Eiserman and Schensul's 2014 study, along with Levy and colleagues' 2005 work. In Eiserman and Schensul's work, users of ecstasy reflected very similar positive responses to the current study including happiness, heightened senses, and connections in social situations; all of which surfaced in this qualitative work as well. In Levy et al.'s study, users were also studied in a focus group setting and expressed stronger positive characterizations. The difference in these qualitative studies was that they simply accounted for users' views on ecstasy.

In the current data, more users reflected positive views than non users, yet non users still expressed a strong amount of positivity in discussing ecstasy use. So, while both studies qualitatively captured users expressing strong positive views of the drug, non users in the current study also expressed positive utterances during the focus group sessions, suggesting one need not have direct experiences with the drug to form these expectancies.

Additionally, many quantitative studies supported these findings (Businelle et al., 2007; Cole & Sumnall, 2003; Gamma et al., 2004; Peters et al., 2005; Walter et al., 2002). In Peters et al. (2005), they found that users tended to hold more positive views of ecstasy than non users. The same finding was also present in Businelle et al. (2007) work, and other studies containing users and non users, as well as Cole and Sumnall's (2003) work on just ecstasy users. The major discrepancy between the current study and the previous research is that while users reflected more positive attitudes about ecstasy, they also expressed more negative views and risks than non users in our findings. In all of the studies presented, there were significant findings that users' attitudes were more positive, while non users' contained more negative attitudes. However, in the current study this was not the case. Users reflected more utterances of positive and negative utterance, which will be addressed later in discussing the findings of Negative Effects of ecstasy.

A few areas of subtheme analysis were specifically interesting in applying these findings to today's society. Of the subthemes, users reported specifically higher responses in the areas of Interpersonal Psychological, Intrapersonal Physical, Music/Dancing, and Wealth related utterances. These four categories surrounding ecstasy use were reported in higher frequencies by users of ecstasy. In understanding why many users reported more statements reflecting Interpersonal Psychological reasons for taking ecstasy, it can be speculated that there may be a

strong desire to become socially more accepted and connected to a group. In today's world, there is constant mention of technology taking over face-to-face interaction. New methods of communication such as texting, facebook messaging, or emails allow for easy and rapid methods of contacting people, while simultaneously taking away any real need to talk to others in person. In a fast paced world, society is placing a higher value on quick and efficient communication to allow for extended productivity. However, in doing so, people remain somewhat isolated and shut out from simple human interaction. At the collegiate level, this population is the first generation to have truly grown up with technology as a domineering source of human interaction.

At this point in time, large gatherings of young adults can specifically be found at massive music festivals including Coachella, Firefly Music Festival, Lollapalooza, and Ultra Music Festival to list a few. These concerts are mainstream, widely attended, and highly publicized. This new wave of Electric Dance Music, or EDM, generally has a DJ producing fast-paced music that moves large crowds in a very similar fashion. The amount of connectivity elicited by these music festivals can be seen on both small and large scales. On a small scale, groups of friends generally plan to attend these festivals as weekend or weeklong getaways. They are expensive, and usually require some form of hotel and travel to be booked, which could reflect why wealth is commonly associated with ecstasy use. In doing so, friends treat these events as escapes from academic, economic, or social demands of society by creating a group to attend these events with. At a larger scale, attendees from all over the nation are found dancing to the same widely accepted music, joined together at a common location, for a common interest of EDM music. At large, ecstasy allows for heightened feelings of connectivity at large-level social gatherings, while simultaneously allowing for a user to withstand and enjoy extended

periods of high-energy music and dancing. The four reported subthemes capture this popular trend and shift in the music scene, all of which is driven and accepted by this generation's strong desire for interconnectivity in a disconnected society.

Negative responses. Users reported a higher percentage of negative associations with ecstasy compared to non users. These results were incongruent with a large portion of literature suggesting that users generally report more positive expectancies, while non users generally report more negative expectancies. The strong implications of past literature that non users would reflect more negative views on ecstasy (Businelle et al., 2007; Cole & Sumnall, 2003; Gamma et al., 2004; Peters et al., 2005; Walter et al., 2002; Yacoubian et al., 2003) is not congruent with the present findings. Studies that looked at both users and non users (Businelle et al., 2007, Peters et al., 2005) largely showed that positive and negative attitudes about ecstasy correlated to whether or not a person used ecstasy, respectively.

It can be suggested that this major discrepancy lies in the more abundant presence of ecstasy today versus when these studies were completed (early to mid 2000's). As the National Survey on Drug Use and Health research has shown, there have been 1 million new users in 2012, and an increase in use from 2007 and 2010. This influx of drug use allows for both more positive encounters with the drug, but also for more negative encounters. So in looking at users of ecstasy, this population has become increasingly more prevalent. The increase in prevalence may result in this population seeing more positive effects of the drug (such as heightened senses, sociability, or happiness) but also more negative effects (such as dehydration, contamination, or death). As the rate of drug usage increases, so do the occurrences of both positive and negative instances. Additionally, users, more than non users, are more exposed to certain negative effects of drug use due to their experiential learning of all of the effects of ecstasy. Non users may be

less aware of negative effects, because they experience zero effects of ecstasy. This, paired with more and more popular literature addressing negative consequences of ecstasy use (DeFalco & Italiano, 2013; Italiano, Schram, & Babcock, 2013), leads to a heightened exposure to various negative aspects of ecstasy to be learned and understood.

