SEXUAL RISK TAKING BEHAVIOR
THE CONTRIBUTING FACTORS

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DISSERTATION APPROVAL

This dissertation submitted by Jemie B Russell and Pete Constantas has been read and approved by three faculty members of the American Academy of Clinical Sexologists at Maimonides University.

The final copies have been examined by the Dissertation Committee and the signatures which appear here verify the fact that any necessary changes have been incorporated and the dissertation is now given the final approval with reference to content, form and mechanical accuracy.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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VITAE

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ABSTRACT

This dissertation describes research on sexual risk taking, and the factors which influence this behavior. High risk sexual behavior can lead to serious consequences, such as STD's, unwanted pregnancies, HIV, infertility, sexual dysfunction, interpersonal problems, and other issues relating to a person's wellbeing. The focus was on the factors and processes involved in risky sex, rather than on the consequences. Emphasis was placed on the individual's appraisal or perception of risk, how the person manages risk, and the biological factors which influenced the risk taking behavior. Characteristics of persons who engaged in risky sexual behaviors were described. A literature review of works by several authors was done to describe the factors which influence sexual risk taking. Research by Keller & Brown (2002) explained the influence the media has on people's sexual behaviors; Bell, O'Neal, Du Feng & Schoenrock (1999) researched who was more likely to engage in sexual risk taking, men or women. Zuckerman & Kuhlman (2002) described the sociobiological and biological factors involved in sexual risk taking, and its relationship to sensation seeking. Sexual compulsivity and its link to sexual risk taking was described by using research by Dodge, Reece, Cole & Sandfort (2005). The role of sexual inhibition and sexual excitation in sexual risk taking was explained by using research by Janssen, Vorst, Finn & Bancroft (2002). Some of these same authors were also instrumental in doing studies which showed the relationship between affective disorders and increased sexual risk taking in gay men. This theory was further supported by studies from Ramrakha, Caspi, Dickson, Moffitt, & Paul (2000). Suarez (2003)

examined “barebacking” in the gay population, and the reasons why people would engage in unprotected anal intercourse. Self-esteem instability appeared to be a factor in sexual risk taking, and studies by Martin and Knox (2002) supported this thought. Alcohol and other drug use was long thought to be a cause of sexual risk taking, and this was examined in a study by Fromme, D’Amico, & Katz (1999). Burger & Finkel (2002) studied a group of college students who had body modifications and found a link between that and sexual risk taking. This literature review showed that there are multiple reasons why people engage in sexual risk taking, and due to the complexity of the issues and individuals involved in this behavior, multiple prevention efforts must be created based on the needs of each different population, because one prevention message for everyone will not work.

ABBREVIATIONS

ACTH	=	Adrenocorticotropic Hormone
Agg-Hos	=	Aggression-Hostility
AI	=	Anal Intercourse
AIDS	=	Acquired Immunodeficiency Syndrome
BAS	=	Behavioral Activation Scales
BIS	=	Behavioral Inhibition Scales
CAIR	=	Center for AIDS Intervention Research
CDC	=	Center for Disease Control
CNS	=	Central Nervous System
CSF	=	Cerebrospinal Fluid
DBH	=	Dopamine Beta-Hydroxylase
EP	=	Evoked Potential
GABA	=	Gammaaminobutyric Acid
HAART	=	Highly Active Antiretroviral Therapies
HIV	=	Human Immunodeficiency Virus
ImpSS	=	Impulsive Sensation Seeking
LEQ	=	Life Experiences Questionnaire
N-Anx	=	Neuroticism-Anxiety
NA	=	Nucleus Accumbens

MSM	=	Men who have sex with men
MSQ	=	Mood and Sexuality Questionnaire
SCS	=	Sexual Compulsivity Scale
SES	=	Sexual Excitation Scale
SIS	=	Sexual Inhibition Scale
SOI	=	Sociosexual Orientation Inventory
SSRIs	=	Selective Serotonin Reuptake Inhibitors
SSS	=	Sensation Seeking Scales
STAI	=	Spielberger Trait Anxiety Inventory
STI	=	Sexually Transmitted Infection
STD	=	Sexually Transmitted Disease
UAI	=	Unprotected Anal Intercourse
ZDPR	=	Zenmore Depression Proneness Ratings
ZKPQ	=	Zuckerman-Kuhlman Personality Questionnaire

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INTRODUCTION

Scientists have few answers to the fundamental questions about sex, and with the shadow of AIDS looming over the United States and other countries; they need those answers to determine whether the epidemic will affect the general population. Although there has been adequate research on the populations at high risk of being infected with HIV, there is little asked beyond whether they have altered their behaviors or whether they use condoms (Michael, Gagnon, Laumann, & Kolata, 1995).

Sexual behavior can involve many risks, such as sexually transmitted infections (STIs), unwanted pregnancies, and damage to relationships, legal consequences, social stigmatization, and violence. Effective interventions are necessary to change behavior and remain a high priority, and it is therefore necessary to look at the situational and individually oriented factors that lead to high risk sexual behavior so that a more encompassing range of effective interventions can be designed (Bancroft, Janssen, Strong, Carnes, Vukadinovic, & Long, 2003).

Tiefer (2003) summarized the problem nicely: "…in the twenty-first century, sexual images permeate ads, films, television, and the internet;

sexual issues are high on the global public health agenda; people travel, emigrate, and date partners with different sexual values; celebrities and politicians offer a kaleidoscope of messages about sex and gender; ordinary people are living longer, more vigorous lives—and both public and professionals need scientific and clinical models of sexuality and sexual problems to help them cope. The prevailing medical model and nomenclature, deriving from the work of Masters and Johnson (1966, 1970) and Kaplan (1974, 1977, 1979), and codified in the American Psychiatric Association's (APA) Diagnostic and Statistical Manual (1980, 1987, 1994), are inadequate to fill this tall order. They contain too many mistaken claims (errors of commission) and leave too much out (errors of omission)" (Tiefer, 2003).

The Centers for Disease Control and Prevention recommended that Michael, Gagnon, Laumann and Kolata (1995) focus on nine diseases in their book "Sex in America", and they put their attention on gonorrhea, syphilis, genital herpes, Chlamydia, genital warts, hepatitis, AIDS, and for men, nongonococal urethrities, and for women, pelvic inflammatory disease. In their surveys they found that one in six Americans said that they had a sexually transmitted disease at one time or another. And a large percentage, the same percentage as women getting pregnant in the past year, said that

they had had one of these illnesses in the past year (1.5%). Almost as many women had had a venereal disease as the number of women who got pregnant, in the last year. These authors also noted that women were four times more likely than men to have gotten gonorrhea, and three women in one hundred got genital herpes. This does not mean that women are promiscuous. This means that it is twice as easy for a man to infect a woman as it is for a woman to infect a man with a disease, including AIDS (Michael, Gagnon, Laumann, & Kolata (1995).

The dilemma is that we need to know how common the diseases are and who gets them, and until we do, we cannot decide who is at risk or what even constitutes risky sexual behavior. There has never been a systematic national study that could help in the determination of the epidemiology of these diseases.

Michael, Gagnon, Laumann, & Kolata (1995) found that the people who are most likely to be infected have many sex partners, and rarely use a condom. These people have a tenfold more likelihood of becoming infected than those who have fewer or only one partner. The risk is also correlated with other behaviors and attitudes, which tend to go hand in hand with having many sexual partners. It does not matter if one is African American, Caucasian, Hispanic, Asian, or Native American. Nor does it matter, at least

according to these authors, whether you had sex education in high school. Contrary to some of the research in the following chapters, the authors believe that it has nothing to do with having an education or socioeconomic level. The overriding variable is unprotected sex, with many partners, and this is the characteristic of risky behavior, although some populations showed a propensity for certain diseases over others (Michael, Gagnon, Laumann, & Kolata, 1995).

People with more partners, had more disease over the past year and over a lifetime. The profile of typical people with multiple partners was pieced together by asking whether people who have many partners tend to go through a series of monogamous relationships, or whether they have simultaneous sexual relationships, none of which are monogamous. Data showed that the more partners a person had, the less likely was that person to be involved in a monogamous relationship. This could mean that a man who has had sex with multiple partners was having sex with people who may have also had multiple partners. The people this man chose had a greater exposure than average to getting a venereal disease simply due to having multiple partners. It was also shown that the more partners a person had, the more likely it was that this person did not know his partners well, and would not know whether they could be trusted or not and perhaps did not even care.

