

STEREOTYPES AND MEDICAL MARIJUANA IN THE WORKPLACE

by

SHANE ALLEN FUHRMAN

(Under the Direction of ROB MAHAN)

ABSTRACT

Marijuana is growing in acceptance as a legitimate form of treatment for many disorders, injuries, and illnesses. However, due in large part to Federal law and social stereotypes, medical marijuana is still not considered an acceptable medication to organizations that drug test their workforce. While companies are generally protected legally from granting the same allowances for medical marijuana as they do for other medications, a change in Federal law could force employers to face the reality of a workforce that includes those who use marijuana as a medicine. The current study used policy capturing to investigate whether the social stereotypes of marijuana use translate into workplace stereotypes that affect judgments co-workers. Results showed individuals do consider marijuana use when making judgments of reliability, safety, and performance of potential co-workers. Those who use marijuana are were found to be judged less positively than those who do not use marijuana. Moderating variables of this finding are examined. Findings suggest future research in variables that may decrease stereotyping of medical marijuana users is necessary to prepare for future Federal policy changes that may occur.

INDEX WORDS: policy capturing, medicinal marijuana, marijuana, drug-use, job
performance, workplace safety, stereotype, recreational, co-worker

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CHAPTER 1

Introduction

Through experience, (mis-)education, media, laws, and values, people have developed stereotypes of the marijuana user. These stereotypes can influence how individuals make judgments about others, in particular, their co-workers who use marijuana. While many laws and court cases have protected the workplace from the potential harm of those who smoke marijuana, the reality of marijuana users as a normal part of the workforce is a real possibility in the future. While public opinion and laws are changing to be more favorable to medical marijuana use, most of these laws still protect businesses from having to accommodate a medical reason for marijuana use (Wiwi & Crifo, 2010). However, if laws at the Federal level change in the same progressive manner as in many states, organizations may have to directly deal with having to accommodate marijuana users in their workforce. The current study seeks to determine the amount of stereotyping that occurs in the workplace for marijuana users and to find characteristics that may influence the outcomes of any stereotype that may exist. This information may help businesses prepare for future changes to the workforce resulting from the medical marijuana movement.

Marijuana use has been a social and political topic for many years, but in the mid 1990s, when the first US states legalized it for medicinal use, became a major legal issue (Michael, 1997). Up to that point, marijuana use was illegal and access to the substance was limited to purchases on the black market. Today, in the sixteen medical marijuana states, those with doctor

prescribed medical marijuana ID cards can easily walk into dispensaries and acquire legal marijuana (Bostwick, 2012). With legal support in many states, marijuana is available for those with medical approval to purchase at state licensed dispensaries. The transformation being seen in states who have legalized marijuana for medicinal purposes challenges many of the previously held societal beliefs regarding marijuana's uses and consequences.

However, this transformation in the legal aspects of marijuana use has far reaching effects beyond the political arena. It has found its way into the workplace realm as a major legal, safety, and efficiency issue. As of 2000, over one-third of all Americans have reported smoking marijuana at some point in their lives, making it the most widely used illicit substance (Earlywine, 2007). It is also the most widely detected drug found in drug testing (Quest Diagnostics, 2008). With marijuana use becoming more prevalent in society, any stigmas attached to the substance are likely to become more relevant to the workplace and the workforce.

Marijuana as both an illegal drug and a medicine, has received a large amount of debate over the years. The decades of negative press marijuana use has received may have led to a pervasive stereotype (Gasnier, Meade & Hoerl, 1938). Organizations also have responded to this negative press by trying to protect safety and productivity through employment drug-testing and employee assistance programs. While these programs were intended to have positive effects on the workplace, negative stereotypes of marijuana use could have adverse effects as well. If the political and scientific movements succeed in changes to the current Federal laws, organizations may face legal troubles resulting from potentially discriminatory actions. If a negative stereotype is pervasive in the workplace, the consequences could pose significant challenges to

organizations in the near future as marijuana use receives greater acceptance both legally and socially.

This study will describe how stereotypes can have negative impacts in the workplace. In addition, the stereotypes that may exist for those who use marijuana will be considered given the current and fluid legal and social climate surrounding the substance. Finally, the goals of the current study are to investigate whether a negative stereotype of marijuana users exists in the workplace and determine characteristics of the person and the job that may moderate the strength of these stereotypes.

Stereotyping and Workplace Judgments

Stereotypes in the workplace have been researched for many years. Broadly, stereotypes are “beliefs about the characteristics, attributes, and behaviors of members of certain groups” (Hilton & von Hippel, 1996, p. 240) that make cognitive processes associated with understanding behavior simpler. This simplification heuristic makes dealing with the complexity of the world easier. The development of stereotypes is beneficial to much of every day decision-making, allowing people to render quick judgments about complex human behavior.

However, there have been negative consequences to the use of stereotypes in organizational decision-making. Stereotyping in the workplace is of particular concern as it can lead to legal prosecution based on claims of discrimination. Discrimination occurs when certain characteristics are attributed to a particular demographic group during decisions such as selection, promotion, and termination. When a decision maker relies on a stereotype of a group when making judgments about individuals of that group, characteristics can wrongly be

attributed to the individual because of their group membership. Many different types of stereotypes have been seen in the workplace. Race, gender, and age are just a few that have been seen in the workplace and have led to charges of bias and discrimination (Fiske & Lee, 2008; Heilman & Eagly, 2008; Posthuma, R. & Campion, M., 2009).

The Marijuana Stereotype

Many things have led to a social stigma that seems to exist for users of marijuana. Starting with the 1936 film “Reefer Madness” and through the Nixon administration’s war on drugs, marijuana was vilified. As a result, the federal government ended all research on the drug in 1992 with the closing of its research program for new drugs called the Compassionate Investigational New Drug program (Parloff, 2009). Marijuana has been portrayed in film, media, and research as an addictive and harmful substance that is a gateway to harder drug use. In addition to its supposed gateway properties, marijuana use has also been linked to several psychological disorders, including schizophrenia (Murray, Morrison, Henquet & Di Forti, 2007). The dangers of marijuana use have come from many angles and this information may have led to a negative stereotype of those who use it. Following is a review of other findings that may suggest the harmful effects of marijuana.

General Cognitive and Psychomotor Functioning.

If one pictures the stereotype of someone who smokes marijuana, they may imagine someone who is forgetful. This is the belief that those who smoke pot have poor functioning memory capacities. This stereotype does appear to be supported by some research on the clinical effects of marijuana on memory. The effects of marijuana are linked to its active compound,

tetrahydrocannabinol (THC). Several experimental studies have shown that marijuana intoxication reduces subjects' attention and ability to concentrate on tasks as well as their speed at learning new material (Schwenk, 1998). Research seems to suggest that these negative effects are isolated to short-term memory only and do not affect participants' long-term memory.

However, not all studies have shown these negative consequences on memory functioning. Many survey studies have found no evidence of history of marijuana use having any effect on performance on a variety of memory tasks (Schwenk, 1998). While this appears to be contradictory, the difference appears to be in whether the focus is on intoxication or previous use of the drug. While THC intoxication appears to have negative consequences on memory functioning, history of use does not appear to have as consistent an effect. This may suggest marijuana intoxication has more acute than chronic consequences during intoxication, casting doubt on any stereotypical chronic effects to a marijuana user.

Another concern with those using marijuana is how it affects psychomotor functioning. Experimental studies have shown intoxication leads to greater rates of error in estimations of both distance (Bech, Rafaelsen & Rafaelson, 1973) and time (Hollister, 1986). Other negative effects have been shown on visual tracking (Schwenk, 1998), and visual information processing (Braff, Silverton, Saccuzzo & Janowsky, 1981; Casswell & Marks, 1973). Motor control, but not reaction time, has also been shown to suffer due to marijuana intoxication (Kvalseth, 1977). In general, experimental studies have shown intoxication impairs performance on psychomotor tasks, especially as they increase in complexity.

The potential stereotype of marijuana users that has received research attention is the apparent lack of motivation and laziness of those who use marijuana. It is believed that those

who use marijuana lack motivation to complete everyday activities and work requirements, leading to poor performance ratings. Several studies have found evidence of marijuana users having indications of lower motivation, including lower grades than non-users (Schwenk, 1998). While there have been other studies showing contrasting results for marijuana's motivational effects, the cumulative negative aspects from research and popular press have fostered a pervasive negative stereotype of marijuana users.

Driving Performance.

A significant area of marijuana research that is relevant to stereotype development and receives a great deal of attention is driving behavior. Marijuana has often been considered to create driver impairments that are similar to those seen in alcohol intoxication. The idea of impairment behind the wheel is very powerful and salient in society. Marijuana's dangers to driving contribute, particularly with clear evidence of alcohol related driving fatalities, to a negative stereotype of users as dangerous, high-risk behavior.

In a review of the many studies on marijuana and workplace relevant variables, Macdonald et al. (2010) found, based on blood test studies, there is a significant association between crash involvement and higher concentrations of THC. This suggests that higher concentrations of THC increase the odds of being in a vehicle accident. Their review suggests an increase in odds of 1.4 to 6.6 times the normal odds of being in an accident. However, their findings show that only acute effects of marijuana are dangerous to driving as the effects of marijuana only last approximately four hours after consumption.

This conclusion is supported by several studies, including one by the Federal Department of Transportation (DOT). One study found that even moderate doses of THC, when combined with alcohol, produce exponential increases in risk of impaired driving (Ramaekers, Robbe, & O'Hanlon, 2000). This DOT study also showed that marijuana does have significant effects on driving performance. However, the study suggests that the overall effects are less dramatic than one finds with alcohol and are highly dose related ("Marijuana and actual," 1993). While this study did suggest differences in the types of impairment that marijuana and alcohol possess, linking marijuana to highly politicized alcohol-based driving event data further reinforces negative stereotypes of users.

The conclusion that most have taken from all the above research on driving is no one should drive under the influence of any drug. Even the National Organization for the Reform of Marijuana Legislation (NORML), the country's largest pro-marijuana organization, has written this in their constitution. The "No Driving" clause in their "Principles of Responsible Cannabis Use" states "Although cannabis is said by most experts to be safer with motorists than alcohol and many prescription drugs, responsible cannabis consumers never operate motor vehicles in an impaired condition (p.1)(Gieringer, 2010)." Even advocates of marijuana use warn of the dangers it can cause if used behind the wheel.

Much of the above research suggests many different negative effects of using marijuana that can be used to inform a stereotype of users. In support of this idea, a study on the characteristics of what a prototypical marijuana user was like found greater negative perceptions of users than non-users on a number of dimensions including normative success, social attractiveness, and risk orientation (Comello & Slater, 2011). The findings of adverse effects of

marijuana use have been used to mount a campaign against the substance over the years. Despite research suggesting that some of these findings may be overstated, the prevailing belief seems to be that marijuana is a harmful substance that will negatively affect personal health, motivation, basic functioning, and driving (Schwenk, 1998). This highly publicized belief accounts, in large part, for a negative stereotype of those who use marijuana.

Marijuana Law in the U.S.

Marijuana law has been a hot socio-political topic ever since the first states passed laws allowing for the medicinal use of the drug. The federal government currently holds marijuana as a schedule I drug in the Controlled Substances Act of 1970. This act made it illegal to possess, cultivate, and distribute substances like marijuana. A Schedule I controlled substance means the drug has a high potential for abuse, has no current medical use, and there is a lack of accepted safety for the use of the substance (Seamon, 2006). Based on this law, the federal government does not distinguish between the medical use and non-medical use of marijuana. It is interesting to note that Schedule II drugs are seen by the Federal government as having medical benefits and include the drug cocaine.

Since this act was imposed, sixteen states (Alaska, Arizona, California, Colorado, Delaware, Hawaii, Maine, Michigan, Montana, Nevada, New Jersey, New Mexico, Oregon, Rhode Island, Vermont, Washington) and Washington D.C. have split from the federal government on drug policy and have legalized the controlled medicinal use of the drug on the state level (Cerde et al., 2012). This means these states will not enforce the federal government's laws regarding marijuana use, cultivation, and distribution and allow for the possession and

consumption by patients who demonstrate medical necessity (Seamon, 2006). This sharp divide between state and federal law is what has made marijuana such an intensely debated legal issue.