In taking a closer look at the specific subthemes of ecstasy, Social Pressure was an area of importance in terms of the increase in ecstasy use. Many participants discussed the subtle nature of the pressure that accompanies this drug. For instance, one participant described: "I wouldn't say pressure like hard pressure, but there have been events where I know a lot of people are doing it, so in that way it is persuading others to use." These "big events," where there is an abundance of drug use, places a certain kind of pressure on others to want to experience the same kinds of sensations and connections as those on ecstasy. This is further encompassed by another participant's statement, "it's tough when you see a lot of people using it and you're not, you kind of wish you had what they had at that time." This kind of statement introduces a different kind of social pressure, one that stems from both exposure to positive outcomes of drug use, and the desire to "have what they have," and join the group to be on a similar level in terms of energy, connectivity, and sociability. While driven by both expectancy theory (in terms of wanting to use because others reflect enjoyment of the drug) and social learning theory (in terms of witnessing the positive outcomes of the drug and then performing them personally), there is also this underlying pressure to use in order to attend and enjoy various popular festivals. These responses were similar to Levy et al. (2005) study, which captured users' strong desire to participate in drug use while watching their friends rolling on ecstasy and enjoying themselves.

Risk responses. In the qualitative component of analyzing risk associations to ecstasy, more users than non users discussed the riskiness of ecstasy. In terms of quantitative research,

ecstasy was viewed to be just as risky as cocaine, but more risky than marijuana and alcohol; there was no difference in reports between users and non users. These results partially support the final hypothesis that ecstasy would be viewed as less risky than cocaine, but more risky than marijuana and alcohol. Ecstasy was viewed more risky than alcohol and marijuana, yet was placed at the same level of risk as cocaine. These findings were not parallel to a majority of the literature (Gamma et al., 2004; Yacoubian et al., 2003). Specifically, in Yacoubian et al.'s (2003) study, non users who reported high potential risks were less likely to use ecstasy than those who reported little to no risk. Those who reported less risk were more likely to use within the following 12 months following data collection. This stark difference in use and levels of reported risk was not found within the current study. Similarly, these findings were not parallel to Gamma et al. (2004) findings that suggested users of ecstasy would report very few risks and safety concerns in terms of using ecstasy.

This major disconnect from the literature may be due to the lack of qualitative data that was reported and coded as "Risks of Ecstasy." Only 7% of the total utterances were associated with risk (Table 1). The small level of responses alone represent that the population at large sees very limited risks associated with this drug. Very few common or nuanced risk responses surfaced in the focus groups, and most of the responses had to be probed, to then be analyzed. Specifically, legal risks were hardly noted even when probed for. However, one area that was mentioned rather consistently was the theme of Contamination. In terms of purity levels, some participants noted that molly and ecstasy differed in terms of purity levels. Even though this is not entirely accurate information, it is a view held by some college students. This finding is congruent with both Bahora and colleagues (2009) and Walters and colleges (2002) study describing that ecstasy has a perception of being a pure drug. When discussing which specific

contaminants these drugs contained, participants listed various substances – some of which were accurate (bath salts, PCP, etc).

Short-term risks were noted such as dehydration, or brief post-use depressive states. However, very few severe or long-term effects were discussed. It can be speculated that the minimal responses in terms of Risk of Ecstasy can be in part due to the limited risks presented in educational and social situations. Few risks are publicized in terms of ecstasy use due to its relatively new introduction into the drug scene. The lack of ecstasy research in the educational realm is in part responsible for this limited knowledge of risks of ecstasy. The more that is discovered about various risks of ecstasy (highly contaminated pills and powders, drug reactions when mixed with other drugs, or long-term neurotoxic effects), the more knowledgeable people will be about potentially harmful consequences of this drug.

Knowledge about ecstasy. The largest overarching theme present in our results was the concept of knowledge, or lack thereof, of ecstasy. At many instances throughout the focus groups, participants made statements that were either quiet knowledgeable or absent of factual information. Users, presented more information in terms of Location (where ecstasy is used), Classification (names and descriptions of ecstasy), and Socially Learned (learning about ecstasy from experience, peers, or media) than non users. These findings were consistent with most qualitative research that had users reflecting various pieces of information about ecstasy (Eiserman & Schensul, 2014; Levy et al., 2005). Both qualitative studies had users reporting various locations of use, names of ecstasy, and more. Interestingly, users also reflected more instances that presented the Lack of Information subtheme. This was a piece of information that surfaced and was not entirely relevant to any preconceived hypotheses, but, helps in constructing

future research and in terms of creating prevention initiatives. A main quotation reflected the genuine lack of information that exists in terms of ecstasy:

"I think that uh like it's definitely because of the music, and it's a growing phenomena in the US I guess this wasn't the case ten years ago. It wasn't the same club drug that is. Like it used to be huge in Europe and then like just small parts of the US, but now it's big in colleges across the country and it's even leaking into like seniors and juniors in high school which is wild. Umm and, so I say, to that sense, that it's definitely a serious thing that people need to be educated on and it definitely can be like real in death but it also would be less likely if people knew what they were doing taking it."

Here, this participant reflected a concerning aspect of this drug. Very little research has been conducted on ecstasy, molly, and MDMA in general. The short-term effects have been noted, while the long-term effects are even less studied. Additionally, there is limited propagation of scientific knowledge of this substance. The majority of the population taking ecstasy is unaware of its negative consequences. College aged drug users are not fully aware of what is being studied, or what is currently understood about ecstasy. In this instance, this user is expressing a need for a wider understanding of knowledge. The user explains how if more were to be understood (in terms of negative consequences or risks) the current harmful outcomes would decrease. This becomes incredibly important in terms of understanding this study's future implications. Due to the high prevalence of reported knowledge utterances (and the lack of knowledge) surrounding ecstasy use, this implication will predominantly focus on a knowledge base prevention method that seeks to address a college aged population.

Limitations

While many topics of importance arose within these focus groups, there were a few problematic areas of this research worth noting. Primarily, this study was conducted at a private liberal arts institution that widely attracts citizens of the surrounding New England states. With this, it is difficult to apply these findings to a wide geographical collegiate network. The findings are relatively specific to the college. In terms of this population, there was a small sample size of twenty-four students. So, while rich in content during the focus groups, it cannot be stated that these students' views are a substantial representation of all views held by students at this institution. This was especially evident in conducting data analysis of the quantitative questionnaire of the study. A larger sample would have allowed for a greater application of these findings to the larger college community.