A quarter of the people surveyed who had had two partners in the past year said that they had a one night stand at that time, and that they had known their partners less than two days. Two thirds of the people with three or more partners in the past year said that they had a one night stand, and had known their partners less than two days. The respondents with the most partners also engaged in risky sexual practices, such as unprotected sex. People who had primary partners were more likely to use condoms when with secondary partners, which suggests that when they sense greater risk, they are more likely to use protection. It was also found that people who had the most partners were most likely to have paid for sex. Three out of one hundred people surveyed had had more than three partners in the past year, and had the occasion to pay for sex. Those with the most partners also were more likely to have engaged in group sex and anal intercourse. It was also found that the people who had had more partners were also more likely to have been under the influence of drugs or alcohol during some sexual encounters, and even if a condom was used, the use was not great enough to offset the higher risks of infection (Michael, Gagnon, Laumann, & Kolata, 1995).

It has been thought that men who had sex with men, intravenous drug users, their partners, and their children, hemophiliacs and others who

received contaminated blood products became at risk of contracting HIV, although with proper handling of the blood supply the latter group has only a minuscule risk of becoming infected. It has also been thought that college and high school students are at great risk of contracting HIV. But there was no general consensus on this. Given the differing views, how could people estimate their own risk? The National Commission on AIDS and other groups state that everyone is at risk, and that AIDS is a disease that does not discriminate. Other national committees, like one put together by the National Research Commission, conclude differently, lending to the belief that AIDS is not spreading into the general population, but is concentrated in the minority groups, the poor and disenfranchised, the blacks and Hispanics, groups in which poverty, ill health and a dearth of healthcare, inadequate education, joblessness, hopelessness, and social disintegration exist. What we know for sure is that AIDS is spread through sexual intercourse, and is spread very well through anal intercourse in particular, rather than vaginal intercourse. It is also transmitted very well by seropositive intravenous drug users who share their needles with uninfected people. But compared to STDs, HIV is very difficult to spread. The chances are one in five hundred that an act of sexual intercourse with a seropositive man or woman will transmit HIV through vaginal or anal sex. However, frequent unprotected

sexual acts with an infected partner increase the odds of getting HIV. A person has two out of three chances of becoming infected with HIV after five years of regular unprotected intercourse with a partner who is HIV seropositive. In addition, we know that relatively few people are infected. Only a small percentage of the population has HIV. Of the twelve million new cases of STDs reported to the Centers for Disease Control and Prevention in 1991, just 50,000 were AIDS cases, which constitutes less than one half of one percent of new STDs (Michael, Gagnon, Laumann, & Kolata, 1995).

Gay communities in New York and San Francisco were affected by HIV during the late 1970s and early 1980s. These men frequented bathhouses, and had sex with strangers. The CDC found that men who had AIDS had twice as many sexual partners as uninfected men, and they were twice as likely to visit bathhouses. It was also found that their partners had more partners than the partners of uninfected men. Some gay men who were interviewed in the early 1980s and who had AIDS reported that they had about 1,100 partners in their life, and some had even more. This was possible because of the anonymity of sexual partners in bathhouses, where it was not uncommon to have a dozen or more partners on a weekend. These men also reported frequent anal intercourse, which is the easiest way to

spread HIV. Many of these men traveled to other big cities, and the spread of HIV was ensured. The gay men who lived quietly and had sex with one or a few partners did not get infected, and this was because his social network was closed. In order for the virus to spread, regular and frequent sexual contacts must occur between infected and uninfected groups. Gay men are the largest infected group. In order to spread the infection to the heterosexual community, gay men would have to have unprotected, frequent sex with bisexual men. They, in turn, would have to have frequent sex with numerous women, or the gay men would have to have frequent unprotected sex with women. Then those women would have to have frequent, unprotected sex with many men to take this epidemic more deeply into the general population. There was no data to substantiate this occurring (Michael, Gagnon, Laumann & Kolata, 1995). It is thought, therefore, that AIDS is likely to remain where it began, among gay men and intravenous drug users, and their sexual partners. Our public education campaigns focus on the general population, the “everybody is at risk” warnings, and are unlikely to be effective in that they do not target specific populations with their unique problems. The interventions should be aimed at the people who are suffering from AIDS and dying from it, and at those who are most at risk of contracting it.

In this study we will be examining the relationship between risky behaviors and sensation-seeking. Risky behaviors (e.g., binge-drinking, drunk driving, risky sex) are increasing among US college students and the personality trait of sensation-seeking provides a potential link between such norm-breaking behaviors and biological processes. (Rosenblitt, et. Al., 2001)

According to Zuckerman, sensation-seeking behavior is not exactly the same as risk-taking behavior. The sensation-seeking trait is an active pursuit of novel, intense and complex sensations and experiences (Zuckerman, 2000). Risk-taking is not the main point of sensation-seeking. It is merely the price such people pay for certain kinds of activities that satisfy their need for novelty, change, and excitement. In fact, many of the things that high sensation seekers do are not at all risky. They enjoy high-intensity rock music, view sex and horror movies, travel to exotic places and party without drugs. Sensation seeking can also extend to the physical involving unusual or extreme sports, such as sky-diving, hang-gliding, scuba diving, auto racing, rock climbing, and/or white water kayaking. An interest in participating in such sports describes one subcategory of sensation-seeking: thrill- and adventure- seeking. There are other kinds of sensation-seeking that are expressed not through physical action but through the casting off of inhibitions in a social setting (disinhibition), through deviant

life styles (experience seeking) and through the pursuit of change for change's sake (boredom susceptibility). This variety of sensation-seeking has been related to such risky activities as smoking, drinking, drugs, unsafe driving and gambling (Zuckerman, 2000).

MEDIA INFLUENCE ON SEXUAL BEHAVIOR

Since World War II, sex has become more publicized by the media, is depicted in movies, advertisements, and read about in magazines, newspapers, and books. It is also talked about more openly than ever before. The change was brought about by popular culture where sexuality is ever-present. This influence of the mass media has created the false notion that Americans are more sexual than ever (Michael, Gagnon, Laumann, & Kolata, 1995). This has left people at a loss as to where the boundaries of acceptable sexual conduct are.

Conflicting views about sex are part of life in America. On the one hand there is the view that promiscuous behavior leads to the grave, and parents rarely speak about sex to their children, keeping it a “dirty little secret”. On the other hand, sex is portrayed as an endless source of pleasure and fulfillment. The media portrays sex as the pinnacle of physical pleasure, with no serious consequences. For those who argue that sex is a sin, there is widespread protest by people who oppose providing condoms to teenagers in schools, their argument being that condoms corrupt the morals of these teenagers, and give the message that it is okay to have sex, and are an incentive for premarital intercourse.

Most people learn by doing, and the message is that sex is secret and perhaps dirty, but irresistible. Sex becomes all-powerful and all-overcoming, and something that cannot be controlled.

The question becomes, to what degree are people's sex lives under their control, and can it be changed? Given the tide of teen pregnancies and the spread of HIV, what can policymakers do to reduce these? Any kind of study on sexuality would go against conventional morality, and scientific research was avoided on this topic because government and private foundations were not interested in paying for this kind of research. Sex was just sinful and wrong. It was thought that understanding the strength of the sex drive was enough to be able to find ways to control it. Because of the reluctance of parents and schools to discuss sexual matters, the media became the more accessible way for people to learn about sexual behavior. It was found that sexual talk and displays, flirting to sexual intercourse, had increased from slightly more than half of television programs in 1997-1998, and in 1999-2000 it had increased to more than two-thirds of the programs. One in every ten programs showed intercourse, either implied or explicit (Brown, 2002). Other media which portrayed sexuality or eroticism were music videos, and Hollywood movies, two-thirds of which are R-rated. The internet has also contributed to the availability of sexually explicit content.

It was found that the word “sex” is the most popular search term used today. A few sites, such as the American Social Health Association’s iwannaknow.org, are known for promoting healthy sexual behavior and also provide advice on communication in relationships, and ways to protect against sexually transmitted diseases.