While federal law legally supersedes state law, states not enforcing federal law leave the federal government without an enforcement mechanism. With their resources spread too thin to control the use of marijuana all over the country, the DEA and other federal agencies have generally been forced to leave medical marijuana states alone. The lack of resources and practical enforcement mechanisms led the Federal government, under the Obama administration, to announce a change in federal policy towards medical marijuana called the Non-Enforcement Policy. The policy states that federal prosecutors would not enforce the federal ban against marijuana against individuals who are in clear compliance with state marijuana laws. The goal of state control was to allow the Federal government to devote resources to more important issues such as terrorism and trafficking in illegal narcotics. However, this is merely a policy and not a law and as such, people are still legally culpable for marijuana violations be they medical or otherwise (Mikos, 2011).

Marijuana Law in the Workplace

Before the first medical marijuana initiatives were passed, companies could deny employment or terminate employees for testing positive for marijuana as it was an illegal substance at both state and Federal levels. To combat drug use, organizations have turned to the use of drug testing as a condition of employment. As early as 1998, over 80% of Fortune 1000 companies use some form of drug testing (Hartwell, Steele, & Rodman, 1998). As a result of efforts to screen drug users, the employee approval of drug testing in the workplace has slowly trended upward (Fendrich & Kim, 2002). This could be a result of many studies that suggest

drug use increases the likelihood of injuries and accidents, lowers productivity, and correlates with several other important workplace-relevant variables. American workers report around four million injuries annually. Post-accident drug tests have identified positive results in 6% of the general workforce with 4% of those having dangerous or safety sensitive jobs (Earlywine, 2007). Some estimates have the annual cost of drug use in the workplace upwards of \$100 billion in lost productivity (Segal, 1990).

Once the first states legalized the medicinal use of marijuana, it became a legal gray area as to whether or not a company could dismiss or deny individuals employment for legitimate medical use of the drug. Many organizations in the medical marijuana states have turned to federal laws, such as the 1988 Drug-Free Workplace Act and the Occupational Safety and Health Administration (OSHA) to continue protecting their workforce. As a condition of Drug-Free Workplace Act of 1988, most organizations or individuals with federal funding are required to provide a drug-free workplace (“Drug-free workplace”, 2012). As this is a federal law, organizations are compelled to comply even in states with medical marijuana. In addition, the Federal Department of Transportation specifically prohibits the use of medical marijuana for transportation workers and those in safety sensitive jobs established by the Department of Defense and the Nuclear Regulatory Commission (Calvasina, 2011). All organizations also have the duty under the Federal Occupational Safety and Health Act to provide a work place that is safe from hazards that can cause harm to workers (Schwartz, 2010). OSHA has recognized drug and alcohol use as avoidable workplace hazards and advocates drug-free workplace programs (Calvasina, 2011).

Medical Marijuana Users as a Protected Group.

The other side to the medical marijuana use and workplace debate revolves around whether medical marijuana users are like other individuals with disabilities. The Americans with Disabilities Act (ADA) was passed in 1990 and was designed to prohibit discrimination on the basis of disability in employment matters, among other protections. While the ADA does not specify all of the impairments it covers, it gives a general outline of a disability as those who have physical or mental impairments that substantially limit major life activities. Title I of the ADA specifically requires employers of 15 or more employees to provide qualified individuals with disabilities with equal opportunity to the full-range of employment opportunities that are available to others. It also restricts the questions that can be asked about an applicant's disability before a job offer is made and requires reasonable accommodations be made for qualified individuals (U.S. Department of Justice, 2005). The ADA specifically permits employers to prohibit the use of alcohol and drugs in the workplace and permits the discipline of employees found to be in violation of employer drug and alcohol policies (Calvasina, 2011).

Proponents of medical marijuana argue that under the ADA, random and pre-employment drug testing constitutes discrimination against those who are using marijuana to treat major disabilities (Schwartz, 2010). This has led to questions about how much a company can ask applicants and employees about their medical treatments and about how much accommodation they should be required to give for off site and off hours use of marijuana.

Case Law and Medical Marijuana

This has been the topic of several state and US Supreme Court cases that resulted from claims of wrongful termination and discrimination. One of the most noted cases dealing with medical marijuana was *United States v. Oakland Cannabis Buyers' Cooperative*. In this case, the federal government sued a marijuana dispensary for growing and distributing an illegal substance under federal law. The dispensary argued their patients had a medical necessity for the use of marijuana and that it was an exemption to the Controlled Substances Act. The Supreme Court sided with federal law and said there is no medical necessity defense for marijuana under the Controlled Substances Act since marijuana has no accepted medical use (Seamon, 2006).

Another significant case involving marijuana and the workplace was *Washburn v Columbia Forest Products*. In this case, the Oregon Supreme Court considered if the termination of an employee due to his use of marijuana for a disability was discrimination. In their ruling, the Court ruled the individual, Robert Washburn, was not entitled to any employment accommodations for his use of medical marijuana as he still had access to conventional prescription drugs to treat his condition (Seamon, 2006). This further emphasized marijuana's lack of legal legitimacy as a medication.

The California Supreme Court took up another marijuana case in *Ross v. RagingWire Telecommunications, Inc.* in 2008. The court held that drug testing was legal and the termination of an employee who uses medical marijuana is not discrimination. In addition, the court held that employers are not required to accommodate the use of medical marijuana in any way, even if it does not affect the employee's job performance. Finally, the ruling stated that the California

laws allowing for medical use of marijuana did not give marijuana the status of a legal prescription (Hurwitz, 2011).

The US Supreme Court has also taken up the topic of medicinal marijuana. In a landmark 2005 decision, the topic of states rights versus federalism in regards to marijuana law was explicitly considered. In *Gonzales v. Raich*, the Court ruled that the federal government may enforce the Controlled Substances Act and its prohibition of the use of marijuana, even for those who use it legally under state law (Gonzales, Attorney General, et al. v Raich et al., 2005). With this and other cases as a guideline, employers may now refuse to accept medicinal marijuana as a legitimate explanation for a positive drug test without concern of any legal repercussions (Kenney, 2006). As one can see, the courts have not ruled favorably for the medical marijuana movement under the veil of federal law.

Future of Marijuana Law and the Workplace.

While precedent and federal law seem to lay a strong groundwork for an employer's right to deny work for anyone using marijuana, the future may not be so certain. The political movement that has successfully pushed for legalization of the medicinal use of marijuana in many states may force the US government to reconsider the drug's schedule I status. As of now, sixteen states and Washington D.C. have legal medical marijuana laws with eighteen more states considering medicinal use and eight states (Washington, Oregon, Nebraska, Montana, Missouri, Michigan, Colorado, and California) considering ballot initiatives to fully legalize marijuana use up for vote in 2012 (Altieri, 2012). There seems to be a growing push in favor of decriminalizing the medical use of marijuana all over the country and in some places, its complete legalization.

The social acceptance of marijuana is not the only reason for the push for its decriminalization. State governments are increasingly finding budget shortfalls and the decriminalization of marijuana is one way that has been proposed to limit both enforcement and litigation. There are billions of dollars spent every year enforcing drug laws and prosecuting people accused of minor drug possession violations. Decriminalization or even legalization would allow local and federal government agencies to focus on more harmful substances and more dangerous criminal activities. Saving money is not the only benefit. Decriminalization would also allow for the control and taxation of marijuana. It has been suggested that tax revenue of marijuana could generate in billions of dollars in state revenue (Duncan, 2009).

A final sign that employers may have to acknowledge and accept workers using marijuana off hours as a medicine are several legislative bills that are being considered around the country. One bill in Hawaii would require employers to outsource drug testing to an outside medical reviewer. This reviewer would consider whether marijuana use would pose a safety concern to the job and if no concerns are found, they would report a negative drug screen to the employer. Currently, California is considering a ballot initiative that would prohibit employers from firing a person who tests positive for marijuana if they have a legitimate medical marijuana card allowing for its use (Nicholas, 2010).

The growing social and legal acceptance of marijuana as a medication combined with the financial gains states receive from its control and taxation make it appealing to consider for states hit with budget cuts and limited funding. As a result, the federal government will continue to feel pressure from states looking to legalize some form of marijuana and may be forced to make the issue of marijuana legalization a state issue by removing the Schedule I status that

marijuana has. This may have drastic effects for employers. If employers would no longer be permitted to penalize those who use marijuana, they will have to face the real possibility of a vastly changing workforce where marijuana users will be working alongside non-users.

Finding Evidence of A Marijuana Stereotype in the Workplace

There is sufficient evidence to suggest that a stereotype of marijuana users exists in society as well as the workplace. This study seeks to determine how prevalent that stereotype may be in the workplace and what variables may lead to increased stereotyping. One source of attitudes that may be the most relevant to stereotypes is the attitudes of one's peers or co-workers. These attitudes are not necessarily bound by legal standards and may present a clear picture of any perceptions people may have about marijuana users in the workplace.

Co-worker attitudes and behaviors have proved to be a significant influence on work outcomes. A study on nurses and the antecedents of reporting impaired co-workers showed the best way to determine workers who suffer from substance abuse is through their non-impaired co-workers (Beckstead, 2002). This suggests that co-workers have access to information about their peers' drug use and how it affects their work.

In addition to having access to peer drug-use, co-worker attitudes and behaviors have been shown to influence those around them. Co-worker counterproductive behaviors have been shown to lead to decrements in performance in fellow employees (Yang, 2008). Value congruence with co-workers has shown to influence performance (Adkins, Ravlin & Meglino, 1996). Exposure to co-worker substance abuse has shown effects on performance, job attitudes (Lehman, Farabee, & Bennett, 1998), and teamwork (Bennett & Lehman, 1999a). Additionally,

perceived co-worker support for safety minimizes the relationship between high job demands and hazardous job events (Turner, Chimel, Hershcovis, & Walls, 2010).

All this suggests co-workers may have a clear view and attitude of employee marijuana use and its effects on the job and the workplace. To these ends, some companies have instituted programs to combat employee substance abuse by using their co-workers. In these programs, workers are used to identify intoxicated co-workers and persuade them to take the day off and seek treatment. These employees are not questioned about their absence and are not penalized if they leave work (Miller et al., 2007). This use of co-workers shows how influential one's colleagues can be and how important it is to consider the perspective they offer. The present study seeks to capitalize on the knowledge and perspective that co-workers may have on the behavior and quality of work of those who use marijuana through the use of policy capturing.

Judgment Policy Capturing.

Policy capturing is a methodology commonly used in decision-making research. It utilizes a series of decisions made by the participant based on a predetermined set of cues to see what and how information is utilized. This set of cues makes up what is often termed a paper co-worker. Participants make judgments based on sets of cues that result in a set of cue utilizations that make up a person's judgment policy. These cue utilizations represent how much each particular cue factored into their judgments (Cooksey, 1996). Co-workers have a unique perspective to look at how marijuana users are stereotyped in the workplace. The current study uses policy capturing to determine how individuals weight characteristics about co-workers and what role employee drug use may have on co-worker judgments of productivity and safety.

Cue Selection.

Choosing cues in policy capturing is a task that must balance the desired information, relevance, and ecological validity. The cues chosen for this study vary in their relevance to safety and productivity. Previous job performance and experience are believed to be the most relevant to current performance, safety, and reliability as a co-worker. Past and current performance has shown to be positively related to future performance (Zyphur, Chaturvedi, & Arvey, 2008). Job experience has shown positive affects on both safety (Gyekye & Salminen, 2010) and job performance (Schmidt & Hunter, 2004). It is expected that these two variables should be the most relevant and potentially the most influential in co-worker judgments.

Job relevant variables such as gender and ethnicity are easily accessible, but are generally not acceptable characteristics for one to use in hiring and should bear no effects on safety or performance. Gender has previously been shown to have no value in predicting injuries (Frone, 1998). While it could be argued that, in some jobs, one gender may outperform another in safety or job performance, neither gender nor ethnicity is believed to bear direct relevance to general safety or performance in the workplace. However, these are characteristics that potentially could affect a person's preferences and opinions, particularly as they relate to marijuana use, and are included to provide comparisons.