Additionally, within the sample, there were mostly seniors present. By not having a wide range of class representations, it is hard to generalize these attitudes to all ages of college students. Seniors may be more desensitized to drug exposure and use, which may have impact certain responses. Also, besides two participants who classified themselves as a minority, most of the participants were Caucasian. This limits the findings in terms of encompassing a wide range of races and ethnicities. Also, due to the college's small student population and campus, there was occasional familiarity of some participants with each other or with the researchers. This factor could have acted in one of two ways. It could have hindered certain students' responses due to social threats by peers, fear of judgment, or general discomfort in sharing views. However, it also could have helped evoke various types of responses by providing a sense of comfort and trust to participants.

Lastly, users may have unintentionally altered the responses of non users and vice versa. Because the two groups were combined in all three focus groups, certain topics and responses that surfaced, may have been tainted by experience, or lack thereof, with ecstasy.

Future Research

In furthering MDMA research, using larger sample sizes that are more diverse in race, ethnicity and class years would help to better encapsulate general attitudes of all college students at this college. Had more focus groups been run, these attitudes may have been able to encompass the greater college populations' views on ecstasy. In terms of creating more nationally applicable findings, running focus groups in colleges across geographical locations would better capture varying populations' views.

In analyzing and discussing these findings, many unpredictable themes surfaced that have not been widely researched. This study is a hub of new and undiscovered themes of ecstasy use, which will hopefully inspire future research. These included topics such as interpersonal versus intrapersonal reasons for taking ecstasy, wealthy connotations of ecstasy, locations of drug use, and the lack of information that students possessed. The qualitative nature of this work allows for incredibly rich views to be dissected further in later studies. For example, the current finding of users reporting more negative effects and risks associated with ecstasy use can serve as a new topic of research. Discovering how users' more prevalent utterances of negative effects and risk influence their decisions to use could lead to very interesting findings. In the future, looking at the specificity of these negative effects and risks expressed by users may be telling of an ecstasy users' profile. Future research should seek to determine the sources of these negative effects and risks, and how they do not act to inhibit drug use. In asking questions such as, "to what extent might an intervention be able to make users' negative expectancies and perceived risks a more

prominent factor in their decision to use ecstasy?" might lead to a better constructed prevention effort for ecstasy.

Implications

In this study, the overall sample held more positive views about ecstasy. However, more positive views about a drug do not correlate directly to drug use. In tackling the issue of drug awareness and prevention, expectancy theory can be used to combat present positive connotations of various drugs. The core idea of expectancy theory promotes the notion that prolonged exposure to positive attitudes and outcomes may lead to the initiation of drug use. In a population that holds positive expectancies about ecstasy, there also exists a higher risk of use.

At the college where this research was conducted, the study abroad office is in charge of informing, organizing, and providing services so that students may successfully go abroad to various countries. More than 60% of the students study away at this institution. This office is successful in encouraging, informing, and providing students with all facets of studying away. This awareness is primarily instituted through what is referred to as a *Global Ambassador* for studying away. In this service, two students apply, and are carefully selected to represent the specific country in which they spent their time abroad. Once selected, these two students become employees of the study abroad office, and spend time researching their countries more, compiling essential information about the program, and most importantly, addressing a wide range of students in an informative and educational manner to promote studying away. They, in a sense, act as peer advisers and mentors to students who are learning about, and applying to, study abroad programs.

In applying a potential prevention program at this college, there is a strong parallel that exists between the idea of a Global Ambassador and what could be called a Health and Wellness

Ambassador. In taking the educational, informative, and adviser aspects of Global Ambassadors' positions, a Health and Wellness Ambassador could be created in a similar fashion. Instead of having students send applications to the study abroad office, they would apply to the college's Health Center. After being chosen based on credentials such as academic standing and experience working with students (through teaching assistant, mentoring, leadership roles, or community service work), Health and Wellness Ambassadors would go through a brief orientation on methods of educating (led by a volunteer Professor), student health (led by a member of the Health Center), and research (by a Librarian). Students would be on pay roll and responsible for coming into work a few hours a week (just like the Global Ambassadors) and researching their "area of expertise." They, just as the Global Ambassadors, will become professionals in their assigned areas including: alcohol, marijuana, ecstasy, cocaine, study drugs, tobacco, and hallucinogens. Following a brief orientation, Ambassadors will hold the following responsibilities for the entirety of a full academic year:

- Be generally available all year as a drug information point person for both faculty and students. This means holding "office hours" every other week in the Health Center for those with topic-related questions.
- Help to organize and then run a "Health and Wellness Fair" for incoming freshman that will be a required event during orientation. This will seek to better introduce and educate various health and wellness issues that many college students face. The Ambassadors will have tables with informative pamphlets, as well as present their area of expertise to the incoming groups.
- Hold two drug-education events per semester. This allows the Ambassador flexibility and creativity in applying their area of knowledge to a fun and attractive event that will

be open to all class years. An example of this could be an event titled, "Smoking and S'mores," where students would attend a small bomb-fire. Here, both the tobacco and marijuana Ambassadors could intimately discuss both pros and cons of smoking with students, while enjoying snacks.

- Be responsible for conducting presentations and small group discussion on a designed "Drug Awareness" day. This mandatory day would take place at the beginning of each school year, and all classes would have to attend a large presentation regarding commonly used college drugs. Following the presentation, lunch would be served, and students would be broken up into mixed groups. They would then circle through a drug panel where each Ambassador would discuss their area of illicit drugs. The event would take about three hours, and all freshmen are exempt due to their attendance at the "Health and Wellness Fair."