Early, unprotected sexual activity continues to be a major concern with regard to health risks. In spite of this, mass media rarely depict the three C’s of responsible sexual behavior: commitment, contraceptives, and consideration of consequences. Television continues to portray couples who engage in sexual intercourse who have met only recently, and one quarter of those do not continue in the relationship after having sex. Very few of these programs on television mention the possible consequences or need to use contraceptives or protection against STD’s. They also rarely show unwanted pregnancies as the outcome of unprotected sex. STD’s are almost never shown as a consequence of unprotected sex. HIV/AIDS are sometimes part of the topic in these programs. Commercial television and magazines never mention abortion, and that is too controversial and could lead to advertising boycotts.

Because the patterns of media use strongly differ by age, gender, race/ethnicity, and socioeconomic level, it is important to understand the

media's effect on sexuality within subgroups: all people do not see all of the same sexual messages. Some see more, some seek them out, and some try to avoid them. Other studies indicate that men and women interpret media content differently. They also evaluate and may incorporate what they see in their own sense of sexuality. This is called media effects. People are consequently having sex earlier, with more partners, without protection or affection, because of the influence of the media. The exposure to sexual media content and effects leads to the theory that the media do have an impact in at least three ways: (a) Agenda Setting/Framing, (b) Cultivation, and (c) Cognitive Social Learning Theory.

(1) Agenda Setting/Framing: a consistent set of sexual and relationship norms are reinforced, by showing topics and images that are frequent and prominent in the media; the audience then comes to believe that these are important.

(2) Cultivation: television is notorious for continually repeating myths and ideologies. A steady dose of television, for a duration of time, acts like "the pull of gravity toward an imagined center" (. This pull results in beliefs and conclusions about reality amongst diverse viewers. A consistent set of sexual and relationship norms are reinforced (Brown, 2002).

(3) Cognitive Social Learning Theory: sexually responsible models are rarely included in the media, and people will imitate behaviors of others when those models are rewarded for their behavior (Bandura, 2001). The media provides cognitive scripts for sexual behavior that people may not be able to see anywhere else. What are missing are the possible negative consequences of sexual activity. Therefore, ways to prevent these negative outcomes are not shown. Media audiences learn that sex is consequence-free, spontaneous, and more closely related to lust rather than love (Brown, 2002).

In conclusion, it is thought that the mass media can affect awareness of and beliefs about sexual behavior, and consequently one's sexual behavior. The media may be an important instrument which could help bring about change in people who take sexual risks.

GENDER AND SEXUAL RISK-TAKING

It has been theorized that women may engage in sexual risk for different reasons than men, leading to a “difference in pattern” hypothesis (Bell, O’Neal, Du Feng & Schoenrock, 1999). Analyses of love attitudes, risk perception, sensation-seeking, and risk behaviors in other domains in relation to sexual risk behavior showed gender similarities and differences. Findings were more consistent with the difference in “pattern hypothesis”, where women may engage in sexual risk for different reasons than do men, rather than differences in the “magnitude hypothesis”, where the same factors are implicated for men and women but where there is a difference in the strength of the correlates (Bell, O’Neal, Du Feng & Schoenrock, 1999).

This research indicated that young men are more likely to give reasons for engaging in sex, such as physical pleasure. Women emphasized emotional and relational reasons, with romantic ideals interfering with safe sexual practices. Men engaged in a given risk behavior with the thought of less personal risk to self and others, and less fear of risks. Sensation-seeking is related to many risk behaviors including sexual risk, and will be further examined later on.

Gender differences occurred on risk perceptions and risk behaviors. Men were more likely to engage in sensation-seeking, and women were more likely to have possessive, dependent and logical love attitudes. Associations between sexual risk and other risk behaviors were stronger for men than for women; sexual risk is a weaker component of a risk behavior "syndrome" for women than it is for men (Bell, O'Neal, Du Feng & Schoenrock, 1999). Ludus, or game playing, was positively and equally related to sexual risk for both genders. Women tend to have a more relational orientation, in which sexuality is perceived as part of an ongoing, emotional relationship. Men tend to have a more recreational orientation toward sex, and they view most women as potential sex partners with little or no emotional relationship need as a prerequisite for sex. Women in general hold less permissive attitudes than men do with regard to casual sex in the absence of a committed relationship, and this difference is quite large (Impett & Peplau, 2003).

Sensation-seeking was related to sexual risk behavior for men, and is one of the most prominent individual-level factors in the study of risk behavior. Correlations between risk-taking behaviors and sensation-seeking were similar in magnitude for men and for women, but different with regard to sexual risk-taking. Sexual risk-taking in women is characterized by the

absence of a strong sensation-seeking component, most probably because of women's emphasis on the emotional and relational significance of sex.

People high in the personality trait of sensation-seeking, that is , people who are drawn to stimulating experiences, have a tendency to participate in more sexually risky practices than people low in sensation-seeking (Impett & Peplau, 2003). In addition, concerns that a partner would resent someone for not engaging in sex were a fear that sexual-risk takers expressed. Women in particular engage in sex without condoms because of the fear of offending their partner, and also a fear that he may lose interest in them and they therefore comply.

Women and men who engaged in a higher level of sexual risk-taking behavior also placed less importance on practical considerations such as how a lover reflects on family and on career, or whether a lover has a similar background. They also placed less importance on whether this person would be a good parent, and what he or she would become later in life. Men compared with women who reported higher levels of sexual risk behaviors endorsed less pragmatic love attitudes and also were more likely to engage in sexual risk-taking behaviors, being less choosy about partner characteristics for casual dating and sexual relations. Men were more likely to engage in risky behaviors, had a preference for sensation-seeking, but

were less likely to perceive the behaviors as risky. Women were more likely to be practical, or pragmatic, and less likely to engage in risky sex behaviors (Bell, O'Neal, Du Feng, & Schoenrock, 1999).

Several studies further showed that men and boys are more open to recreational or casual sex than women, and that women view emotional involvement as necessary in order to engage in sex. Women also express less support for sexual permissiveness, and men are more likely to engage in casual sex (Cubbins & Tanfer, 2000). Because of these differing views, it can partially explain the gender differences in engaging in sexual relations outside of committed relationships.

Several studies of our culture confirm that males are more interested in physical sexuality than females are, and that more men think about sex daily than women do. Men believe the physical aspect of sex in building love is important, but women need the emotional attachment first before they can engage in intercourse, for the most part (Baldwin & Baldwin, 2002).

One study found that men were more likely to engage in sexual intercourse in order to relieve sexual tension, but women would engage in intercourse to enhance emotional intimacy (Baldwin & Baldwin, 2002).

Women tend to have more religious ties than men do, and religious behavior has an important relationship to sexual behavior. Because religion for the most part emphasizes family and family ties, it is less likely for people with stronger religious ties to engage in sexual risk-taking behaviors, when they are busy caring for a family, children, or both. In addition, some religions have guidelines or rules on sexual activities that restrict women's behaviors more than men's. It was found that the more a person participated in church activities and had a strong attendance pattern, the less likely they were to engage in casual sex, had fewer sex partners, and were less likely to have had multiple vaginal and anal sex partners over the short term. The level of participation in a religious organization is an indicator of religious influence, and is part of the social network in which individuals carry out their daily lives. The social network with these restrictive views on sexual behavior is unlikely to have partners willing to engage in high-risk sex behavior (Cubbins & Tanfer, 2000).

Employment places restraints on men for sexual risk-taking; although men may be more exposed to multiple partners at work, there is less time to engage in sexual risk-taking activities because of the constraints of a job. However, the type of employment, number of hours worked, and specific

family influences, such as ages of children in the home and duration and quality of marriage, all play a role in this.

Gender remains a significant predictor of the lifetime experience measures of sex behavior. However, gender was not significantly related to short-term sex behaviors in one study. Cultural factors play a big part in influencing sexual risk-taking behaviors. There are still double standards in which high-risk sex behaviors may be more acceptable for one gender versus the other. Several social and cultural factors partially explain the differences in men's and women's high-risk sex behavior. Many cultures deliberately try to suppress female sexuality, and the general thought is that "men always want and are ready for sex…women learn not to be sexual." (Impett & Peplau, 2003).

Early sex experiences appeared to lead to distinct paths of risky sex activity, and past sex behaviors were important factors in predicting lifetime and short-term high-risk behaviors. The earlier the age one had first sex, the more likely was the person to have had high-risk sex behaviors, that is, casual sex and multiple partners over both the short and the long term.