While co-workers having access to information about another employee's drug use is not entirely ecologically valid, one could make a case that the business would have this information from pre-employment drug testing. Also, from previous studies of co-worker drug use and its effects on others, it could be assumed that co-workers do eventually have access to peer drug use and its effects (Lehman, Farabee, & Bennett, 1998). The interesting side to the current study is

that employees are the ones being given the chance to judge what drugs affect the workplace. Normally, the business makes these decisions and would have them in their drug testing policy. In the current case, employees are allowed to use their stereotypes of the substances that may cause problems in the workplace in their judgments.

Legal prescription drugs, such as amphetamines (ie. ADHD and ADD medications), are legal for most jobs today. They have been legal for years and many states have protected their use in the state constitutions (Schwartz, 2010). Amphetamines are one of the most prescribed drugs in the United States. The effects of prescription medications in the workplace are not well known. While there has been a noted increase in positive drug tests for opiates in post-accident drug tests, the role of the drugs in the accidents is unknown. Also, there are no data on whether the drugs were prescribed or obtained illegally. Generally, these medications are viewed as having a behavioral benefit as they are intended to make and keep people healthy, thus improving functioning and productivity. As a result they may be related to performance and safety, but exactly how is unknown (Lee, 2011). Amphetamines are used, in this study, for comparison reasons.

Marijuana as the Focus?

While all of the above cues may have relevance to judgments of co-workers, marijuana is the main variable of interest in this study. Marijuana remains a schedule I drug under the Controlled Substances Act despite many states fighting for its rescheduling. Advocates of rescheduling point out that while marijuana is a Schedule I substance, drugs such as cocaine and opium are Schedule II drugs. This implies that marijuana is more addictive and has less medicinal uses than either of the above-mentioned substances (Voelker, 1994). The battle over

marijuana's rescheduling is something that is ongoing and has already become an issue for organizations seeking to protect their workplace. This battle does not appear to have clear resolution in sight, but the effects of a possible rescheduling should be investigated so companies can prepare for the consequences.

What is Known About Marijuana Use in the Workplace?

So far, the grounds for a potential stereotype of marijuana users have been discussed along with the current legal situations and future possibilities many states and employers may find themselves in. Clearly medical marijuana use is going to be a major topic in the workplace in the upcoming years. The next section discusses what is already known about marijuana use in the workplace and will outline several hypotheses the current study is seeking to confirm. Finally, a case for using co-workers as a source of evidence to determine any stereotype that may exist is made.

Grounds For Marijuana Use Information Utilization.

A general case for a societal stereotype of medical marijuana users has been made. However, it is also possible this general stereotype can be seen in a specific case of workplace attitudes as well.. Evidence of workplace stereotyping comes in the form of numerous studies looking at marijuana use, drug-testing perceptions, and other workplace variables. While some of these studies show little or no effects of marijuana use on these workplace variables, many findings showed effects that may support negative perceptions of marijuana users in the workplace. This lack of clear consensus on many of the issues surrounding marijuana further suggests there are other variables in play when looking at marijuana's effects on workplace

functioning. Following are the findings, as well as numerous potential moderating variables, that may influence the strength of any stereotype that may exist.

One of the most studied variables in the workplace and one of the most relevant to perceptions based on stereotypes is job performance. There have been several studies that have considered marijuana's effects on how one performs their job with mixed results. One study looking at the job status and performance of those in middle adulthood found neither chronic, nor current use of marijuana adversely affects occupational status and achievement (White, Aidala, & Zablocki, 1988). In a review of the literature on marijuana in the workplace, Macdonald et al. (2010) found that marijuana use generally impairs performance for approximately four hours after consumption. Adverse effects on psychomotor skills, perception, attention, decision-making, learning, and short-term memory are frequently found as the acute effects of marijuana. However, beyond the four-hour time period after consumption, no negative effects were found. Long-term, heavy use of marijuana has shown no effect on job performance. Additionally, no marijuana withdrawal effects have been found to have any influence on performance.

A study by Kagal, Battalio & Miles (1980) actually took people out of their normal life and had them live and work in what they called an "experimental micro-economy" to test marijuana's effects on work and life behaviors. Volunteer smokers resided in two wings of a hospital for 98 days. Participants earned money piece-rate by performing basic manual job tasks. They were required to pay for most of their normal living expenses such as food and entertainment with the money earned from the labor. The experimental group was required to smoke a certain number of marijuana joints each day. Work output, activities, and other variables were carefully measured. The results showed that marijuana consumption had little to

no effect on output or hours worked. However, there was a significant preference for leisure activities over work within two and a half hours of consumption. Any decrements in performance or production that did occur were a direct function of job complexity and quantity of marijuana consumed. The authors also note that most participants actively scheduled marijuana consumption away from times where greater cognitive or motor skill was required. All this taken together suggests that marijuana use has acute effects that hinder work performance but longer-term use does not seem to have significant impacts. However, these acute effects may be grounds for a negative stereotype to exist in the workplace.

Another variable of interest that may be grounds for stereotype use in the workplace is safety. Several studies have modeled factors believed to be involved in workplace injuries. *On-the-job* substance use predicted workplace injuries with high significance. However, *general* substance use did not achieve significance in the full model (Frone, 1998). Supporting this conclusion, marijuana intoxication and not general substance abuse, has been linked to decreased workplace safety (Earlywine, 2007; Kaestner & Grossman, 1995).

A few studies do show a substance use/accident relationship. One of the studies found that the relationship only held for high-risk jobs (Holcom, Lehman & Simpson, 1993). Another study found that those testing positive for marijuana are at a higher risk for turnover, accidents, injuries, and disciplinary problems (Zwerling, Ryan & Orav, 1990). A follow-up to this study found that the adverse findings to these employment outcomes decrease after the first year of employment (Ryan, Zwerling, & Jones, 1992). Again, intoxication and the acute effects of marijuana seem to be the most influential link to safety related variables in the workplace. Medication or not, if a user is intoxicated at work, it could be seen as a dangerous work

environment. With safety being very important in the workplace, the above can be seen as grounds for stereotyping medical marijuana users.

Performance and safety are not the only problems facing organizations in regards to drug use. Some of the most expensive costs are from behaviors like absenteeism and turnover. These behaviors can be especially frustrating to co-workers who potentially have to deal with greater workloads in the absence of others. A study by Normand et al. (1990) looked at a large sample of US postal service applicants. 6.3% tested positive for marijuana. Based on the tests and the follow-up employment check, no significant relationship was found between positive drug tests for THC and involuntary turnover. However, it was shown that a positive drug test did make one more likely to be absent from work or use leave time than negative testers. Absence from work can cause frustration for other workers and may further lend to stereotyping of those who are prone to absence, as marijuana users seem to be.

An overarching theme thus far has been that there is a stereotype people hold about marijuana users that will affect their perceptions of working with someone who uses marijuana. It is believed that this stereotype will also effect perceptions of those working around a medical marijuana user in the workplace in judgments of perceived co-worker safety, reliability and performance judgments. Stereotypes have become pervasive over the years and thus, many people will use them, believing marijuana to be a detriment or a danger to the workplace. In general, it is believed that most participants will utilize marijuana use as a significant cue in their judgments, leading to the main hypothesis of the current study:

H1: Marijuana use will be a significant cue utilized in productivity, reliability, and safety judgments by the majority of participants, although will exhibit significant variance in the cue's standardized B weight.

Moderators of The Marijuana Stereotype

If there is indeed a marijuana stereotype in the workplace, it is not expected to be the same for everyone and across every situation. There are other variables and characteristics that may make individuals utilize stereotypes more or less. Characteristics that reinforce or support stereotypes may make it more likely for stereotypes to manifest themselves in judgment policies. This section discusses several moderating variables that are believed to affect the strength of the marijuana user stereotype in the workplace.

Characteristics of the Marijuana Using Co-worker.

H2: The gender and marijuana use characteristics of the paper co-worker will lead to a significant gender X marijuana use interaction where female paper co-workers who use marijuana will be judged as lower in safety, reliability, and performance than for men who use marijuana.

Given the nature of stereotypes, there may be certain characteristics that enhance or support what one perceives as a marijuana user. This will lead to an interaction where one characteristic enhances stereotyping and leads to more pronounced consequences of the marijuana use cue. One such interaction that is expected is that paper co-workers who are female and test positive for medical marijuana will be judged as less fit co-workers than their male counterparts. Thus, it is believed that being female and a marijuana user will enhance stereotyping leading to more pronounced effects on judgments.

Gender-role theory and sex role congruence as it relates to the workplace suggest that jobs and occupations have masculine or feminine stereotypes attached to them. This idea suggests that a sex-typed job will be judged as more appropriate for one gender than the other based on the congruency between the sex-typing and gender of the person. Evidence of this has

been seen in numerous studies that show women and men are seen as better fits for jobs that are congruent with their sex and that a bias exists against incongruence (Cohen & Bunker, 1975, Kalin & Hodgins, 1984, Levison, 1975).

While gender by itself has not been shown to have an effect on workplace injuries, men have shown correlations between on-the-job substance use and exposure to hazardous and potentially dangerous work situations (Earlywine, 2007). Also, a study by Macdonald (1995) on the appropriateness of workplace drug testing, any drug use, legal or illicit, is significantly related to job injuries for males and those in the youngest age group, suggesting men are more likely to suffer negative effects from drug use than women. Finally, a study found a negative relationship between drug use and employment and noted that this relationship was more apparent among men than women (Huang et al., 2011). All of this suggests that drug use and its effects seem to be a trait associated with men more than women. This combined with the findings of gender-role theory may suggest that drug use in women will be seen as a greater deviation from typical societal gender roles, resulting in greater stereotyping for co-workers who are women and use marijuana.

H3: Paper co-worker's type of use of marijuana will explain significant variance in the marijuana use cue utilization where those co-workers who use recreationally will score lower on perceptions of performance, safety and reliability than those who use medicinally.

Co-worker type of marijuana use is also considered in the current study. While marijuana use in any form is believed to be significant in predicting perceptions of workplace outcomes, legality of use may lead to stronger stereotyping. A national poll taken in 2011 showed that 74% of Americans believe marijuana should be legalized for medical use in their home state while only 18% said they opposed this type of legalization. However, when asked

about a general form of legalization, similar to alcohol and tobacco, the numbers changed significantly. When asked if they supported legalizing recreational marijuana use in their home state, only 42% said they supported it with almost half (49%) saying they were opposed to this type of legislation (Braverman, 2011). This shows how the public sees recreational use and medicinal use very differently. This suggests that the stereotypes that exist of marijuana users may differ by the legality of use where those using recreationally may experience stronger stereotyping than those using medicinally.

Characteristics of the Judges.

Policy capturing is powerful at determining how an individual processes and weights information during a decision making task. The real benefit in policy capturing studies is when findings can be aggregated to larger groups. A nomothetic approach can explain how certain groups process information and make decisions. Several grouping variables are of interest in the current study including characteristics of the individual participants and qualities of their occupations and workplaces.

H4: Marijuana use by participants will explain significant variance in the use of the marijuana use cue where those who use themselves, will have lower cue utilization of the marijuana use cue than those who do not use marijuana.

One's own use of marijuana could be expected to lead to a certain decision policy. If a person uses or has a history of using marijuana, they may be more likely to not stereotype other users of marijuana. It would be expected that those who use marijuana are less likely to use the marijuana test cue at all. It has been found that those who use marijuana believe the drug to be less harmful than non-users do (Fabricius, Nagoshi, & MacKinnon, 1993). In addition, as frequency of the use of marijuana increased, attitudes towards marijuana in both social and legal

aspects showed greater favorability (Martino & Truss, 1973). Similarly, as use increases, individuals show greater acceptance of both medical and recreational use compared to those who do not use (Allen & Riedle, 2011). A study showed that personal attitudes towards drugs acted as a mediator between demographic and other personal characteristics and attitudes towards drug testing (Bennett, Blum & Roman, 1994). Additionally, value congruence with co-workers has shown to influence performance (Adkins, Ravlin & Meglino, 1996). If both judge and co-worker are marijuana users, the potential co-workers may even get judged more positively. Generally, this suggests that one's own use of marijuana and attitudes towards marijuana may affect one's judgment policy.

H5: The state participants are employed in will explain significant variance in the use of the marijuana use cue, where those working in states where medical marijuana is legal will have lower cue utilization for the marijuana use cue than those who do not use marijuana.