By having this point person be a student, there is a possibility that expectancy theory can be used in a beneficial way to enforce drug prevention. Because these Ambassadors will be fellow peers, other students would be learning about certain drug expectancies and their positive and negative outcomes. Therefore, they will be exposed not just to positive outcomes of drugs (usually observed in the media or by watching peers reactions to drugs) but also to negative outcomes (such as the Ambassador bringing in college aged guest speakers, or speaking of their own experiences candidly). This kind of employment for a student will provide a role model to present a well-rounded view of all illicit drugs, and encourage both prevention and safe use tactics.

This will begin in application to specific drugs that are abused by college students, but has the potential to expand into other areas such as: men's and women's health issues, sexually

transmitted diseases and contraceptive methods, dieting, healthy eating, and eating disorders, and many more areas afflicting college students today.

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Figures

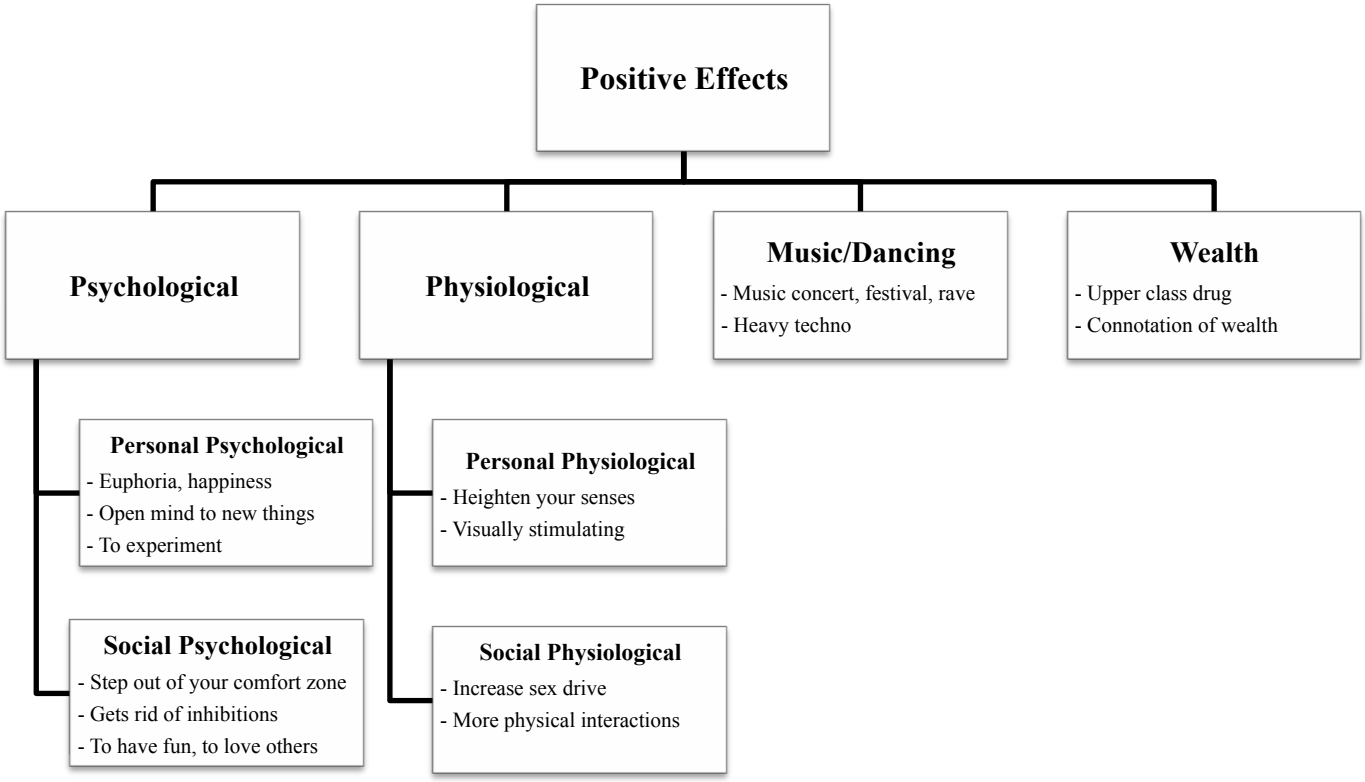

Figure 1. Reported Subthemes of Positive Effects of Ecstasy

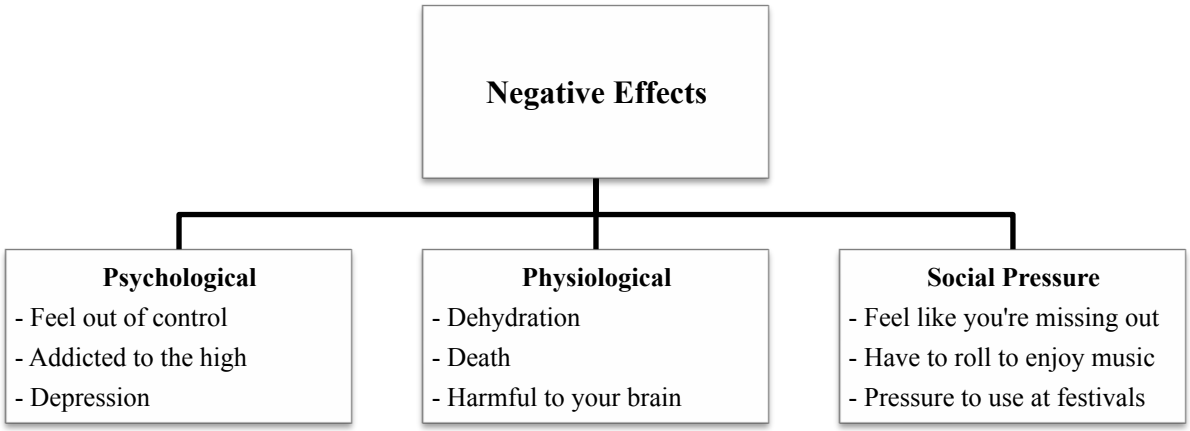

Figure 2. Reported Subthemes of Negative Effects of Ecstasy

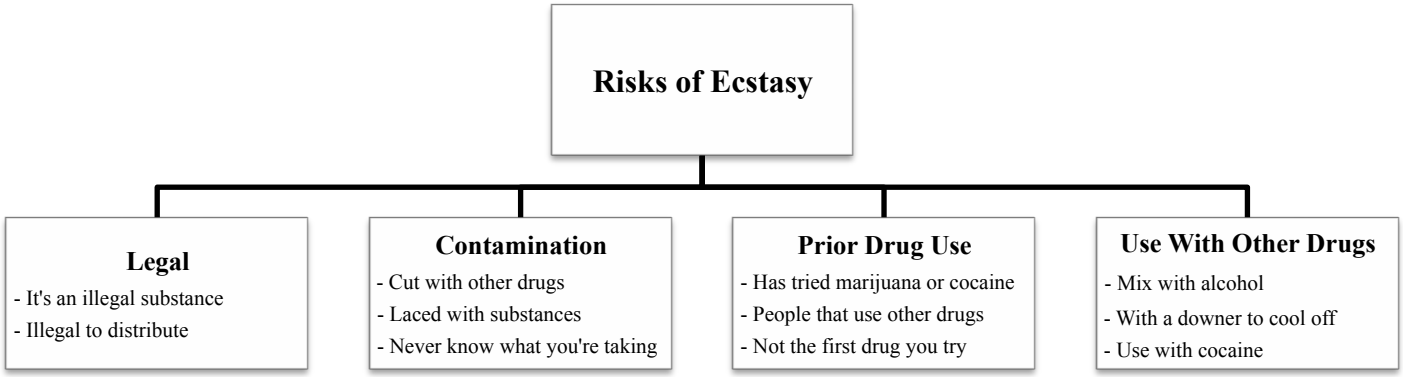

Figure 3. Reported Subthemes of Risks of Ecstasy

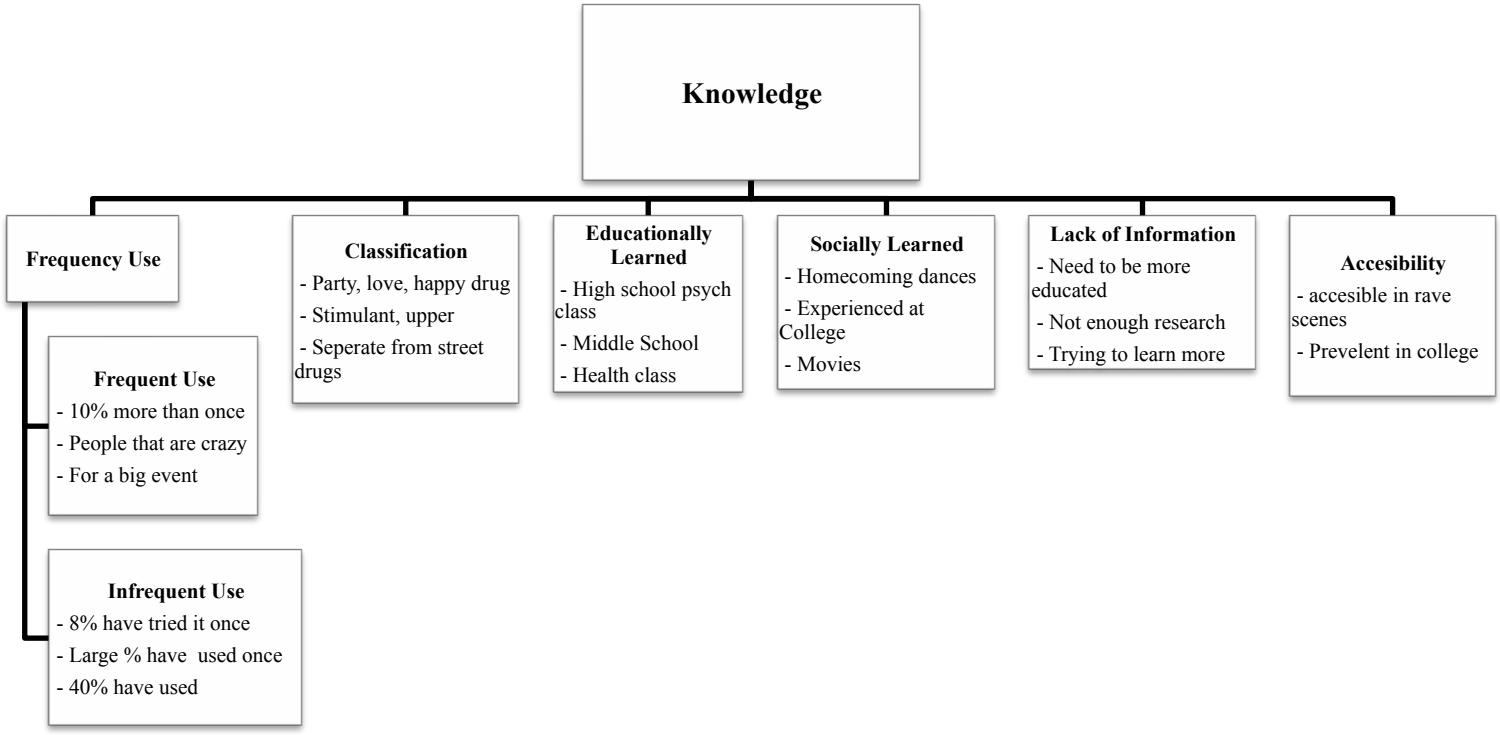

Figure 6. Reported Subthemes of Knowledge of Ecstasy

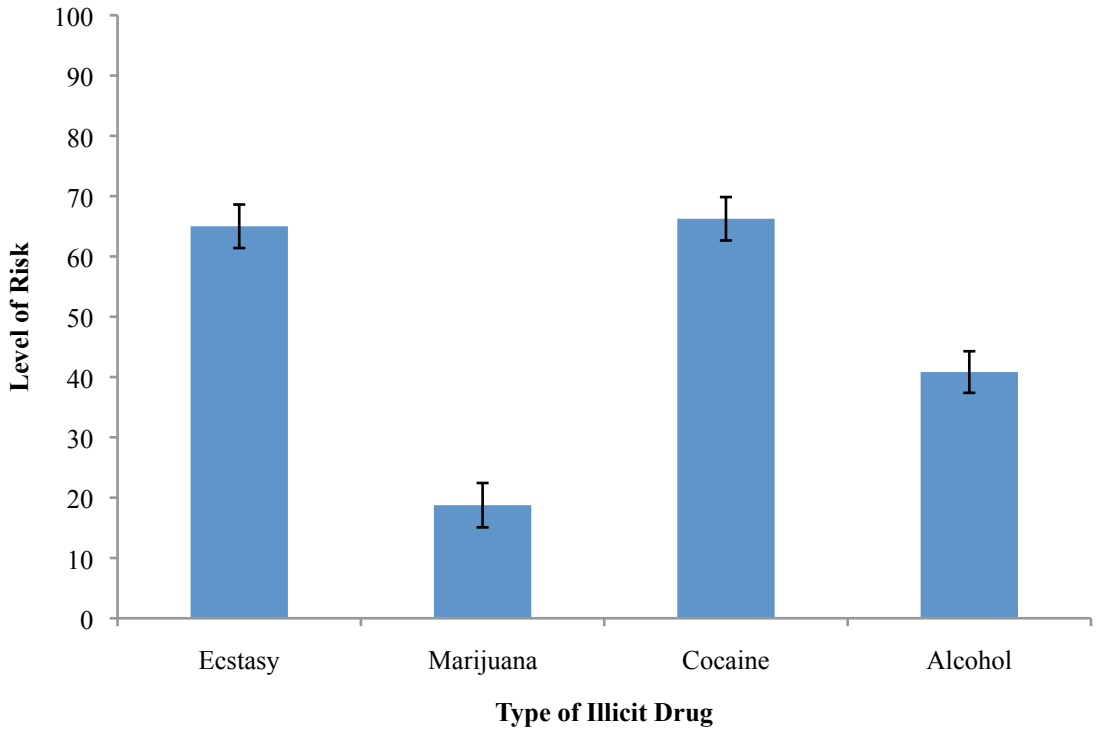

Figure 4. Perceived Levels Of Risk for Illicit Drugs [$F(3,21)=47.36$, $p<.001$]