In one study it was agreed that the incidence of risk and reckless behaviors, such as sexual risk-taking, vary according a host of demographic factors, which include gender, age, ethnicity, and education level. Other

researchers found that gender differences in risk-taking behaviors were the greatest during emerging adulthood, or in young adults in college, than in any other period of development. When looking at self-reporting of sexual risk-taking, one must take into consideration that group membership may shape the extent to which risk and reckless behaviors are reported accurately. Because the traditional gender role socialization of males encourages them to be active, bold, independent and doing what their peers say they are doing, this may encourage more males than females to exaggerate their involvement in risky and reckless behaviors. In a study of emerging adults, it was found that males engaged more frequently in risky and reckless behavior than same-age females (Lucke, 2002).

In a study by Lucke (2002), she mentions literature which demonstrated that “masculine” personality characteristics are associated with high levels of self-esteem in women, but that these women who take on “masculine” models of sexuality may have increased risky sexual behavior. Lucke (2003) found that multiple partners in the past year were associated with “masculine” personality traits, as well as those women who used substances with casual partners. This suggests that males with traditional attitudes and women with non-traditional attitudes have more sexual partners. However, these women with “masculine” personality traits were

unlike men in the sense that men used condoms less consistently than these women did.

Some researchers showed the relationship of gender role traits and sexual behavior among a group of US college students, and found that women with “masculine” gender role personality traits had more sexual experience, were more likely to have engaged in oral sex, had sex at an earlier age, and had more sexual partners than women with the traditional feminine traits. Lucke (2002) studied the relationship between gender roles and three risky sexual behaviors:

(1) having multiple partners;

(2) not using condoms;

(3) drug and alcohol before or during sexual intercourse.

Lucke (2002) confirmed in this study that age at first intercourse predicted the number of sexual partners in both males and females, and those who had their first intercourse before age sixteen were more likely to have had two or more partners in the last year. Other researchers have reported that early first intercourse has been found to be linked to having more sex partners and more frequent intercourse (Lucke, 2002).

It was also found that age, education, and marital status were associated with condom use. Younger people, who had more education and those who were unmarried were more likely to use condoms (Lucke, 2003).

Young people who started using different methods of contraception often stopped using condoms, especially those who had frequent sexual intercourse. Those people with over five or more partners were less likely to use condoms than those individuals with fewer partners (Lucke, 2003).

The use of alcohol and other drugs is important to mention, albeit briefly here because it will be elaborated upon later in this paper. Substance use can impair judgment, increasing the likelihood that the use of condoms will be neglected. In addition, alcohol and drugs sometimes enhance sexual desire. Researchers have studied the relationship between drinking and condom use during sexual activity, and there was no relationship between drinking and condom use in casual or steady sexual relations in their study. In fact, higher levels of condom use were reported with casual partners when there was higher substance use and intoxication (Lucke, 2003).

SOCIOBIOLOGICAL FACTORS

In examining sexual risk-taking, it is important to look at the biological and social factors involved in the development of sexual behaviors in men and women. Sociobiologists believe that genes have a very strong effect in determining each species' physiology, brain activities, and behavior. However, genetic factors do not account for more than about half of the variance for behavioral disorders and dimensions. Despite this sociobiologists argue that most of the causation for male-female differences in sexual interest lies in the evolutionary past (Baldwin, J.D., & Baldwin, J. I., 2002).

Sociobiologists make the distinction between ultimate and proximate causes of behavior. Evolution and genetics are the ultimate causes that make each species' behavior unique, and proximate causes refer to the day to day situations in a person's like that explain daily variations in behavior. Sociobiologists place more emphasis on "ultimate causation", with less attention paid to proximate causes such as learning, language and culture. Both causes appear to have importance (Baldwin, J. D., & Baldwin, J. I., 2002).

Sociobiologists coined the term “parental investment” in their theory of sex and gender differences. The notion of “minimal parental investment” is used when describing the roles of parenting offspring. The woman inevitably has a heavier investment, since she carries the baby for nine months, perhaps breastfeeds and then cares for the child. A man only needs to parent the child, which requires the desire and ability to copulate with any female who is willing. Therefore, natural selection works differently on women and men, which could explain why men and women think and act differently when it comes to having sex. However, learning and culture, as mentioned previously, play a big role as well.

According to sociobiology, man’s best reproductive strategy is to try to copulate with as many different females as possible, even unconsenting ones. This will ensure more offspring. Because women have more time to spend with their offspring and more energy goes into raising them, they are expected to be more discriminating and choosy in mating, selecting strong, healthy men, who are committed to child rearing, thereby increasing the chances of the offspring surviving adulthood. Women who had intercourse indiscriminately would have weaker, sicker, and less intelligent children than the discriminating women. Hence the genes that propagate female caution and choosiness in sexual relations are presumed to

be passed on more successfully than the genes for indiscriminate sex (Baldwin, J. D., & Baldwin, J. I., 2002).

Nature cannot in itself explain sexual behavior. Nurture plays an important part as well. Gender differences are further exaggerated by social arrangement, traditions and culture, as well as socialization. Individual personalities and personal choices play a big role as well. The individual's unique genetic information interacts with numerous environmental factors during development, and these influence behaviors. There is genetic development, which directs the building of the CNS, muscles, and other mechanisms that mediate behavior, but ultimately the final product of this depends on numerous environmental inputs, like nutrients, vitamins, minerals, gases, toxins, temperatures, physical blows, et al. There are also different learning experiences that stem from the biological differences between men and women, and the double standards that societies create for the two sexes are implicated. The biological differences in men and women affect each individual's sexual learning experiences, and the different sexes tend to go in opposite directions in sexual interest, depending on the culture they are in (Baldwin, J. D., & Baldwin, J. I., 2002).

In childhood, boys tend to self-stimulate as their penis is conspicuous. They get positive reinforcement from this, which strengthens their interest in

sexual stimulation. In many societies, girls are punished for self exploration, and they become inhibited sexually. In adolescence, boys become sexually aroused two to three years earlier than girls, and boys also became aroused more frequently than girls. The boys' arousal was more distracting than the girls' as well. Researchers believe that this is caused by testosterone, which is linked to sexual interest in males and females (Bancroft, 1984). Males' testosterone level is 7 to 13 times higher than women's. However, despite the fact that neurohormonal causes are influential, we still must consider learning, cognition and culture. In many societies, females are evaluated more negatively than males for having early sex, or casual sex. Men also were more likely to approve of various sexual behaviors. Women themselves are much less accepting than men of premarital or casual sex (Baldwin & Baldwin, 2002).

Boys generally engage in more risky sexual behaviors than girls, and many cultures are more tolerant of male adolescent sexual activity or may even encourage it. Also adolescent boys tend to use alcohol and drugs more often than girls, which can lead to sexual-risk-taking.

The role of manhood promoted in many societies may discourage young men from showing affection or other emotions while encouraging them to seek control, success and power. Such pressures may prompt boys to

act aggressively, leading to injuries, accidents and homicides. (O’Neil, Good, & Holmes, 1995).

PERSONALITY AND RISK-TAKING

Zuckerman and Kuhlman (2000) did a study of the relationship between risk-taking behaviors and personality. They studied six areas: (a) smoking, (b) drinking, (c) drugs, (d) sex, (e) driving, and (f) gambling.

The 260 participants self-reported on their participation of the above activities. They also completed the Zuckerman-Kuhlman five-factor personality questionnaire. Risk-taking was related to scales for impulsive sensation-seeking, aggression, and sociability. The six areas were not related to neuroticism or activity. Impulsive sensation-seeking differences mediated gender differences on risk-taking. The biological factors involved in risk-taking behaviors and sensation-seeking are the D4 dopamine receptor gene, the enzyme monoamine oxidase, and augmenting or reducing the cortical evoked potential. Other studies have shown the similarities in humans to other species with the same biological markers. The traits underlying risk-taking was presented in a biosocial model.

Decisions are based upon the anticipation of reward balanced with risk. It is believed that when people are weighing the pros and cons of an activity, that they are already involved in the early stages of risk-taking activities. If one gets enough gratification from a certain activity, there is

typically less deliberation between opportunity, grasping the opportunity, and consummating it. If there is punishment for this activity, there tends to be a lengthier decision-making process when faced with the same opportunity. Some people never stop taking risks despite negative consequences, but others do when they are punished for it.