The state laws where each participant lives may also be a significant predictor of one's decision policy. If participants live in states where marijuana is legalized for medicinal use, it may be more common to have a co-worker who uses medical marijuana. Also, for a state to have legalized medical marijuana, the people had to have voted for it. A study on state differences in use of marijuana showed that states with medical marijuana laws have more residents who use marijuana than states without such laws (Cerdeira, et al., 2011). This acceptance and greater use of medical marijuana in states where it is legal is expected to lead to less use of any negative societal stereotype of marijuana users. As such, it would be expected that those who use marijuana would not be judged as negatively as they would in a state where it is not legal. One can expect the marijuana test to be utilized as a cue more for those in states where it is not as common and is against the law.

H6: Age of the participant will explain a significant amount of variance in marijuana use cue utilization, where younger participants will show lower marijuana use cue utilization than older participants.

Another individual characteristic that is believed to affect the use of stereotypes is age of the judge. Age has been shown as a significant factor in opinions on drugs and drug testing. Studies have shown that age is significantly related to the support of drug testing in organizations where older workers are more likely to be supportive of testing (Fendrich & Kim, 2002; Bennett, et al., 1994). One could take from this that older people may be more likely to support a drug free workplace. In addition, in the previously mentioned study by Macdonald (1995) on the appropriateness of workplace drug testing, any drug use is significantly related to job injuries for the youngest age group. This would suggest that older participants would be more likely to stereotype marijuana users.

The Job of the Judge.

Another variable that may have significant effects on the judge's decision policy and their use of a marijuana user stereotype are the characteristics of their job. There are certain aspects to jobs that may lead to greater use of stereotypes. Certain jobs may be more accepting of marijuana users than others. The current study investigated whether job characteristics such as risk and interdependency affect judgment policies. This will give a better idea of what occupations may have more difficulty if they are allowed to employ medical marijuana users.

H7: Job riskiness of the participant will explain a significant amount variance in the marijuana use cue usage, where those in riskier jobs will show greater marijuana use cue utilization than those in less risky jobs.

Risk level of the job in question could be considered a characteristic that would affect one's judgment policy. This could be risk to the person, co-workers, or the public. Those who

value safety on the job have shown more favorable attitudes towards employment drug testing (Mastrangelo & Popovich, 2000). Things such as subject's perceptions of danger on the job and contact with the public are significant determinants of the perceived need for drug testing. In fact, perceptions of danger are the single best predictor of acceptability of drug testing and have been shown to mediate relationships between job characteristics and acceptability of testing (Murphy, Thornton, & Prue, 1991). In addition, a study of metropolitan residents showed there was strong consensus in the need for mandatory drug testing when impairment could jeopardize public safety. Interestingly, there was little consensus on mandatory testing in other jobs (Latessa, Travis & Cullen, 1988). Supporting this idea, opinions on drug testing have shown the increasing approval for drug testing in safety sensitive, healthcare, factory and federal government jobs (Fendrich & Kim, 2002).

Beyond opinions on testing in the workplace, risk has also proven to be a significant determinant in actual work outcomes. Substance use is related to accidents in high-risk jobs (Holcom et al., 1993). Another study found that those testing positive for marijuana are at a higher risk for turnover, accidents, injuries, and disciplinary problems (Zwerling, Ryan & Orav, 1990). Finally, A study using data from the 1994 National Household Survey on Drug Abuse suggests that weekly marijuana users who show clinical symptoms of dependence were more likely to be fired in certain occupations. Those occupations included construction and machine operator jobs that have greater risk to safety and jobs that required more public interaction, like sales and protective services (Hoffman & Larison, 1999). All this leads to the expectation that those who have riskier jobs or have more contact with the public will be more likely to seek a drug-free workplace to maintain safety.

H8: The amount of interdependency of the participant's job will explain significant variance in the marijuana use cue usage, where those in jobs that have greater interdependency will show greater marijuana use cue utilization than those in jobs that have less interdependency.

One final characteristic of the job that may influence stereotyping of co-workers is the level of interdependency involved in the job. Crant and Bateman (1989) suggested when the work flow involves activities of one employee that directly relate to the activities of another, drug use can compromise quality and in turn affect the quality of work and relationships across work units. They suggested that high interdependency would lead to greater need and support of a drug-testing program. While no direct test of this could be found, some evidence of this does exist. Exposure to job related co-worker substance use has been shown to relate to negative workplace consequences to teamwork as well as things like increased workload, poor morale, safety concerns, etc. (Bennett & Lehman, 1999a; 1999b). This suggests that working closely with others who use drugs or alcohol can have negative consequences on the workplace and the workforce. Thus, it is believed that if marijuana use has a negative stereotype in the workplace, working closely with someone who uses marijuana will be seen as a negative thing in jobs that require high interdependency. Thus, it is believed that those who work closely with others, will be less accepting of having a marijuana using co-worker.

Implications

This study seeks to give a clearer picture of the consequences that organizations will be faced with should marijuana laws be changed to allow for legitimate, legal use of the drug. While a definitive answer to marijuana's effects on the workplace is far from reality, this study will show how allowing users into the workforce will affect one of the most important barometers of workplace functioning, co-workers. It is believed that co-workers will hold

stereotypes of what marijuana users are like in the workplace and this study seeks to identify how often and under what circumstances these stereotypes may be used in judging those one works with. Fostering a better understanding will help organizations prepare and manage the changes that may be on the horizon.

CHAPTER 2

Methods and Materials

Participants

The use of snowball sampling was employed. This sampling is a non-probability based sampling technique (Noy, 2008). The use of this sampling was necessary to adequately reach a broad cross section of the population of adult workers in America. In addition, the use of a probability based sampling methodology, *Amazon.com*'s Mechanical Turk (MTurk) service was used. This service posts the survey and users log in and complete the survey for a small amount of money. Users of this service were paid \$0.40 for successful completion of the survey. Previous studies have shown this service provides a fairly representative sample that is usually more representative than surveys done by bringing people into a lab (Berinsky, Huber, & Lenz, 2012).

Procedure

This study was a web-based survey study. The survey URL was sent out via email and social media using the snowball method of data collection (Noy, 2008) as well posted to *Amazon.com*'s Mechanical Turk service. The first page of the survey was the informed consent document. After giving consent, participants were given an explanation of the scenario and the cues and shown 35 randomly generated co-worker profiles based on the seven cues. Each profile was rated on the three criterion variables. After evaluating the profiles, participants were given the demographic and other questionnaires. Following completion of the scales, each participant

was asked to give self-reports of how much each of the cues used in the study matter to them when making voting decisions. They were asked to distribute 100 points across the seven cues based on their importance to their judgments.

Measures

Characteristics of the Participant.

General Marijuana Use.

Participants' general use of marijuana was assessed using 4 questions taken from Frone (2003). The scale can be found in Appendix A. Previous studies have shown a high coefficient alpha at 0.96 (Frone, 2003). Values were normalized and averaged to form a composite score for analysis. This study showed a coefficient alpha of 0.93.

On-the-Job Marijuana Use.

Participants' on-the-job use of marijuana was assessed using four items taken from Frone (2003). The scale can be found in Appendix B. Coefficient alpha for this scale has previously been high at 0.88. Values were averaged to get a composite score for analysis. This study showed a coefficient alpha of 0.926.

Demographic Information.

Participants were also asked several demographic and other questions. These included age, ethnicity, gender, state of residence, education, and opinions on legalization of marijuana for medical and for general use.

Occupational Risk.

To assess occupational risk, three questions were adapted from Tepper, (1994). The scale can be found in Appendix C. Values were averaged to get a composite score for analysis. This study showed a coefficient alpha of 0.876.

Interdependency of Job.

To determine the interdependency of each participant's job, five items developed by Pearce and Gregersen (1991) were used. The scale can be found in Appendix D. Items were scored on a 5-point Likert scale (1-strongly disagree to 5 – strongly agree) and averaged for an overall score, with higher scores indicating greater interdependency. This scale has shown moderate reliability with $\alpha = 0.76$. This study showed a coefficient alpha of 0.85.

Other Job characteristics.

Questions were asked to ascertain the participant's job, level in the organization, and salary.

Paper Co-worker Vignettes

Each paper co-worker was created based on the random generation (based on the computer clock) of seven characteristics (cues). The instructions and a sample vignette can be found in Figure A. All other information in the vignettes was constant. The following cues were used to provide details about each potential co-worker:

- Gender (male/female)
- Ethnicity (African-American/ Caucasian/ Hispanic)
- Past work performance rating (1 – poorest performer to 10 – best performer)

- Experience (years from 1-30)
- Drug use
 - Marijuana - (use or no use)
 - If use - Type of Marijuana use – (recreational or medicinal)
 - Amphetamines (ex. Adderall, Vyvance, Riddlin) – (use or no use)

Instructions

Imagine yourself in the job/occupation that you have held or hold a full time job in. You will be presented with 35 profiles. Consider each profile as though it represents one of your co-workers. You will be asked to give your perceptions of each co-worker's reliability, safety, and predicted job performance.

Please give your honest opinions on each co-worker based on the qualities you feel would make a successful co-worker. Job performance is defined as how well one performs their job. Safety is defined as how safely one performs the duties of their job. Reliability is defined as how conscientiously and how dependably one performs their job.

Sample Vignette

Co-worker # 1 is a ETHNICITY MALE/FEMALE with experience in your field. They have had about EXPERIENCE years of experience in the field. Also, based on discussions and ratings with their previous employers and references, their past performance was rated RATING out of a possible 10. MARIJUANA USE SENTENCE. AMPHETAMINE USE SENTENCE.

Note. MARIJUANA USE SENTENCE - This co-worker uses marijuana recreationally off the job; This co-worker has a prescription for marijuana for treatment of an undisclosed chronic condition; no sentence for non-use. AMPHETAMINE USE SENTENCE - This co-worker uses amphetamines for treatment of ADD/ADHD; no sentence for non-use.

Figure 1. Instructions and sample vignette template.

Dependent Variables

Each paper co-worker was rated on three perceived qualities; job performance, safety, and reliability. Each quality was rated on a 10-point scale with higher scores meaning more of the quality.

- What is your impression of what this co-worker's job performance would be?
- What is your impression of what this co-worker's reliability as a fellow employee would be?
- What is your impression of what this co-worker's safety on the job would be?

CHAPTER 3

Analysis and Results

Initial Data Analyses and Design Check

All preliminary analyses were performed using SPSS version 15. The first analysis was on the three criterion measures. The three measures were found to be highly correlated (Table 1). Due to these high correlations, the three measures were averaged and used as a single, composite criterion representing judgments of overall quality as a co-worker.

Table 1

Correlations Between Criterion Variables

	<i>Safety</i>	<i>Reliability</i>	<i>Performance</i>
<i>Safety</i>	--		
<i>Reliability</i>	0.87**	--	
<i>Performance</i>	0.79**	0.88**	--

Notes. N = 12321 (judgments); ** $p < 0.001$

To begin, each participant's judgments on the averaged criterion of overall quality as a co-worker was regressed on the cues given for each paper co-worker. Ethnicity was broken into two orthogonal contrasts. The first was a comparison between Caucasians and both minority groups. The second was a contrast between African-Americans and Hispanics. Orthogonal contrast vectors were also used for the marijuana use cue. The first was a comparison between users of marijuana (both medical and recreational) and non-users. The second was a comparison

of medical marijuana users and recreational marijuana users. The resulting R^2 values were analyzed for signs of unreliability on the part of the participant in their responses. Anyone with R^2 values less than 0.60 were excluded from further analyses due to lack of consistent use of the cues presented. This is a fairly liberal cut-off value suggested in previous research in policy capturing (Stewart, 1988).

The design of the study randomized cues to keep the cues as orthogonal as possible. This was done to minimize effects of multicollinearity and to make interpretation easier (Cooksey, 1996). As can be seen in Table 2, the cue inter-correlations are low. While some are significant, they are small and probably due to the large sample of judgments ($N = 12321$). Thus, relative orthogonality was achieved by design. Since orthogonality was achieved by design, no Level-1 independent variables were centered in regression or HLM analyses as is usually suggested since doing so would not meaningfully change the resulting values (Hofmann & Gavin, 1998).