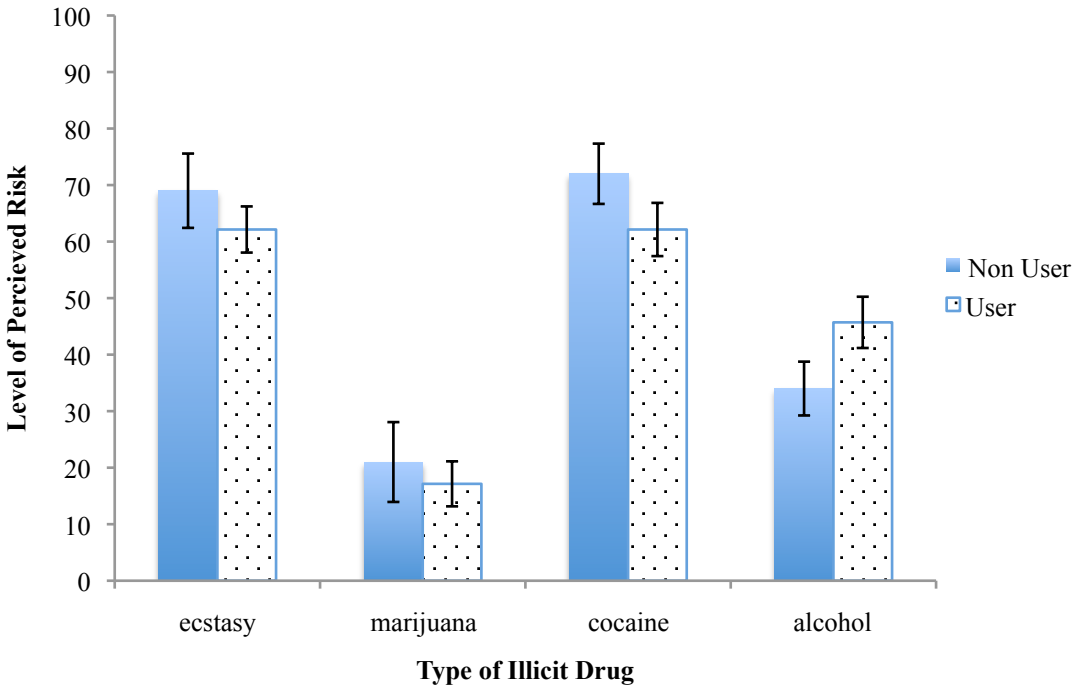

Figure 5. User Versus Non User Perception of Risk of Illicit Drugs [$F(1,22)=3.67$, $p=.07$, *ns*]

Tables

Table 1

Phases of thematic analysis

Phase	Description of the process
1. Familiarizing yourself with your data:	Transcribing data (if necessary), reading and re-reading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking if the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic 'map' of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells, generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

Note. Braun & Clarke, 2006, p. 87

Table 2

Overall Frequencies and Percentages of Overarching Themes from Focus Groups

Overarching Theme	Frequency (*n*)	Percentage (*n*)
Negative Use of Ecstasy	71	16.71
Positive Use of Ecstasy	157	36.94
Risk of Ecstasy	32	7.53
Knowledge of Ecstasy	165	38.82