Zuckerman describes the personality trait for sensation-seeking as: "…a trait defined by the seeking of varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience" (Zuckerman, 2000). Impulsivity is defined as "the tendency to enter into situations, or rapidly respond to cues for potential reward, without much planning or deliberation and without consideration of potential punishment or loss of reward" (Zuckerman, 2002). The level of inhibition of dangerous reward-seeking behavior is low in impulsivity. Zuckerman (2000) combined the two traits into one "supertrait" called impulsive sensation-seeking. These two traits are representative of the approach of the risk/reward conflict. In novel social situations, the traits of anxiety and neuroticism, or harm-avoidance surface in consideration of the risk component of whatever the conflict may be. These traits are related to behavioral inhibition. They may

include impulsivity and hostility traits, but these are more related to expression of behavior and not to inhibition.

Sensation-seeking has been linked to potentially risky experimenting, sports, jobs, criminal activities, sexual behavior, smoking, alcohol and other drug use and abuse, reckless driving and driving while intoxicated, and gambling. High sensation seekers tend to think that the risk is lower than it actually is. Low sensation seekers think the opposite. High sensation seekers have less anxiety than low sensation seekers in the same risky situations. One can conclude that it is likelier that the high sensation seeker will participate in risky activities more so than the low sensation seeker, who is more apt to avoid the risk-taking activities.

Zuckerman, Kuhlman, Joireman, Teta, & Kraft (1993) developed the broader five-factor personality questionnaire called the ZKPQ, because they believed that it was not enough to focus on the single trait of sensation-seeking. The ZKPQ includes a scale for impulsive sensation-seeking (ImpSS) and the role of other personality factors involved in risk-taking behaviors.

Eynsenck (1976) found that drinking and sexual activity frequently begin at parties, and these activities are enjoyed by extroverts and impulsive sensation seekers. He also found that extraversion and psychoticism were

related to risky behaviors such as “promiscuity”, but extraversion was more related to sociability and psychoticism to impulsive sensation-seeking in the ZKPQ. Therefore, Zuckerman (2002) separated these factors because impulsivity was combined with sensation-seeking as one factor, and extraversion is just sociability. Activity was made a separate factor independent of the other factors.

Other studies have verified the relationship of sensation-seeking and the related traits to sexual risk-taking among HIV positive individuals. These studies showed that impulsivity and aggression are related to risky behavior as well. Arnett (1966) used his own Sensation-seeking Scale (SSS), and found that sensation-seeking was predictive of reckless behaviors in sex, driving, illegal drug use, and vandalism. Caspi et al (1997) was able to predict risky sexual behavior, alcohol dependence, violent offenses and dangerous driving habits using a broad range of personality traits (Zuckerman & Kuhlman, 2002).

This study researched six types of risk-taking: drinking, smoking, drugs, sex, driving, and gambling. Other studies examined the correlations between risk appraisal and risky behaviors across four areas: criminal, minor rule violations, financial, and sports risks. The correlations were

significant, albeit not large. Studies have also found important correlations among all four of the risk-taking behaviors they examined.

Zuckerman & Kuhlman (2002) expected ImpSS to be strongly related to all of these risk-taking behaviors. Based on the previously mentioned studies above, they also expected aggression and sociability to be related to risk-taking behaviors.

While children are still learning to walk and talk, psychologists may be able to predict which of them will drive dangerously, abuse alcohol and engage in unsafe sex as young adults. Researchers followed 961 children from birth on to the age of 21. Those who reported that they had abused alcohol, drove recklessly, had unprotected sex with multiple partners, or had violent crime records, all tended to have scored the same way on personality tests three years earlier: low on traditionalism, harm avoidance, control, and social closeness, and high on aggression. Most surprisingly, researchers found that this particular cluster of personality characteristics could be predicted by the subjects' temperaments by the age of three. Toddlers who were rated as "undercontrolled" (irritable, impulsive, and emotionally volatile) were twice as likely to be involved in risky behaviors almost two decades later (Caspi, 1998).

Gender, personality, and risk-taking and the interactions among them were studied as well, Women scored higher than men on the neuroticism and sociability scales, and men scored higher on the impulsive sensation-seeking and aggression-hostility scales. Men scored higher on the risk-taking in the six areas, therefore, gender might be a mediating factor in the relationship between personality traits and risk-taking. (Zuckerman & Kuhlman, 2002).

This study used the ZKPQ to assess five basic personality traits:

(1) Impulsive sensation-seeking (ImpSS);

(2) Neuroticism-Anxiety (N-Anx);

(3) Aggression-Hostility (Agg-Hos);

(4) Activity;

(5) Sociability (Soc).

The authors also used the Life Experiences Questionnaire (LEQ), which measures self-reported behavior in six areas of risk as mentioned earlier in this chapter. The sexual behavior section assessed the extent of risky sexual behavior with four items:

(1) How many different persons had participant ever had intercourse with, ranging from none to four or more;

(2) How many different people the participant had sexual intercourse with during the last 12 months;

(3) How many times the participant had sex in a week when they had a sexual partner;

(4) How often did they or their partner use some method of birth control, and/or a condom during sexual intercourse.

The participants were tested in large groups. The results showed correlations among the six risk measures for both male and female subjects. Driving and gambling scales were less consistent in correlation with the other four behaviors. Gambling correlated significantly with sexual experience for males and with drinking, but not with any of the other risk scales for females. Correlations were found between the five ZKPQ personality scales and the six individual risk scales. None of the risk measures were correlated significantly to N-Anxiety and Activity. ImpSS, Agg-Hos, and Sociability had positive correlations with the risk measures and some component scales. As stated earlier, males scored high than females on some scales and the composite risk measure such as drug use, risky driving and gambling. Males scored much higher on the ImpSS scale, meaning that men were more impulsive than women, and women scored much higher on the N-Anx scale and Sociability scale, meaning women

were more anxious but sociable. The difference on the gambling scale was very significant, and comprised for 22% of the variance on this scale. Those individuals who were prone to taking risks turned out to be heavy gamblers. Sexual risk was predicted by both ImpSS and Agg-Hos. Participants were divided into high, medium, and low general risk-takers. The most salient peak in the profile was seen for males in the ImpSS, and those males who scored higher on this scale were more apt to take sexual risks. Both high and middle male risk-takers scored average on Agg-Hos, meaning they were not that aggressive in personality. The low scores of the low risk-takers account for the significant overall difference. By this we can conclude that the low risk-takers are less impulsive than those who scored high in impulsivity, rather than the high risk-takers being more aggressive. When one looks at the sociability scale, the high risk-takers are a bit above average on this trait, but the low risk-takers are significantly more introverted and unsociable (Zuckerman & Kuhlman, 2002).

In this study, the authors state their belief that in a college population, parties where there is heavy drinking and/or drug use are often places where sexual encounters often originate. They believe that risky sexual behavior is a part of this complex, and that the disinhibiting effects of alcohol and other drugs most probably play a large role in this sexual risk-taking, like having

unprotected sex with someone casual. The authors found only a superficial relationship between risky driving and gambling, and substance abuse/sex core of the risk-taking factors. Gambling was not related to risk-taking among women, but it was related to drinking and risky sex in men (Zuckerman & Kuhlman, 2002).

General risk-taking could be predicted by three of the ZKPQ personality scales: ImpSS, Agg-Hos, and Sociability. Sensation-seeking and impulsivity in risky behaviors was correctly predicted and mentioned in previous research. However, sociability was positively related to all of the risk-taking activity in general, and in particular, drinking, but this was negatively related in previous studies by Caspi et al (1997). This could be because the populations studied were different. To further understand why personality predicts risky behavior, Zuckerman & Kuhlman (2002) looked into this further with regard to the psychobiology of personality and risk-taking, specifically, common factors at the genetic, neuropsychological, psychopharmacological, and psychophysiological levels.