Table 2

Correlations Between Cues and Criterion Variables

		1	2	3	4	5	6
1	Performance	--					
2	Reliability	0.88**	--				
3	Safety	0.79**	0.87**	--			
4	Criterion Average	0.94**	0.97**	0.93**	--		
5	EthV1	0.04**	0.03**	0.03**	0.03**	--	
6	EthV2	0.02**	-0.02*	-0.01	-0.02*	0.00	--
7	Gender	0.02	0.02*	0.03**	0.02*	-0.01	0
8	MJV1	-0.10**	-0.17**	-0.20**	-0.16**	0.00	-0.01
9	MJV2	0.02	0.03**	0.02*	0.02**	0.00	0.01
10	Amphetamine	-0.09**	-0.13**	-0.18**	-0.14**	-0.01	-0.01
11	Experience	0.86**	0.75**	0.65**	0.79**	0.04**	-0.02**
12	Past Performance	0.08**	0.09**	0.08**	0.09**	0.01	0.00
<i>M</i>		5.46	5.27	5.23	5.32	--	--
<i>SD</i>		2.92	2.88	2.89	2.74	--	--
		7	8	9	10	11	12
7		--					
8		-0.01	--				
9		-0.01	-0.01	--			
10		-0.01	0.02	-0.01	--		
11		0.01	-0.01	0.01	-0.04**	--	
12		0.02	-0.02**	0.02*	0.02	0.04**	--
<i>M</i>		0.49	--	--	0.5	5.71	15.53
<i>SD</i>		0.5			0.5	3.06	8.56

Notes. Means and standard deviations with "--" were contrast vectors. Bold variables were criterion variables. ETHV1 = Caucasian vs Minority (Caucasian = 2, Minority = -1); ETHV2 = African American vs Hispanic (African American = 1, Hispanic = -1, Caucasian = 0); MJV1 = Use vs non-use (use = -1, non-use = 2); MJV2 = Medical use vs Recreational use (medicinal use = 1, recreational use = -1, non-use = 0); ** $p < 0.01$, * $p < 0.05$.

Sample Characteristics

All participants were over the age of 18 and confirmed they had a full-time job or had previously held a full-time job in the United States. The total response size was 412 with ninety-seven from snowball sampling and 315 from MTurk. Twenty-two participants were excluded for having R^2 values less than 0.60. Also, thirty-eight others were excluded from the analyses due to lack of variation in the criterion, most commonly due to a response set answer (series of all one answer). The final sample consisted of 352 participants.

Of the 352 participants included in the sample, about two-thirds of the sample was female ($n=231$). The vast majority of the sample was Caucasian ($n=290$). The mean age of the entire sample was 36 ($SD=11.87$). A full table of sample descriptive statistics for each sample can be found in Table 3. Both the snowball sample and the MTurk sample were similar. For the rest of the analyses the overall sample will be used. A correlation table of all study variables is presented in Table 4.

Table 3

Descriptive Statistics of Sample.

	<i>Sample 1 (N=88)</i>	<i>Sample 2(N=264)</i>	<i>Overall (N=352)</i>
<i>Age</i>	<i>M=36 (12.64)</i>	<i>M=36 (11.64)</i>	<i>M=36 (11.87)</i>
<i>Gender</i>			
<i>Male</i>	25 (30.1%)	92 (34.7%)	117 (33.6%)
<i>Female</i>	58 (69.9%)	173 (65.3%)	231 (66.4%)
<i>Ethnicity</i>			
<i>Caucasian</i>	75 (90.4%)	215 (81.1%)	290 (83.3%)
<i>African-American</i>	1 (1.2%)	26 (9.8%)	27 (7.8%)
<i>Hispanic</i>	4 (4.8%)	11 (4.2%)	15 (4.3%)
<i>Asian</i>	1 (1.2%)	9 (3.4%)	10 (2.9%)
<i>Other</i>	2 (2.4%)	4 (1.5%)	6 (1.7%)
<i>Salary</i>			
<\$25K	17 (20.5%)	84 (31.7%)	101 (29.0%)
\$25K-\$50K	39 (47.0%)	125 (47.2%)	164 (47.1%)
\$50K-75K	14 (16.9%)	37 (14%)	51 (14.7%)
\$75-100K	6 (7.2%)	17 (6.4%)	23 (6.6%)
\$100K-150K	6 (7.2%)	2 (0.8%)	8 (2.3%)
\$150K+	1 (1.2%)	0 (0%)	1 (0.3%)
<i>Education</i>			
<i>Some High School</i>	0 (0%)	3 (1.1%)	3 (0.9%)
<i>HS Graduate</i>	5 (6.0%)	33 (12.5%)	38 (10.9%)
<i>Some College/Trade School</i>	15 (18.1%)	76 (28.7%)	91 (26.1%)
<i>College/Trade School degree</i>	37 (44.6%)	109 (41.1%)	146 (42.0%)
<i>Secondary Degree</i>	26 (31.3%)	44 (16.6%)	70 (20.1%)

Note. Sample 1 – Snowball sample, Sample 2 – Mturk; Age- M=mean (Standard Deviation); Numbers in parentheses are % of sample.

Table 4

Correlations Between Study Variables

		1	2	3	4	5	6
1	Salary	--					
2	Age	0.26**	--				
3	Ethnicity	0.00	-0.05	--			
4	Gender	-0.14**	0.04	-0.12*	--		
5	Education	0.28**	0.09	0.02	0.10	--	
6	State MJ Law	-0.07	-0.08	0.25**	0.00	-0.06	--
7	Interdependency	0.16**	0.00	0.04	0.09	0.06	0.01
8	Job Risk	-0.02	0.06	0.04	-0.09	-0.08	-0.02
9	On-the-job MJ Use	-0.09	-0.11	0.00	-0.05	-0.12*	-0.02
10	General MJ Use	-0.09	-0.15**	0.06	-0.06	-0.13*	-0.02
	<i>M</i>	2.07	36	2.07	.66	3.7	2.08
	<i>SD</i>	0.98	11.87	0.62	.47	0.94	9.09
		7	8	9	10		
	7	(0.85)					
	8	0.217**	(0.867)				
	9	-0.046	-0.016	(0.926)			
	10	-0.05	-0.055	0.704**	(0.930)		
	<i>M</i>	4.15	1.86	1.11	0		
	<i>SD</i>	0.7	0.97	0.48	0.82		

Notes. MJ – Marijuana; Ethnicity (1=African American, 2=Caucasian, 3 = Hispanic, 4= Asian, 5=Other); Gender (0=male, 1=female); State MJ Law (1=illegal, 2 = medically legal); Interdependency – Job Interdependency; Reliabilities in parentheses; ** $p < 0.01$, * $p < 0.05$.

To look for significant differences between the MTurk and snowball samples, t-tests were conducted for normally distributed variables and Mann-Whitney tests were run for non-normally distributed variables to test for mean or variance differences. The largest effect size of any significant differences between samples was for job interdependency ($d=0.18$) where the Mturk

sample ($M=4.10$, $SD=0.68$) showed a lower mean than the snowball sample ($M=4.35$, $SD=0.72$), $t(346) = 2.95$, $p = 0.003$.

In addition, in the HLM analyses to follow, response set (sample) was added as a Level-2 covariate in the analyses to ensure either sample was not using information differently. Results of this can be found in Table 5. Type of sample was not significant in any hypothesis test suggesting where participants were recruited to take the survey had no systematic effects on the judgments made or hypothesis test results.

Table 5
Unstandardized Coefficients of HLM Level-2 Analysis of Moderating and Demographic Variables.

<i>Level-2 Slope</i>		
<u>Variable</u>	<u>MJV1</u>	<u>MJV2</u>
Intercept	0.28***	0.07***
General MJ Use	-0.02	-0.01
OTJ MJ Use	0.00	0.04
Medical Legislation	-0.02*	0.04*
General Legislation	-0.01	-0.05***
Age	0.00	-0.01**
State Law	0.01	-0.08*
Job Risk	0.04**	-0.02
Interdependency	-0.02	0.02
Gender	0.07**	-0.02
Education	0.01	0.02
Salary	-0.01	-0.03
Manage Employees	-0.02	-0.05
Response Set	0.05	0.04

<i>Variance Components</i>				
<u>Variable</u>	<u>Standard Deviation</u>	<u>Variance Component</u>	<u>χ^2</u>	<u>P-value</u>
Intercept	0.87	0.76	5898.04	<0.000
MJV1	0.24	0.06	1152.64	<0.000
MJV2	0.21	0.04	533.19	<0.000

Notes. $df = 345$; $N = 12075$; Contrast vectors-MJV1 = Use vs non-use; MJV2 = Medical use vs Recreational use; Response set – Snowball sample vs MTurk; * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Hypothesis Tests

H1: Marijuana use will be a significant cue utilized in productivity, reliability, and safety judgments by the majority of participants, although will exhibit significant variance in the cue's standardized B weight.

Test 1.

To test H1, participants' standardized regressions were computed and beta weights were tested for statistical significance. Two things are of interest with these standardized values. One is the magnitude of the cue weights given to each cue by participants. The other is the direction of any effect. To address the first, the absolute values were taken for each of the standardized beta coefficients to better represent the overall relative weight each cue was given, as the sign only indicates direction. Since the cues were orthogonal, the beta weights provide an index of importance. These values are summarized in Table 6. As can be seen, the two marijuana cue contrast vectors (MJV1 = use versus non-use and MJV2 = medical use versus recreational use) were both used by participants, particularly vector 1 being used by 52% of the participants in their judgments.

Table 6

Absolute Values of Individual Participant Regression Values

	<i>Mean</i>	<i>SD</i>	<i># Significant (% of sample)</i>
R^2	0.892	0.085	---
<i>ETHV1 –</i>	0.061	0.054	30(8.5%)
<i>ETHV2-</i>	0.056	0.065	25 (7.1%)
<i>Gender -</i>	0.055	0.051	32 (9.1%)
<i>MJV1 -</i>	0.180	0.172	183 (52%)
<i>MJV2 -</i>	0.074	0.083	56 (15.9%)
<i>Amphetamine -</i>	0.141	0.155	134 (38.1%)
<i>Experience -</i>	0.832	0.197	341 (96.9%)
<i>Past Performance -</i>	0.077	0.076	54 (15.3%)

Notes. N= 352; # significant at $p < 0.05$ level.; Coefficients are standardized beta coefficients. Contrast vectors: ETHV1 = Caucasian vs Minority; ETHV2 = African American vs Hispanic; MJV1 = Use vs non-use; MJV2 = Medical use vs Recreational use.

To address the direction of the effects and differences between how individuals used each cue, chi square tests were done on the proportions of individuals with significant beta values for each cue. The results of these tests are in Table 7. As can be seen, significant differences were found for both of the marijuana cues, the amphetamine use cue, experience cue, and performance cue. Generally, marijuana use was detrimental to criterion ratings for the majority of the sample that used the cue (99.4%). In addition, the use of recreational marijuana over medical use was found to have detrimental effects on ratings for the majority of participants who used the cue (73.2%). Similar results were found for the use of amphetamine medications (96.3%). In contrast, 100% of participants used experience and 94.4% used performance ratings. Both of these were related to positive criterion judgments. The other three cues were found significant

for a smaller proportion of the sample and were evenly split between those who used them positively and negatively.

Table 7

Comparison of the Direction of Cue Use For Those Demonstrating Significant Standardized Beta Coefficients.

	<i>Positive %</i>	<i>Negative %</i>	<i>X²</i>	<i>p-value</i>
<i>ETHV1 –</i>	56.7	43.3	0.53	0.465
<i>ETHV2-</i>	56.0	44.0	0.36	0.549
<i>Gender -</i>	43.8	56.2	0.50	0.480
<i>MJV1 -</i>	0.6	99.4	179.02	0.000
<i>MJV2 -</i>	73.2	26.8	12.07	0.001
<i>Amphetamine -</i>	3.7	96.3	114.75	0.000
<i>Experience -</i>	100.0	0.0	309.38	0.000
<i>Past Performance -</i>	94.4	5.6	42.67	0.000

Notes. *df*= 1; Contrast vectors: ETHV1 = Caucasian vs Minority; ETHV2 = African American vs Hispanic; MJV1 = Use vs non-use; MJV2 = Medical use vs Recreational use.