Table 3

Total Frequency and User/Non User Percentage of Positive Subthemes from Focus Groups

Positive Use of Ecstasy	Total Frequency (*n*)	Users % of *n*	Non Users % of *n*
Positive Psychological	42	52.38	47.62
Positive Physical	16	56.25	43.75
Personal Psychological	19	42.11	57.89
Social Psychological	28	60.71	39.29
Personal Physical	5	80.00	20.00
Social Physical	9	55.56	44.44
Music/Dancing	31	67.74	32.26
Wealth	7	71.43	28.57
Total	157	57.96	42.04

Note. n = total number of positive utterances

Table 4

Total Frequency and User/Non User Percentage of Negative Subthemes from Focus Groups

Negative Use of Ecstasy	Total Frequency (*n*)	Users % of *n*	Non Users % of *n*
Negative Psychological	16	50.00	50.00
Negative Physical	28	60.71	39.29
Social Pressure	27	62.96	37.04
Total	71	59.15	40.85

Note. n = total number of negative utterances

Table 5

Total Frequency and User/Non User Percentage of Risk Subthemes from Focus Groups

Risk of Ecstasy	Total Frequency (*n*)	Users % of *n*	Non Users % of *n*
Legal	5	20.00	80.00
Contamination	11	63.64	36.36
Prior Drug Use	5	40.00	60.00
Use With Other Drugs	11	72.73	27.27
Total	32	56.25	43.75

Note. n = total number of risk utterances

Table 6

Total Frequency and User/Non User Percentage of Knowledge Subthemes from Focus Groups

Knowledge of Ecstasy	Total Frequency (*n*)	Users % of *n*	Non Users % of *n*
Frequent Use	9	55.56	44.44
Infrequent Use	6	50	50
Location	56	57.14	42.86
Classification	47	63.83	36.17
Education Learned	10	50	50
Social Learned	7	85.71	14.29
Lack of Information	25	68	32
Accessibility	5	80	20
Total	165	61.82	38.18

Note. n = total number of knowledge utterances

Appendix A

What Do You Think About Ecstasy?

Take part in a focus group to share your thoughts on current attitudes surrounding the drug ecstasy!

- Recruiting BOTH ecstasy users and non-user
- Sessions: one hour long with lunch provided
- February 17th and 24th during common hour

You may be eligible to receive extra course credit

For more information contact:

Rachel at Rachel.reingold@trincoll.edu
Maria Young at Maria.young@trincoll.edu

Appendix B

CONSENT FOR PARTICIPATION IN A RESEARCH PROJECT

TRINITY COLLEGE

Study Title: *Ecstasy: An Exploratory Study of College Students' Attitudes and the State of Prevention*
Principal Investigator: *Rachel Reingold and Maria Young*

Invitation to Participate and Description of Project

You are invited to participate in a research study designed to examine college students' perceptions of ecstasy use including: the effects of ecstasy, risks associated with its use, and ways in which people's attitudes about the substance are formed. You are being asked to participate because of your previously expressed interest in the study, and because you are a student attending Trinity College. We will be conducting several recorded interviews and focus groups, with a total of 25-30 student participants. These students will consist of both users and non-users of ecstasy. **It's critical to note that you do not need to be an ecstasy user to participate in this study, and that in signing this form you are allowing these sessions to be tape-recorded.**

In order to decide whether or not you wish to be a part of this research study, you should know enough about its risks and benefits to make an informed judgment. This consent form gives you detailed information about the research study, which a member of the research team will discuss with you. This discussion should go over all aspects of this research: its purpose, the procedures that will be performed, any risks of the procedures, and possible benefits. Once you understand the study, you will be asked if you wish to participate; if so, you will be asked to sign this form.

Description of Procedures

If you agree to participate in this study, you will be asked to participate in either an individual interview or a focus group of 5-7 participants that should last no longer than two hours. Both will be followed by a questionnaire, which should take no more than 10 minutes to complete.

If you were chosen to participate in an individual interview, it will be scheduled at a time most convenient for you. The Focus group will meet at a selected time that will accommodate all of its members. Both will follow structured and scripted questions designed to ascertain the presence or absence of various attitudes surrounding ecstasy. These questions will stimulate discussion on a broad scope of topics pertaining to thoughts and perceptions of ecstasy. The concluding questionnaire will ask about your background (e.g., gender), substance use, and your attitudes about various substances (e.g., marijuana).

Risks and Inconveniences

Risks, discomforts and inconveniences associated with this study are limited to slight emotional and/or social discomfort. Slight emotional or social discomfort can arise from answering broad questions in the interview or focus groups, and more personal questions in the concluding questionnaire. This is minimized in the focus group and interview by the impersonal nature of the questions being asked. At no point during the interview or focus group should you feel compelled to disclose whether you have used ecstasy or any other drug. The research team will highly discourage participants from sharing whether they have used illicit drugs during the focus groups or interviews. We do, however, ask that you be willing to disclose substance use in the questionnaire following the interview or focus group; the information will be kept entirely confidential, in that your questionnaire will be identified by a code rather than your actual name.

Benefits

The issues we will examine have the potential to contribute to the understanding of contemporary attitudes on both ecstasy and other illicit drugs. We expect this research to yield critical information, not only about the unique perceptions surrounding ecstasy in comparison to other illicit drugs, but also about the associated risks. We believe that the information gained in this research also has the potential to inform prevention and intervention programs for college students. In the future, research findings from this study may be integrated and presented to preventative programs and school administrators to inform the public regarding possible prevention or intervention methods.

By participating, you will be eligible to receive research participation credit (or extra credit), depending on whether this research activity has been formally approved by your instructor. Focus group participants will be provided with food during the group. Course-related research credit (or extra credit) will not be offered unless you participate in both components of the study.