PSYCHOBIOLOGY OF RISK-TAKING

Zuckerman & Kuhlman (2002) describe sensation-seeking as follows: “the seeking of novel situations and the willingness to take risks for the sake of such stimulation”. The authors believe that the species of hominids are highly sensation-seeking. They were hunters and had to move from territory to territory for new resources, and this entailed great risk. Going into new environments meant taking chances because there were dangers from unknown elements in new areas. Because this risk-taking was of benefit to the community, it had positive rewards and was therefore pleasure inducing. There are variations in this trait of sensation-seeking. This may be a function of the high level of assertive mating based on this trait. A twin study was done with twins who were separated at birth and raised in different environments. This yielded the same heritability (59%) and correlation between identical twins either raised together and apart. The studies of sensation-seeking of twins raised together in their families yielded a heritability for the broad trait of .58. There was no effect of shared family environment, which means that similarities were due to genetic reasons and not social modeling and reinforcement. However, because we tend to choose our friends and social contacts based on trait expressions that we

have in common, this specific social environment may have some influence in shaping the sensation-seeking trait, and is influenced by genetic factors because of choice of commonalities in behavior and personality (Zuckerman & Kuhlman, 2002).

Heritability of sensation-seeking was found to be at the high end of personality traits. These ranged from .3 to .6, and the mean was around .4. Extraversion traits ranged around .4. Aggressiveness and agreeableness were opposing traits and disagreeing did not necessarily mean being aggressive. A twin study of aggressive antisocial behavior in twins was done by Eley (1997), who found that genetic factors could be attributed to 65% of the differences in risk-taking type of behavior. The rest was due to a different environment. Therefore, it was concluded that there is a high degree of genetic influence on at least two of the three personality factors that influence risk-taking. Little evidence was found for influence of a shared environment (Zuckerman & Kuhlman, 2002).

Genetic research has come up with ways to identify loci on the DNA and specific genes which are linked to psychopathology and personality traits. The first study at the molecular level uncovered an association between a gene and a personality trait, specifically, that there was a relationship between the D4 dopamine receptor (D4DR) exon III, and the

trait of novelty seeking. This study was done by Ebstein et al (1996). Four out of seven ensuing studies have confirmed this link. The Tridimensional Personality Questionnaire by Cloninger (1987) measured novelty seeking, and is highly correlated (r=.68) with Impulsive Sensation-seeking scale from the ZKPQ. The form of the D4DR was also found to be associated with sensation-seeking and heroin abuse/addiction, and has also been found to be characteristic of men who have had bisexual experiences than those who are exclusively homosexual or heterosexual. This gene is also related to pathological gambling (Zuckerman & Kuhlman, 2002).

Biochemistry

Work with rats allows for direct experimentation on the central neurochemical functions, using selective chemical or neural lesioning, electrical or chemical stimulation of certain areas of the brain, and response measures in those areas. Zuckerman (1984, 1991) believed that we could try to understand the psychobiology of personality by a compilation of findings from human correlational, experimental, and psychopathology research, and experimental and correlational studies of other species which use animal models for human personality traits and psychopathology.

Monoamine Oxidase

MAO is an enzyme involved in the catabolic degradation of the monoamine neurotransmitters. In other words, it breaks them down before it can be stored in the neuron or synaptic space, and by doing so, regulates the levels of neurotransmitter by balancing production and disposal. MAO has two forms, A and B. Humans have mainly MAO-B, and the studies rely mostly on MAO-B derived from blood platelets. These may not be the same enzymes as MAO-B in the brain. However, it has been found that drugs that inhibit MAO-B in the brain also play in inhibitory role on MAO-B found in the blood. In addition, many studies have linked platelet MAO-B to personality, psychopathology, and risky behavior, with significant negative correlations between MAO-B and sensation-seeking. Other studies, one in particular by Zuckerman (1994) have found a similar relationship with extraversion. MAO-B has been found to be a very reliable biological trait which changes slowly with increased aging. When relating sensation-seeking to age, it has been found that MAO is lowest in adolescence and increases with age in the brain and blood. Women have a higher level of MAO at every age, and sensation-seeking is higher in men than in women (Zuckerman & Kuhlman, 2002).

Low levels of MAO-B have been linked with tobacco, drug, and alcohol use, as well as criminality. Over one third of male students with low

MAO had convictions for more serious crimes than traffic violations. Those with high MAO had a much lower percentage of admitted convictions for serious offenses. Zuckerman and Kuhlman, (2002) showed the association of low MAO levels and different areas of psychopathology. These disorders, including high sensation-seeking, are characterized by disinhibition, except for schizophrenia. Low MAO levels were found in the relatives of alcoholics and those who had bipolar disorder, even if they did not have symptoms of these disorders themselves. This indicates that low MAO is genetically linked to disorders, and is not a state-dependent reaction to the disorder, or the drugs used to treat it. The MAO levels in bipolar stay the same despite the clinical phase of the disorder. A gene has been found underlying MAO-B, which is under complete genetic determination (Zuckerman & Kuhlman, 2002).

In another study of monkeys, it was found that both females and males with low MAO were more active and social, and played longer than those with high MAO. The monkeys with low MAO were also more sexually active, and were more domineering and aggressive. MAO-B is consistently linked to sensation-seeking, sociability, disinhibition, and impulsivity in personality, psychopathology, and comparative behavioral studies. It is important to note that human risk-taking behavior in several

areas, including sexual risk-taking, is linked to low MAO levels. MAO influences behavior through enzymatic actions on the monoamine neurotransmitters, although it is not active in itself. The question is, which neurotransmitters are influenced by MAO, and how does this affect risk-taking behavior (Zuckerman & Kuhlman, 2002)?

Monoamines

Several studies have suggested that brain monoamines, such as dopamine, serotonin, and norepinephrine, underlie behaviors such as approach, inhibition, and arousal. In addition, they are thought to influence personality traits like sensation or novelty seeking, impulsivity, constraint, neuroticism, and anxiety. The theories differ in terms of basic dimensions of personality, and the relationship between specific monoamines and behavioral and personality dimensions. Zuckerman (1995) developed a biochemical model which included traits thought to be influential in risky behavior: sociability and impulsive unsocialized sensation-seeking, and focuses on neurotransmitters, hormones, and enzymes, while excluding the intermediate levels of psychophysiology, emotions and cognitive-behavioral traits. Three basic behavioral mechanisms and their underlying biological bases were defined in a simplification of literature on the functions of the brain monoamine systems:

(1) An approach mechanism based on the mesolimbic dopamine system;

(2) A behavioral inhibition mechanism mediated by the serotogenic system originating in the medial raphe nucleus and ascending to the limbic and neocortical brain structures;

(3) An arousal system as a function of the dorsal segmental noradrenergic system which originates in the locus coeruleus and ascends to the structures of the limbic system and the entire neocortex.

The approach mechanism is facilitated by gonadal hormones, and inhibited through the catabolic action of MAO-B on dopamine, a neurotransmitter. It has been suggested that MAO-B may be more closely tied to the regulation of dopamine, and MAO-A may be more influential in the regulation of serotonin and norepinephrine, based on research on selective MAO inhibitors by Murphy, Aulakh, Garrick, & Sunderland, (1987). Endorphins and GABA (gammaaminobutyric acid) inhibit the dorsal ascending norephinephrine system, which is potentiated by the enzyme dopamine beta-hydroxylase (DBH). Sociability is thought to be a function of the strength of the approach mechanism, anxiety a function of the arousal mechanism, and impulsive unsocialized sensation-seeking a combination of a strong approach and weak inhibition and arousal systems.

This model also shows interactions between the basic behavioral mechanisms and the three neurotransmitters systems at both mentioned levels. Negative correlations were found between sensation-seeking and norepinephrine in the CNF and DBH in plasma in a study by Ballenger et al, 1983). Eysenck's psychoticism (P) scale correlated negatively with CSF 5-HIAA, which is the metabolite of serotonin, and confirms the theory that serotonin mediates the capacity for inhibition and impulsive sensation-seeking, and that a deficit in this neurotransmitter increases the risk for such behaviors. Further evidence for the deficit in inhibitory control due to weak serotogenic systems has been confirmed from studies of psychopathology, where there are low levels of serotonin or its metabolite 5-HIAA in the CSF of those with antisocial and impulsive personality disorders in adults. Direct animal experiments in the comparative literature helps us in understanding this process. Other studies found that serotonin depletion in rats increased predatory and shock induced aggression, and made all organisms more prone to react impulsively and ignore threats of punishment in going after rewards. Dopamine was found to be the accelerator in the drive to risky behavior, and serotonin was found to inhibit this. Sensation-seeking is tied to novelty seeking, and was identified in rats by such behaviors as exploration activity in open areas, or novel choices in a maze.