What the above findings suggest is that marijuana use by a co-worker was a component in the linear regression of judgments of safety, reliability, and job performance. However, other cues supplied significant regression components as well. There were significant differences in those using the two marijuana cues as well as their direction of use. The finding that only half of the sample used the marijuana use versus non-use cue suggests there is variance in cue usage to be explained. This suggests that further hypothesis tests are merited.

Test 2 – HLM.

HLM v. 7.0 was used to perform the analyses detailed tests in most hypotheses. This method of analysis is preferred for policy capturing studies as it provides a simple method of examining both within- and between-individual variance (Kristof-Brown, Jansen & Colbert, 2002). The Level-1 tests were done first to estimate the random coefficient model that provides

information on the relationships between level-1 predictors (cues) and the composite “general quality as a co-worker” outcome. For this test, the eight cue variables were added as Level-1 predictors of general quality. This model determines whether there is significant variance in the beta coefficients for each cue to explain with Level-2 grouping variables in the tests of moderation (Hofmann, 1997).

To test H1, a random coefficients model was examined with no predictor variables using a random intercept to test the amount of variance in co-worker quality that exists in order to explain with moderating Level-2 variables between participants. A second model was run with the eight predictor variables added in. This model allowed all of the slopes and the intercept values to vary between individuals. However, in this case, the model did not converge on a solution. To deal with this, only the marijuana contrasts and intercept were allowed to be random and all other cues were fixed. The amount of variance accounted for by the addition of the eight cues was calculated as a ratio of the difference in variance between the random coefficients model and variance not accounted for by the eight cue model to the total variance from the random coefficients model. The addition of the cues and the random coefficients for the marijuana contrasts accounted for 77.29% of the total variance in co-worker “quality” (the composite criterion) across all participants. Examining the second model and the coefficients for the marijuana contrasts, both demonstrated statistical significance, $\gamma_{MJV1}=0.28, p < 0.001$, $\gamma_{MJV2}=0.07, p < 0.001$. All of the coefficients for this analysis can be found in Table 8. The marijuana contrasts, being significantly used in participants’ policies, lend support to H1.

To justify testing the moderation hypotheses, the random slopes of both marijuana cues were tested for significant residual variance that could be accounted for by Level-2 variables.

The results of this test suggest that there is significant residual variance in MJV1 and MJV2 to merit Level-2 variables being added to explain its impact, $\chi^2(345, N=12075) = 1431.41, p < .001$, $\chi^2(345, N=12075) = 587.76, p < .001$, respectively. This confirms H1 that there is significant variance in the slopes of the marijuana contrasts between people.

Tests of Moderation

H2: The gender and marijuana use characteristics of the paper co-worker will lead to a significant gender X marijuana use interaction where female paper co-workers who use marijuana will be judged as lower in safety, reliability, and performance than for men who use marijuana.

To test this hypothesis, an interaction term of gender X MJV1 (use versus non-use) was created and added to the regression equations at Level-1 in HLM and allowed to vary between individuals. This model showed the interaction term was non-significant at both fixed and random effects, $\gamma_{\text{MJV1} \times \text{gender}} = 0.01, p = 0.635, \chi^2(345, N=12075) = 342.49, p > 0.50$. This gives no support for H2.

H3: Paper co-worker's type of use of marijuana will explain significant variance in the marijuana use cue utilization where those co-workers who use recreationally will score lower on perceptions of performance, safety and reliability than those who use medicinally.

Test 1.

To test this hypothesis, the MJV2 was added to the individual regression equations. This contrast vector was the second marijuana vector comparing those who use marijuana medically and those who use marijuana recreationally. This contrast was found to be significant for a large number of participants, $\chi^2(1, N=352) = 163.636, p < .001$. Of those who displayed a significant coefficient for this vector, a large number of them (73.2%) displayed a positive coefficient, $\chi^2(1,$

$N=56$) = 12.071, $p = .001$. This suggests a significant difference between those who use medical marijuana and those who use recreational marijuana with those using medical marijuana being judged as higher quality than those who use marijuana recreationally. This lends support to H3 in that participants systematically used the cue and, on average, scored those using medical marijuana higher on quality than those using recreational marijuana. This said, the average standardized beta weight given to this cue by those who used it significantly was low ($M=0.10$, $SD = 0.21$) relative to other cues like experience ($M=0.83$, $SD = 0.20$). While there is statistical evidence to support H3, it should be taken with its relative and practical importance in mind given its modest importance in criterion judgments.

Test 2 –HLM.

To further examine this hypothesis, the HLM results from H1 in Table 8 were analyzed. The second marijuana contrast (MJV2) was significant at the Level-1 analysis, $\gamma_{MJV2} = 0.07$, $p < 0.001$. This positive coefficient suggests a positive slope meaning paper co-workers using medical marijuana score, on average, higher on overall quality than those using marijuana recreationally.

Table 8
HLM Unstandardized Coefficients for Slopes-as-Outcomes Model with Variance Components of Random Coefficients.

<u>Variable</u>	<u>Coefficient</u>	<u>Standard Error</u>	<u>T- ratio</u>	<u>p-value</u>
<i>Intercept*</i>	1.34	0.09	15.44	<0.000
<i>ETH V1</i>	-0.002	0.01	-0.29	0.773
<i>ETH V2</i>	-0.01	0.01	-0.68	0.494
<i>Gender</i>	0.06	0.02	2.68	0.007
<i>MJ V1*</i>	0.28	0.02	16.25	<0.000
<i>MJ V2*</i>	0.07	0.02	3.84	<0.000
<i>Amphetamine</i>	-0.60	0.04	-13.83	<0.000
<i>Experience</i>	0.70	0.01	54.129	<0.000
<i>Past Performance</i>	0.02	0.002	8.905	<0.000

Variance Components

<u>Variable</u>	<u>Standard Deviation</u>	<u>Variance Component</u>	<u>χ^2</u>	<u>P-value</u>
<i>Intercept</i>	0.87	0.76	5897.95	<0.000
<i>MJV1</i>	0.27	0.07	1431.41	<0.000
<i>MJV2</i>	0.22	0.05	587.76	<0.000

Notes. *df* = 345; N=12075; Contrast vectors: ETHV1 = Caucasian vs Minority; ETHV2 = African American vs Hispanic; MJV1 = Use vs non-use; MJV2 = Medical use vs Recreational use; Bold are significant at $p < 0.05$; *Random coefficient

H4: Marijuana use by participants will explain significant variance in the use of the marijuana use cue where those who use themselves, will have lower cue utilization of the marijuana use cue than those who do not use marijuana.

Test 1.

To test H4, correlations were computed between general and on-the-job marijuana use and the absolute values of the standardized betas for the MJV1 contrast and the MJV2 standardized betas for those who had significant correlations for each of the marijuana contrasts were assessed. A large number of people reported they had never used marijuana either in general or on-the-job (86.5% and 91.7%, respectively). These variables reflected a limited use time period (previous nine months) so two other variables were included as supplemental variables to give insight into how opinions about marijuana may influence judgments.

Participants were asked about their support of legalization of marijuana for medical use and for

general, recreational use on a 7-point Likert scale (higher values meaning more support for legalization). These two variables were used to supplement the scale scores of marijuana use as they provide more general feelings about attitudes towards marijuana use and are less likely to be skewed due to response set factors like conformity. Correlations for those with significant betas can be found in Table 9.

Table 9

Correlations of Marijuana Use Variables.

		1	2	3	4	5	6
1	General MJ Use	(0.93)	0.15	0.13	0.35**	-0.15	-0.06
2	On-the-job MJ Use	0.68**	(0.93)	-0.11	-0.01	-0.07	0.03
3	Legal - Medical	0.17**	0.11*	--	0.58**	-0.27*	0.01
4	Legal - General	0.21**	0.17**	0.78**	--	-0.25	-0.24
5	MJV1	-0.08	-0.10	-0.40**	-0.30**	--	0.25
6	MJV2	0.05	0.05	-0.02	-0.14	0.06	--
	<i>M</i>	-0.14/-0.18	1.09/1.08	4.94/4.71	4.08/3.48	0.29/0.21	0.03/0.10
	<i>SD</i>	0.62/0.30	0.48/0.41	1.98/1.89	2.32/1.89	0.18/0.17	0.13/0.21

Notes. Values below diagonal are for those with significant betas for MJV1 (N=180); Values above diagonal are for those with significant betas for MJV2 (N=56); Means and Standard deviations on left are for those with significant betas for MJV1 and to the right for those with significant betas for MJV2; MJ – Marijuana; Reliabilities in parentheses. MJV1 = Use vs non-use, absolute values; MJV2 = Medical use vs Recreational use ** $p < 0.01$, * $p < 0.05$

To address the moderating effects that may exist for marijuana use of participants on the judgments of those who use versus those who do not use marijuana, only those with significant standardized beta values for MJV1 (N=180) were included in this aspect of the analysis.

Looking at Table 9, neither of the marijuana use scales were significantly correlated with the

standardized betas for MJV1. This is not too surprising as such a low number of people claimed to have used marijuana in the past nine months. However, the supplemental questions may be more useful in showing how attitudes, which are more freely reported than illegal activities, are related to the use of the marijuana cue. Unlike the scales of marijuana use, the supplemental questions do show significant relationships with the two marijuana vectors. Support for legislation legalizing medical marijuana as well as legalizing general marijuana use were both significantly correlated with MJV1, $r(178) = -0.40, p < 0.001$ and $r(178) = -0.30, p < 0.001$, respectively. These negative correlations suggest those who show greater support for progressive marijuana legislation are more likely to give less weight to marijuana use by a co-worker in judgments of their quality. This finding provides limited support for H4.

Turning to those with significant beta values for the second marijuana vector comparing those who use medical marijuana to those who use recreational marijuana, similar results were found. Neither of the marijuana use scales, nor the supplemental questions showed significance with the second marijuana contrast. The small proportion of people who displayed significant use of the second marijuana contrast may limit the power to detect significant correlations.

Finally, to examine the size of the above effects, those who displayed significant beta coefficients for either of the marijuana contrasts ($N=197$) were isolated and the standardized beta coefficients were regressed on the four marijuana use/support variables to determine the proportion of regression variance predicted for MJV1. The resulting model was significant, $F(4, 193) = 7.69, p < 0.001$, and explained 13.7% of the variation in MJV1, $R^2 = 0.14, F(4, 197) = 7.69, p < 0.001$. In this model, the one variable that was significantly predictive of the MJV1 beta values was the supplemental variable of support for medical marijuana legislation, $\beta = -$

0.38, $t(194) = -3.799$, $p < 0.001$. This finding parallels the correlational findings that the more support a participant showed for medical marijuana legislation, the less weight they gave the marijuana use cue in their judgment policies, adding more support for H4.

Test 2 – HLM.

To test the remaining moderation hypotheses with HLM, the random coefficients model with no Level-2 explanatory variables was compared to a model with each of the moderating variables added as Level-2 variables attempting to explain both of the marijuana use contrasts. Demographic and other control variables were grand-mean centered and added in the same manner. Table 5 displays all coefficients and values obtained from this Level-2 analysis and will be referenced in all HLM moderation tests.

To test H4, marijuana use moderating variables were added at Level-2 for the purpose of explaining between individual variance in each marijuana contrast use. First, looking to the model where marijuana use was a component to explain variance in the MJV1 slope, neither of the marijuana use variables significantly explained variance in the MJV1 slope. However, as previously stated, the small number of participants who claimed to have used marijuana in the past nine months may have limited the power and thus, predictability of the use variables. Therefore, support for policy of both medical and general marijuana use were added to see if more general attitudes about marijuana might explain slope variance. Neither of these variables achieved significance.

As can be seen in Table 5, neither of the marijuana use variables were significantly predictive of the slopes in MJV2. However, results were different for the addition of the two

legislation support variables. Support of general marijuana legislation significantly predicted slopes in the MJV2 contrast, $\gamma_{\text{generallegislationXMJV2}} = -0.05, p = 0.004$. The addition of these four Level-2 variable explained 18.2% of the variation in the slope for MJV1 and 6.3% for MJV2.

The findings for marijuana use and support of marijuana legislation by participants suggests those who support legislation generally give less weight to marijuana use in their judgment policies. Specifically, support of progressive general legislation of marijuana led to lower weight given to the type of use (MJV2). This finding partially supports H4, despite the test of residual variance suggesting there are other variables that explain between individual differences in MJV1 and MJV2 cue use, $\chi^2(341, N=12075) = 1221.50, p < .001, \chi^2(341, N=12075) = 566.64, p < .001$, respectively.