Confidentiality

Any identifiable information that is obtained in connection with this study will remain confidential and will be disclosed only with your permission. **If you are participating in a focus group, by signing this contract you are also agreeing not to disclose any information regarding other's responses in the group discussions.** Sharing information from the focus groups would be a violation of this contract. If you decide to take part in this research study, you will be required to give us information about your substance use solely in the concluding questionnaire, which will remain entirely confidential through codes of identification.

If you are going to discuss your participation in this study with friends or members of your family, you should ensure that they keep it confidential. This means that you, your friends, and your family members must actively protect your own privacy.

Confidentiality of your responses may be compromised only if you provide information indicating that you are immediately dangerous to yourself or others. If you indicate any intention of harming yourself or others, we will have to report these findings to an outside health professional.

Right to privacy for participation in this research will be protected through anonymous coding and proper storage of all data, including data encryption and password protection. At the

start of the project, a list that matches participants' names with identification codes will be prepared by the investigator and will be kept in a computer file that can only be opened with a password, accessible only by Rachel Reingold and Maria Young. This list is necessary only in order to assign identification codes to data that derive from other sources (such as connecting the questionnaire and focus group/interview responses), and will be destroyed (along with the recorded sessions) following the conclusion of data collection and analysis in this study.

When the results of the research are reported, no information will be included that would reveal your identity.

Voluntary Participation and Withdrawal

You do not give up any legal rights by signing this form.

Your participation in research is voluntary. You may refuse to participate or withdraw from participation at any time without jeopardy to future medical care, employment, student status, or other entitlements. However, previously obtained data will be included in the final data analysis. The researcher may withdraw you from the research at his/her professional discretion.

Questions

If at any time you have any questions regarding the research or your participation, you can contact either one of the main researchers, who will answer your questions. The researchers' contact information is: Rachel Reingold, Rachel.reingold@trincoll.edu, (914) 874-3517, or Maria Young, Maria.young@trincoll.edu, (503) 702-3512. We have used some technical terms in this form. Please feel free to ask about anything you don't understand and to consider this research and the consent form carefully – as long as you feel is necessary – before you make a decision

Authorization

By placing an 'X' in the box below you indicate that you have read and understand the above Consent Form, that its general purposes, the particulars of involvement and possible hazards and inconveniences have been explained to *your* satisfaction, and that you have decided to participate in the project.

Your placing an 'X' in this box, along with writing your full name and date in the spaces provided, represents your informed consent to participate in this data collection.

By placing an X in this box: [ ] and printing my name and date below I consent to participate in this data collection.

Name of Subject (print): _____ Date: _____

Participant Signature: _____

Rachel Reingold/ Maria Young

_____ _____

Signature of Research Investigator Date

Appendix C

Focus Group Script

Pre-Focus Group Script:

We want to clarify that this whole session should talk about general attitudes of ecstasy. We are not asking you to tell personal stories, nor use the word "I" when referring to any kind of ecstasy use. We will not consider any use of personal examples or stories to actually mean that they pertain to you. None of our questions will inquire about your personal experience with the drug. This measure is just to ensure your confidentiality, safeguard your reputation, and minimize any legal risk. Also discuss maintaining confidentiality within the group, and not having participants sharing what is discussed during the focus group. Our confidentiality is definite, but everyone else's has to be too. Please silence your cell phones so as not to disrupt the focus group

Scripted Questions With Sub-Questions:

1. When you think about ecstasy, what are your initial thoughts?

- what class of drugs do you think it's in?
- do you think about it on its own/with other drugs similar cocaine, meth, or heroin? (Potential association)
- What street names do you think about?
- What are the differences between molly, ecstasy, MDMA
- Comparative question regarding its safety in relation to other drugs.
- Why would someone take ecstasy

2. What are some of the positive connotations you think of regarding ecstasy?

- How are people's moods affected by ecstasy?
- How is a person's sex drive is influenced by the drug?
    - How do people physically perceive others or themselves while on ecstasy?
    - Would a person enjoy dancing and parties more when they are on Ecstasy?

3. What are some of the negative connotations of ecstasy?

- What are potential health risks of taking these drugs?
- How often do you think ecstasy is used in combination with other drugs such as alcohol, or marijuana?
- When it's not in its pure form, what other substances might be in the ecstasy pill?
    - Legal consequences?

4. When or where did you first learn about ecstasy?

- Student's perception of how many students at trinity use
- in school?
- By friends?

- Do you remember learning about it in high school, was it addressed in drug awareness classes?
- Have you ever felt social pressure to take ecstasy?
- Have your friends ever felt social pressure to take ecstasy?
    - Music scene EDM
    - Could you describe what a typical user is like?

Appendix D

Post-Discussion Questionnaire

Demographic Survey 2013

Code:

Age:

Race:

What is your gender?

- Male
- Female
- Other

What year are you at Trinity?

- Freshman
- Sophomore
- Junior
- Senior

Do you participate in Greek life at Trinity College (sorority or fraternity)?

- Yes
- No

How many times have you used ecstasy?

- 0
- 1-3
- 4-6
- 6-9

- More than 9 times

How many times have you used marijuana?

- 0
- 1-3
- 4-6
- 6-9
- More than 9 times

How many times have you used Alcohol?

- 0
- 1-3
- 4-6
- 6-9
- More than 9 times

How many times have you used cocaine?

- 0
- 1-3
- 4-6
- 6-9
- More than 9 times

How risky is ecstasy (with zero being "not risky at all" and 100 being "extremely risky")?

0 10 20 30 40 50 60 70 80 90 100

How risky is marijuana (with zero being "not risky at all" and 100 being "extremely risky")?

0 10 20 30 40 50 60 70 80 90 100

How risky is alcohol (with zero being "not risky at all" and 100 being "extremely risky")?

0 10 20 30 40 50 60 70 80 90 100

How risky is cocaine (with zero being "not risky at all" and 100 being "extremely risky")?

0 10 20 30 40 50 60 70 80 90 100