Inbred strains and subspecies had different behaviors, suggesting a genetic influence on these traits. Studies attempted to answer two questions:

(1) Is there a relationship between sensation-seeking and susceptibility to drug reinforcement?

(2) Do new stimulation and drugs act through the same biological reward mechanism?

Studies have found that rats who were “high responders” to new situations were also more susceptible to reinforcement from drugs which are abused, and self-administered drugs more rapidly than the “low responders to novelty”.

It has been found that extracellular levels of dopamine in the nucleus accumbens (NA) and other areas of the mesolimbic dopamine system are increased by amphetamines, cocaine, nicotine, morphine, and alcohol. Dopamine antagonists block novelty seeking in rats, and the destruction of the mesolimbic dopamine system interrupts novelty-seeking behavior. Novelty exposure was also found to increase dopamine release from the NA, which suggests that new situations and stimuli, as well as drugs, are rewarding, and act through a common biological mechanism. The high novelty reactive rats had high levels of dopamine activity in the NA both under basal conditions, new situations, or stressful stimulation.

Augmenting or reducing the cortical evoked potential (EP) in response to increased stimulus intensity has the best replicated results related to sensation-seeking in humans (Zuckerman & Kuhlman, 2002). "Augmenters" tend to be high sensation seekers, particularly those who have low inhibition, and also tend to be more impulsive, and "reducers" tend to be low sensation seekers (Zuckermann & Kuhlman, 2002). Neurochemical stress effects are relevant to theories on the role of neurotransmitters and hormones in impulsive sensation-seeking, and it was found that under stress, the reducers show increases in serotonin and corticotropin releasing factor in the hypothalamus, and more adrenocorticotropic hormone (ACTH) from the pituitary, which describes the activation of the hypothothalamic-pituitary-adrenocortical stress pathway. The augmenters showed less stress hormones, but increased dopamine release from the prefrontal cortex. It might be the dopamine reactivity that explains their capacity to show active avoidance behavior rather than immobilization in the face of stress. It also may be what makes them more impulsive when facing risk/reward situations and less reactive in these situations as well (Zuckermann & Kuhlman, 2002).

This study has shown that there is a relationship between personality and risk-taking, and that risk-taking behaviors in different areas can be generalized upon, especially in the area of substance abuse and sexual risk-

taking. Three of the five personality traits are related to general risk-taking behavior, and these are impulsive sensation-seeking, aggression, and sociability. All five personality traits are measured by the ZKPQ. It was found that neuroticism-anxiety and activity are not related to risk-taking, that men engage in risky behaviors more than women, but that this is mediated by ImpSS, the trait that is predictive of smoking and drug use. Genetics play a role in the personality traits associated with risk-taking, and the environmental influences are usually not of shared family type. MAO has been found to play a role in sensation-seeking. Those with low MAO are high sensation seekers, have different disinhibitory types of disorders, and are found to be involved in an assortment of risky behaviors such as smoking, drinking, drug use, and criminal activities. MAO studies indicate an involvement monoamine neurotransmitters such as dopamine, in risk-taking behavior, and dopamine is also linked to certain personality traits. The dopamine receptor gene is related to novelty (sensation) seeking, which indicates the involvement of this neurotransmitter in sensation-seeking behavior. It was also found that dopamine mediates approach and impulsive tendencies in various species and humans, and serotonin seems to inhibit certain behaviors. The interaction of these two neurotransmitters may

balance the reward and avoidance of punishment, along with enzymes such as MAO (Zuckerman & Kuhlman, 2002).

Novelty seeking is genetically influenced, and a biological trait, according to the studies on humans, rats and mice. It is also related to susceptibility to drugs, and influenced by the mesolimbic dopaminergic system's reactions and levels (Zuckerman & Kuhlman, 2002).

Hans Eysenck (1916-1997) worked extensively for over fifty years using clinical and experimental evidence to determine the main dimensions of personality. His "Big Three" model of personality is still used extensively today. Eysenck had three broad traits which explained risk-taking behaviors:

1. Extraversion vs. Introversion;
2. Emotional Stability vs. Neuroticism;
3. Psychoticism vs. Humaneness;

Each of these broad dimensions of personality is comprised of smaller traits, which explain extraverts, for example, being sociable, assertive, with a lot of energy for daily tasks (activity). Personality traits are 50% genetically determined (nature), and the other difference in personality traits is due to socialization, or the way we are brought up (nurture) (Llewelyn, 2003).

An increasing amount of research indicates that risk takers tend to be higher in the narrow “Sensation-seeking” trait, which is a small element of the broader Psychoticism vs. Humaneness trait. Marvin Zuckerman was instrumental in developing the theory of Sensation-seeking in the 1950’s, and a part of his studies is mentioned above. The risk takers are high Sensation Seekers, who seek out exciting, novel and intense new experiences. The studies involving identical twins showed that a large proportion (60%) of Sensation-seeking is genetically determined, and interesting new studies are identifying the specific genes that regulate this need, and the neurotransmitters and enzymes associated with the initiation of such behavior. The deoxyribonucleic acid (DNA) double helix is responsible for the transmission of hereditary characteristics, and may contain genes which are related to the willingness to take risks (Llewellyn, 2003). As we already noted in this paper, on average men tend to be higher sensation seekers than women, and sensation-seeking declines with age, suggesting a decline in a neurotransmitter. This explains to a certain extent the potentially fatal risks young men take. This does not mean to say that women are not sensation seekers. Many women are, and engage in high risk activities, such as some sports, and take health risks such as smoking and binge drinking (Llewellyn, 2003).

Zuckerman proposed that there are four sub-dimensions to the Sensation-seeking trait:

(1) "Thrill and Adventure Seeking", which is the willingness to take risks and is related to the participation in high risk sports;

(2) "Experience Seeking", which relates to the need for novel and stimulating experiences and is associated with al types of risk-taking, including sexual;

(3) "Disinhibition", which is related to a willingness to take social risks and engage in risky behaviors that could endanger one's health, such as binge drinking or unprotected sex;

(4) "Boredom Susceptibility", which is related to an intolerance for the same monotonous events in one's life.

This may lead us to conclude that different types of risk-taking are associated with a universal "risk-taking personality" (Llewellyn, 2003). However, as we have or will see in this paper, there are many factors involved in risk-taking. It is known that the perception of risk triggers a cascade of physiological changes that are experienced as high arousal and anxiety which is not pleasant. This means that some people may be motivated to avoid risks. Although we have evolved as a species to take risks in order to survive, some people are bigger risk takers than others. It is

believed that our own DNA is likely to contain genes that influence our risk-taking behaviors. Personality traits lead some people to take greater risks than others, and all types of risk takers tend to be higher in the Sensation-seeking personality trait. Beyond this, the psychological profiles associated with different kinds of risk-taking vary.

Other studies examined the relationship between sensation-seeking behaviors and two hormones, testosterone and cortisol in male and female college students. Hormone levels were hypothesized in Zuckerman's sensation-seeking scale. As expected, males scored higher on the scale than females. But the data failed to support the generally accepted positive relationship between testosterone and sensation-seeking for either sex. Instead these results support the existence of significant inverse relationship between cortisol and sensation sensation-seeking in men, but not in women. Gendered social norms and expectations are likely to be partly responsible for this effect (Rosenblitt, 2001). Yet in another study of a large sample of male veterans, positive associations between testosterone and risky behaviors were found, such as gambling, alcohol use, and multiple sexual partners (Dobbs & Morris, 1990).

SENSATION-SEEKING AND SEXUAL RISK-TAKING

Unsafe sexual practices, vandalism, truancy, substance abuse, and dangerous driving occur frequently in adulthood as well as in adolescence. There are two psychosocial predictors of problem behaviors in emerging adults, and one of these, sensation-seeking, is a biologically based dimension of individual differences. Peer pressure, the other predictor is a reflection of the social environment (Bradley & Wildman, 2002). Sensation-seeking is a personality factor that shows a person's need for novel, varied, and complex experiences (Zuckerman, 1979). The sensation seekers are uninhibited, impulsive and non-conforming, and have a great need for independence and change. Sensation-seeking has been linked to problem behaviors, and is correlated with illegal drug use, vandalism, sexual behaviors, and reckless driving in college students (Arnett, 1996). When studying people in their twenties, Arnett (1996) found sensation-seeking was associated with theft, vandalism, risky sexual practices, drug use, and dangerous driving.