H5: The state participants are employed in will explain significant variance in the use of the marijuana use cue, where those working in states where medical marijuana is legal will have lower cue utilization for the marijuana use cue than those who do not use marijuana.

Test 1.

To address the impact on criterion judgments of marijuana laws in the states where participants live, the state marijuana law (0 = illegal, 1= medically legal) was correlated with the standardized betas for both of the marijuana contrasts for only those who showed significant beta coefficients for MJV1 and MJV2. It should be noted that only 23.1% of the total sample and 20.9% of the selected sample lived in states where marijuana was legalized for medical use. This size limitation in the sample may condition what can be interpreted from the results.

For those who displayed statistical significance for MJV1 cue use, the only significant correlation that was found was between state marijuana law and the MJV2, $r(52) = -0.21, p =$

0.005. Similarly, for those who displayed significance for MJV2 cue use, state marijuana law was correlated with MJV2, $r(52) = -0.40, p = 0.003$. This suggests that those in states where marijuana is legal for medicinal purposes show lower beta values for the marijuana cue that contrasts type of use, meaning this use distinction is not given as much weight in these states as in states where medical marijuana is not legalized. This finding lends partial support for H5, in that there are less distinctions in type of marijuana use in states where medical marijuana is legal. However, the practical predictive value is limited as state marijuana law was only significantly predictive of MJV2 at a low level, $R^2 = .05, F(1, 194) = 9.13, p = .003$, predicting only 5% of the variance in the betas of MJV2.

Test 2 – HLM.

To test H5, state marijuana law (grand mean centered) was added as a Level-2 predictor of the slopes of both MJV1 and MJV2 across all participants. As can be seen in Table 5, only for MJV2 was state law found to significantly explain variation in the random slope, $\gamma_{\text{statelaw} \times \text{MJV2}} = -0.08, p = 0.08$. This partially supports H5 in that those in states where marijuana use is legal for medicinal purposes show less of a distinction between medical and recreational use than those in states where marijuana is not medically legal. However, state law only explained a small percentage of the variance in the slopes for MJV2 (2.4%). Significant residual variance in the slope for MJV2 remained after the addition of this Level-2 variable, $\chi^2(344, N=12075) = 580.77, p < .001$.

H6: Age of the participant will explain a significant amount of variance in marijuana use cue utilization, where younger participants will show lower marijuana use cue utilization than older participants.

Test 1.

To test H6, age of the participant was correlated with the two marijuana contrasts for those who displayed significant beta values for MJV1, followed by MJV2. For those whose betas were significant for MJV1, age was significantly correlated with the beta values for MJV2, $r(178) = -0.18, p = 0.014$. Similarly, when looking at those whose betas were significant for MJV2, the same correlation increases, $r(178) = -0.31, p = 0.021$. This correlation suggests that older participants have lower standardized beta coefficients for the second marijuana cue contrasting medical and recreational use. This finding runs counter to H6 in that older participants actually use the second contrast less than younger participants. As previous practical results, however, age only explained 3% of the variance in the MJV2 contrast, $R^2 = .03, F(1, 196) = 6.91, p = .009$.

Test 2 –HLM.

To test H6, age of the participant was added as a Level-2 variable attempting to explain variation in the two marijuana contrast cue slopes across all participants. Table 5 shows age only significantly explained slope variation for MJV2, $\gamma_{\text{ageXMJV2}} = -0.01, p = 0.01$. This runs counter to H6 and suggests that older individuals use the distinction between medical and recreational use of marijuana less than younger participants. Again, the addition of age only explained 3% of the variance in the MJV2 slope and left significant residual variance, $\chi^2(344, N=12075) = 578.93, p < .001$.

H7: Job riskiness of the participant will explain a significant amount variance in the marijuana use cue usage, where those in riskier jobs will show greater marijuana use cue utilization than those in less risky jobs.

Test 1.

Similarly to the previous hypotheses, job risk was correlated with the two marijuana contrast betas to test H7 for both those who significantly used MJV1, as well as those who significantly used MJV2. The group that significantly used MJV1 showed a significant correlation with the first marijuana contrast, $r(178) = 0.22, p = 0.002$. This suggests for those who gave weight to the first marijuana contrast in their judgment, as job risk increases, so does the weight given to MJV1. This gives support to H7, as those with riskier jobs weighted the use/non-use cue more in their policy.

Considering those who used the second marijuana contrast significantly in their policies, job risk was significantly correlated with the second marijuana contrast, $r(54) = -0.31, p = 0.022$. This correlation suggests that for those who gave significant weight to the second marijuana contrast in their policy, higher job risk leads to less use of this distinction between medical and recreational use of marijuana by co-workers.

To determine the practical effect of these correlations, risk was added as a predictor of both sets of beta values for those who used either marijuana cue significantly in their policy. Both regression models were significant. As for the predicting the standardized betas of MJV1, job risk significantly predicted these beta coefficients explaining 7% of the variance, $R^2 = .07, F(1, 196) = 14.17, p < 0.001$. In predicting the betas for MJV2, job risk was not as predictive, only predicting 3% of the variation, $R^2 = .03, F(1, 196) = 6.25, p = .013$. All these findings together suggest riskier jobs lead to more consideration about co-worker marijuana use, supporting H7.

Test 2 – HLM.

To test H7, job risk (grand mean centered) was added as a Level-2 predictor of the slope of both marijuana contrasts across all participants. Job risk significantly explained variance in the slope for the MJV1, $\gamma_{\text{risk} \times \text{MJV1}} = 0.04, p = 0.033$. This supports H7, where those in jobs with higher risk gave more weight to the use versus non-use contrast (MJV1). The addition of risk only explained 3.1% of the variance in the MJV1 slope and left significant residual variance yet to be explained, $\chi^2(344, N=12075) = 1394.05, p < .001$.

H8: The amount of interdependency of the participant's job will explain significant variance in the marijuana use cue usage, where those in jobs that have greater interdependency will show greater marijuana use cue utilization than those in jobs that have less interdependency.

Test 1.

To test H8, similar tests as the previous hypotheses were run using job interdependency as the moderator. Job interdependency significantly related to the MJV2 for those who significantly utilized the first marijuana contrast in their policy, $r(178) = -0.15, p = 0.04$. This explained only 2% of the variance in MJV2 use. No other correlations for any other tests were significant. The significant correlation suggests the more participants are dependent on co-workers in their job, the less they made the marijuana type distinction. However, since no other supporting evidence of H8 was found, this result should be interpreted with caution.

Test 2 – HLM.

To test H8, interdependency was added as a Level-2 predictor of the slopes of both marijuana contrasts. As the values in Table 5 show, interdependency was not significant for either contrast, lending no support for H8.

Exploratory Analyses

One curious finding was when demographic variables were used as covariates in explaining slope variance in the marijuana contrasts. From Table 5, gender of the participant showed a significant effect on the first MJV1, suggesting that women used the marijuana use versus non-use cue more than men did. No gender differences were hypothesized, but this may be a future variable of interest looking at how gender may moderate individual judgments of those who use marijuana.

CHAPTER 4

Discussion

The goal of the current study was to investigate the presence of a stereotype of marijuana users as it relates to the workplace. Policy capturing was used to analyze participants' judgment policies to see what information was used and how "cues" were weighted to make judgments about hypothetical co-workers. Individual policies as well as how certain moderating variables affected the development and execution of those policies were of interest. Results showed support for the use of a stereotype of marijuana users in judgments about quality of co-workers. Marijuana use was found to be a significant predictor of co-worker quality for the majority of the sample.

The first finding relates to the cues that were used by the sample in making judgments on quality of co-workers. The overwhelming majority (96.9%) of the sample utilized and gave a great deal of weight to a co-worker's past experience on the job. With nearly every person in the sample significantly weighting experience, it seems that experience is a large driver for how one is perceived to perform on the job. As can be seen in Table 6, relative to all other cues, experience was given over four times as much weight, on average, than the next most weighted cue (marijuana use). This is a good finding for the workplace, as experience was considered to be one of the most meaningful cues shown to participants as it relates to co-worker safety, reliability, and job performance. Experience is frequently used in hiring judgments in businesses and is often required for employment in many jobs. The overwhelming weight given to

experience in co-worker quality judgments by the current sample should be taken into consideration when considering the findings for marijuana use and other cues used in this study.

The focal hypothesis of the study was that individuals will judge co-workers on their marijuana use, but the weight given to this would vary between individuals. Strong support for this hypothesis was found. Marijuana use was used in judgments of quality by over half of the sample (52%). In addition, the type of use (medical versus recreational) of marijuana was used by a lesser but still significant portion of the sample (15.9%) in making judgments of quality. Further analysis showed that there was significant variance in the weights given to these cues to suggest moderating variables may be able to explain why some give more weight to this information than others.

Given the variance in information about marijuana use, the moderating hypothesis tests were justified. There were two characteristics of the hypothetical co-workers that were hypothesized to interact with marijuana use in quality judgments. The first was the gender of co-worker presented. Gender-role theory was used as a basis to predict that marijuana-using co-workers who were female would be judged as lower quality co-workers than their male counterparts. No evidence of this effect was found in the sample. The lack of effect is not completely surprising. Only 9% of the sample used gender as a significant cue in their judgments. While the interaction is not dependent on the use of gender by itself, this finding does suggest that participants were more attuned to more directly job-relevant variables such as experience and marijuana use than the cues that show little or no relationship with job outcomes (Frone, 1998).

The second interaction that was believed to influence judgments was the nature of the use of marijuana by hypothetical co-workers. While marijuana legalization in its different forms has been a topic of conversation in society since it was made a Schedule I substance, there are

significantly different attitudes about the type of legalization that should be considered. More people support medical justifications for legalization than recreational reasons (Braverman, 2011). Because of this, it was hypothesized that participants would judge those who used marijuana recreationally less favorably than those who had medical justifications for its use. Support for this hypothesis was found as a large portion of the sample significantly weighted this distinction as important in their judgments of quality. In addition, the significant majority of the sample who used this cue in their judgments judged those who use medical marijuana as higher quality co-workers than those who use marijuana recreationally. This support for H3 should be taken with caution as only 16% of the sample used this distinction significantly and the average weight given, while significant, was much lower than other cues.

In addition to characteristics of the hypothetical co-workers, several individual difference variables of the participants were expected to moderate how much weight was given to marijuana use in making quality judgments. These included marijuana use of the participant, age, state laws where the participant resides, and several job related variables.

The first individual difference variable was the marijuana use by participants both in general and on-the-job. The belief is that those who use marijuana or have used marijuana will be less likely to stereotype co-workers who use the drug and thus, less likely to hold it against them in judgments of their quality. The initial analysis of these two variables showed a low number of people who claimed to have used marijuana (8% for on-the-job and 13% for general). This finding could be a result of two things. The first is the taboo nature of drug use. While participants were assured anonymity of their answers, many may have felt it risky to admit to using marijuana on an Internet survey. Research does suggest that the more recent the drug use being referenced, the more response bias (Harrison, 1997). The scales asked about marijuana

use in the past nine months. Both of these could have led to the low proportion of participants reporting use of marijuana in comparison to the US population usage of over one-third (Earlywine, 2007). To deal with the possibility of these measures of marijuana use potentially being unreliable, two questions regarding support for legislation of medical and general legalization of marijuana were asked. It was believed that giving opinions on legal policy would be perceived as safer than admitting to actual use of marijuana. Support for this can be found in Table 7. The correlations between policy questions and use were significant, but quite low. Thus, the two policy questions were used as supplements to the marijuana use scales.

The results of the tests for moderation were mixed. Marijuana use both on-the-job and in general failed to be predictive of either of the marijuana contrasts. However, the two supplemental questions did explain variance in the use of the marijuana contrasts. Specifically, support for progressive medical marijuana legislation and general legalization both were significantly correlated with the weight given to marijuana use by co-workers. Support of medical legislation significantly predicted variance in the weight given to marijuana use, such that those who show greater support for legalization gave less weight to the marijuana use cue.

Similarly, for the type of use cue, neither of the scales of use showed significance. However, in the HLM analysis of this cue, both support of medical and general legalization were correlated and predictive of the weight given to the type of use cue. The results of this analysis suggested those who show greater support of medical marijuana legalization gave more weight to the type of use cue and those who showed greater support for general marijuana legalization showed less use of this cue. Those who support medical legalization do not necessarily support a general legalization, as shown by the moderate correlations between the two variables. These findings make sense based on how individuals feel about both types of legalization. For those

who support medical legalization, but not general legalization, this distinction in type of use would be expected to matter more than for someone who supports legalization of both types of use. Additionally, for those who support general legalization of marijuana, the distinction between type of use by a co-worker would likely not matter. The marijuana support and use variables, together, explained roughly 18% of the variance in the weight given marijuana use and 6% of the variance in type of use. As far as explaining the weights given to these cues, this set explained the most variance of any of the moderating variables in the current study.

Another variable hypothesized to influence how marijuana information was utilized in judgments was the laws of the states participants were employed in. It was hypothesized that those living in states where medical marijuana was legal at the state level would use the marijuana use cue less than those in states where medical marijuana was not legalized. The belief was that individuals in states where it was legal would have more experience being around marijuana users and this would lead to greater acceptance of users and thus, less use of the marijuana cues. The analyses showed a significant relationship between those who live in states with legalized medical marijuana and the use of the type of use cue. Those who lived in medically legal states were less likely to give weight to the medical versus recreational distinction. This effect was not very strong, with state law only explaining 2.4% of the variance in the weights given to type of use across the whole sample and 5% of the variance for participants who showed significant weights for either of the marijuana contrasts.

It should be noted that a small proportion of the sample (23%) lived in states where medical marijuana was legalized, potentially limiting any effects state law may have had on the findings. This may have led to the limited effect size that state law had on the weights of both marijuana cues. In addition, medical marijuana legalization is a long process within each state.

Laws are not consistent in every state that has legalized medical marijuana and some states have had these laws longer than others. Washington State was the second state to legalize medical marijuana use. Since passage in 1998, the law has undergone three separate amendments to the original law. This has been seen in many states with these laws (Mkrtchyan, 2011). This lack of consistency and constant amending of the laws may make their effects take longer to emerge in a manner that affects social acceptability. These differences may be a reason why simply living in a state where it is legal may not change one's opinions of marijuana use.

In addition to changes in the laws, studies of marijuana attitudes in states after passing medical legislation show that while the perceived harm of marijuana decreases after legalization, the attitudes towards and prevalence of recreational use of marijuana do not change (Khatapoush, & Hallfors, 2004). This would suggest that just having legal medical marijuana does not change attitudes towards recreational use. If this were the case, the distinction between types of use may matter to many people even in states with progressive medical laws. All of this may mask the true effects of state law on judgments.

The next moderating variable examined at was the age of the participant. It was hypothesized that older participants would use the marijuana use cues more than younger participants because of greater acceptance of drug testing and other anti-drug programs in older individuals (Fendrich & Kim, 2002; Bennett, et al., 1994). The analyses of age showed that age was only related to the weights given to the type of use cue. Older participants were less likely to give weight to this cue. This runs counter to what was hypothesized. There was no relationship between age and the marijuana use cue and the effect on the type of use cue was opposite of what was expected. However, this result could be explained by looking at the history of medical marijuana legislation in context. Marijuana has only seen its form of pseudo-legality

in the last twenty years (Cerdeña et al., 2012). This may explain, in part, why older participants did not give weight to the distinction between medical and recreational use of marijuana. To older participants, marijuana has historically been seen as illegal in all its forms. It makes sense that the more recent distinction between medical legality and recreational illegality is not as commonly understood or used by older individuals. In contrast, younger participants are more accustomed to this distinction and this led to it being more often given weight in their policies. Again, it should be noted that the minimal effect size of age, only explained 3% of the variance in the weight given to the type of use cue.

In addition to characteristics of the participants, several characteristics of the participants' jobs were considered as moderating variables of the weight given to the marijuana use cues. The first was the risk of the job of the participant. It was believed that the riskier the job, the more likely marijuana use would be given weight in the judgment policy. The findings on marijuana intoxication would lead one to expect those who use marijuana to be less safe on the job than those who do not use marijuana.

To investigate this the job risk of the participant was measured and added to the analysis. Results showed that risk was related to both the marijuana use and type of use cues. Correlations suggested those who have riskier jobs gave more weight to marijuana use and less weight to the type of use. For participants who significantly used the two marijuana cues, job risk explained 7% of the variance in weight given to the marijuana use cue and 3 % of the variance in the weight given to the type of use. HLM analysis conducted on the entire sample backed up the findings of risk's moderating effects on the weight given to the marijuana use cue. Across the entire sample, risk explained 3.1% of the variance in weight given to the marijuana use cue. In

all, these findings supported the hypothesis that risk would effect how participants would weight the marijuana cues in their judgments of co-worker quality.

The final job characteristic investigated was the interdependency of the participant's job. It was believed the more one is dependent on others they work with, the more they would weight marijuana use in their judgment policy. Minimal support of this was found. Only the correlation between interdependency and the type of use was significant. No other results supported this hypothesis.

Caveats

Limitations in the current study should be discussed. The first limitation is in the nature of survey research. This type of methodology is commonplace in social and psychological research today. However, some limitations should be discussed. The nature of survey research is self-reporting of information. It is difficult to verify the accuracy of the self-report information given. Marijuana use, in particular, can be seen as sensitive and despite the assurance of anonymity, may lead to participants being less than honest their responses (Harrison, 1997). Interestingly, the policy questions asked to supplement the marijuana use questionnaires showed low correlations with the marijuana use scales. Given this result, one should be cautioned about the accuracy of some of the measurements, such as marijuana use.

The policy capturing methodology also presents some limitations. By forcing individuals to make numerous judgments of the same type, one may expect that participants may "figure out" what the researcher wants them to say. In addition, the possibility of participants getting bored and, in turn, not reliably answering the questions asked can occur. A third issue to take into account is obtaining enough judgments to acquire stable regression estimates. A ratio of 5:1 judgments to cues was used. This was the minimum suggested ratio of cues to judgments

recommended by Cooksey (1996) to obtain a reliable regression criterion estimate. Further, sample limitations were used to avoid issues of participants not following instructions or where boredom may have influenced their judgments. To be included in the analyses, at least 60% of the participant's judgment variability had to be explained by the cues presented, as suggested by previous research (Stewart, 1988).

Another limitation of the current is the ability to generalize beyond the given sample. The external validity of the policy-capturing research is dependent on the ecological character of the cues and the realistic design of the study. This study focused on only a few qualities of co-workers when asking for judgments about the criteria. This can lead to false generalizations since, in the workplace, individuals are presented with a great deal more information about co-workers to base their judgments on. The cues were carefully selected to cover information that varied in its relevance to the quality of an employee, as well as relevant to the research question. While drug use of co-workers is not a common piece of information workers are given, it is not unrealistic to believe that workers would eventually obtain this information once a person is on the job. Limiting the information presented does give a good picture of how the given cues are used, but limits the ability to generalize to real world scenarios that present a great deal more information to base judgments on.

Future Research and Implications

In all, the full set of moderating variables accounted for 22.1% of the overall variance in slopes (weight) of the marijuana use cue and 13.8% of the variance in slopes of the type of use cue. Despite explaining a fair amount of variance in the weights of these cues, there still exists a great deal of variance that can be potentially explained. One aspect to consider in future research is using different methods for collecting marijuana use information about participants.

The scales used in the current study may not have accurately identified participant marijuana use and only referenced use in the past nine months. Different scales, reference periods, and methods should be investigated and compared to best obtain accurate information. Alternatively, ensuring the sample includes individuals of varying levels of marijuana use may lead to clearer results.

Another variable that may be practical to consider in more detail is the nature of state marijuana laws. The current study showed minimal effects for state marijuana law on attitudes and stereotyping. Potential reasons for this were discussed, but clearly dichotomizing this effect was not beneficial in explaining the use of marijuana information. Future research should look at characteristics that distinguish states with medical marijuana laws from other states that are not dichotomies. Concepts such as characteristics of states laws, time laws have been in place, and general support for medical marijuana laws within each state are all variables that should be investigated.

One variable of exploratory interest in the current study was amphetamine use in co-workers. Amphetamines are commonly prescribed for conditions such as ADD and ADHD. Co-worker amphetamine use was a significant cue used in the policies of many participants in the current study. This effect should be further investigated, as amphetamines are becoming more commonplace in the population and are considered a legal prescription at all levels of the law. Post analysis discussions with individuals who took the current survey brought up concerns over the interpretation of the word “amphetamine” as it was used in the vignettes. While it was clearly stated that amphetamine use was for treatment of a chronic condition, some may have misunderstood what amphetamines are in the context. The word, “amphetamine” may have been confused with a popular illegal substance, “methamphetamine,” which carries a much different

meaning. Some participants may have read the vignettes and believed the hypothetical co-workers to be using illegal drugs instead of legitimate prescriptions. This could confound the effects seen and may have led to an inflation of the use of this cue. Future research should look at this effect and clarify the term used to avoid any confusion.

Finally, in the current study, gender effects were found that were not hypothesized. Gender significantly predicted the weight given to the marijuana use cue. Findings suggest that women were more likely to give weight to marijuana use of co-workers than men. This is an effect that should be investigated further in future research as it could be very relevant to finding ways of incorporating marijuana users in workgroups or teams in the future.

Conclusion

Results of the present study support the idea that a stereotype of marijuana users exists in the workplace. Hypothetical co-workers who used marijuana were judged differently than those who did not use marijuana. In addition, the type of marijuana use mattered in judgments as well. Experience of the co-worker mattered a great deal more than anything else in overall judgments. However, the significance of marijuana use of workers should not be underestimated. While federal law protects companies now, the future of marijuana legislation is not clear. With greater scientific support for the medical legitimacy of marijuana being found, the reality of marijuana as a legitimate prescription is getting closer. As science furthers the understanding of the effects and uses of marijuana, greater pressure will be put on the federal government to reschedule the substance. The results of this study suggest that companies should develop clear drug policies and prepare plans for dealing with workers who may, one day, have a legitimate and legal medical use for marijuana.

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Appendix A

General Marijuana Use from Frone (2003)

1. On a typical day of use, approximately how many joints, bowls, etc. do you consume?

0 – never to 10 – 10 or more joints/bowls/etc.

2. How frequently do you use marijuana?

0 – never to 7 – everyday

3. How frequently do you smoke 3 or more bowls/joints/etc. a day?

0 – never to 7 – everyday

4. How frequently do you get *very* high off of marijuana?

0 – never to 7 – everyday

Appendix B

On-The-Job Marijuana Use from Frone (2003)

The following questions are based on your marijuana use in the past 9 months.

1. How frequently have you smoked or consumed marijuana just before starting a shift at work?

0 – never to 4 – Very often

2. How frequently have you smoked or consumed marijuana during lunch or a different break?

0 – never to 4 – Very often

3. How frequently have you smoked or consumed marijuana while on the job?

0 – never to 4 – Very often

4. How frequently have you been under the influence of marijuana at work?

0 – never to 4 – Very often

Appendix C

Occupational Risk adapted from Tepper (1994)

Answer the following question(s) based on the your current/last job where a full-time status was held.

1. In general, how much physical risk does your job pose to you on a daily basis?

1- No risk to 7-Great deal of risk.

2. In general, how much physical risk does your job pose to your co-workers?

1- No risk to 7-Great deal of risk.

3. In general, how much physical risk does your job pose to the public?

1- No risk to 7-Great deal of risk.

Appendix D

Interdependency of Job from Pearce and Gregersen (1991)

Answer the following question(s) based on the your current/last job where a full-time status was held.

1. I work closely with others in my job.

0- *Strongly Disagree* to 4-*Strongly Agree*.

2. I frequently must coordinate my efforts with others.

0- *Strongly Disagree* to 4-*Strongly Agree*.

3. My own performance is dependent on receiving accurate information from others.

0- *Strongly Disagree* to 4-*Strongly Agree*.

4. My work requires me to consult with others fairly frequently.

0- *Strongly Disagree* to 4-*Strongly Agree*.

5. The way I perform my job has a significant impact on others.

0- *Strongly Disagree* to 4-*Strongly Agree*.