Peer influence was studied due to past evidence of its involvement in adolescent problem behaviors, and is related to problem behaviors in emerging adults (Bradley & Wildman, 2002).

Arnett (1996) and Greene (2000) showed the considerable potential for overlap in the definition and measurement of sensation-seeking and risky or reckless behaviors. Bradley and Wildman (2002) investigated the effects of sensation-seeking and peer pressure on emerging adult risk and reckless behaviors. They found that when faced with antisocial peer pressure, high sensation seekers took extreme reckless actions to the limit, because they perceived the pressure in a positive manner, as a "dare", and had no fear of upsetting adults or going against conventional standards. However, low-sensation-seekers found the pressure from peers to go against convention upsetting, and anxiety provoking. They resisted this pressure. Bradley and Wildman (2002) correctly predicted that peer pressure and sensation-seeking tendencies act synergistically, thereby producing an effect on reckless behavior, which tended to be more than the sum of their parts. However, antisocial peer pressures did not interact with sensation-seeking when predicting risk-taking behaviors. The pressure from one's peers to act unconventionally or antisocially were predicted to influence risky behaviors in ways that were linked (Bradley & Wildman, 2002). There were strong correlations between age and sensation-seeking, and the older the member of the sample surveyed, the more they engaged in sensation-seeking. It was also found that the less education a person has, the more likely they were to

engage in risky and reckless behaviors. The more people wanted to feel socially desirable, the less they would engage in sensation-seeking, be influenced by peer pressure to do so, and reckless behaviors. This indicated a tendency of people to underreport the extent of their sensation-seeking tendencies, antisocial peer involvement, and reckless behaviors so that they would be seen in a socially desirable light. However, both sensation-seeking and peer pressure were correlated with some risky and reckless behaviors in a positive direction, but peer pressure had more impact on behaviors such as sexual risk-taking (Bradley & Wildman, 2002). Further findings indicated high levels of reckless behaviors amongst emerging adults, in the 20-25 year age group, and this may be due to financial status, access to sexual partners, alcohol and other drugs. It may also be due to less parental monitoring that accompany these age groups. Current findings emphasize antisocial peer pressure as a continuing, and critical influence on these behaviors well into the 20-25 year age group and perhaps beyond.

Certain personality factors are related to sexual risk-taking in gay men, and these are explored by Bancroft et al (2003). Most studies mention "sensation-seeking" and the relationship to sexual risk-taking, and this was looked into further by Bancroft (2003), who found evidence of personality factors which he termed "impulsivity", "agreeableness", "neuroticism", and

"conscientiousness", all of which play a role in sexual risk-taking. Two specific aspects of personality were examined by Bancroft et al (2003), which are enduring patterns of behavior. Mood was examined, and is discussed in another section of this paper. Sensation-seeking was the other aspect which was studied. The sensation seeker seeks varied, novel, complex and intense situations and experiences, and is willing to take physical, social, legal, and financial risks in order to have such experiences. The level of sexual arousal may be a risk-triggering factor as well. The fact that decisions are made in the heat of the moment rather than after rational thought attests to this. Sexual arousal and the desire for sexual satisfaction create an urge which can distort one's judgment. However, this part of sexual risk-taking has been difficult to prove, because some people are well able to control their urges in similar situations. If high level of sexual arousal had this much influence on risk management, how could any person practice safe sex? Bancroft's (2003) theory is that there are dual control systems in the brain, which influence sexual excitation and sexual inhibition. These are discussed in further detail in this paper later on. The inhibitory mechanism helps manage risk by reducing if not eliminating sexual arousal when the person is faced with a threat. These individuals must avoid risk in order to stay sexually aroused. Those who lack the adaptive mechanism are

more likely to take sexual risks. The individual who engages in risky sex downplays the risk related to a behavior if he or she has already experienced the behavior without any negative consequences. In this context, sensation-seeking becomes the mediator in the "feedback" between risk management and risk appraisal (Bancroft, Janssen, Strong, Carnes, Vukadinovic, & Long, 2003).

Disinhibition was a strong predictor for all risk patterns, that is, cruising, anal intercourse, casual sex, and number of partners, but for oral sex it was only just significant. Disinhibition seemed to have relevance to sexual risk-taking, and can be seen as a measure relating to permissive sexual attitudes.

Again, sexual inhibition was key in moderating sexual risk-taking.

The Seth C. Kalichman and David Rompa Center for AIDS Intervention Research (CAIR) Medical College of Wisconsin (1995) reliably correlated scales of sensation-seeking and sexual compulsivity in gay man and inner city lower income men and women. These scales were related to a propensity toward a range of sexual practices, which included frequent episodes of unprotected sexual intercourse and multiple partners, and this is consistent with theories of sensation-seeking. This study also showed that sexual compulsivity was unrelated to novelty and variety in sexual practices,

but linked to lower levels of self-esteem and resistance to using sexual-risk reduction behaviors. There was a difference between gay men and heterosexual samples in that the scales correlated sexual compulsivity with drug and alcohol use only in the gay population, and sexual compulsivity was related to different sexual practices only among heterosexuals. The sensation-seeking and Sexual Compulsivity Scales were reliable, valid, and useful in predicting sexual risk-taking behaviors in this study (CAIR, 1995).

Zuckerman (1983) believed that sexual practices that put people at risk for HIV infection are a part of sensation-seeking, which he defined as follows: "a trait defined by the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experiences". Sensation-seeking also includes thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility. Zuckerman (1983) showed in other studies that high sensation seekers seek out and enjoy sexual experiences with many different partners than low sensation seekers, and this may hence explain high sexual risk-taking behavior which is maintained despite the risk of HIV exposure and infection (Zuckerman, 1983).

On the other hand, sexual compulsivity is seen as persistent, repetitive, intrusive, and an unwanted urge to do certain acts, frequently as a

routine or as a ritual, and involves a focused and intense need to meet sexual needs. It also involved sexuoerotic preoccupations, and people with sexual compulsion have traits of hyperphilia and erotomania. At the root of sexual compulsion there are obsessive and repetitious thoughts, and rigid behaviors. Therefore, this may place some individuals at risk for HIV infection (CAIR, 1995).

Kalichman et al (1994) developed the Sexual Sensation-seeking and Nonsexual Experience Seeking Scale, and the items measured sensation-seeking related to sexual behaviors and sensation-seeking in general (CAIR, 1995). Kalichman and colleagues (1994) also used the Sexual Compulsivity Scale, which consisted of items reflecting obsessive preoccupation with sexual acts and encounters. They suggested that these scales may be useful in HIV prevention programs, and did two studies. Study 1 examined the scales in a sample of gay and bisexual men, and Study 2 with African American men and women. The associations of sensation-seeking and sexual compulsivity with a penchant for multiple sexual acts were investigated, as well as intentions to change sexual risk behaviors. If sensation-seeking were related to a wide range of sexual activities and were compatible with risk-reduction intentions, there would be construct validity. Sexual compulsivity would show a resistance to risk reduction and not

related to the thought of a pleasurable experience due to multiple sexual practices. Study 1 examined the reliability and validity of the Sensation-seeking and Sexual Compulsivity Scales in a sample of same-gender sexually active men in a community. Thirty five percent of these participants stated that they had engaged in unprotected anal intercourse in the past three months, and of these, fifty percent reported two or more unprotected anal intercourse partners, and fifteen percent reported three or more partners. A little more than half of the men who had intercourse in the past three months used a condom. Forty eight percent of the men used alcohol before sexual activity, and thirty percent used cannabis, cocaine, or nitrite inhalant prior to sex. Eighty six percent were tested for HIV antibodies; sixty eight percent were HIV-negative, twenty eight were HIV-positive, and four percent did not know their HIV test results (CAIR, 1995).

Self-esteem was also measured, and participants completed the 10-item Rosenberg Self-Esteem Scale (Rosenberg, 1965; Wylie, 1989).

Participants completed self-report measures of sexual behaviors, assessing frequencies of insertive and receptive anal intercourse with another man without the use of condoms They also reported on the number of men they had unprotected anal intercourse with over that same time period of three months. Insertive and receptive unprotected anal intercourse was

summed up to give a single index of unprotected anal intercourse. Alcohol, cannabis, cocaine, and nitrite inhalant (poppers) use with regard to sexual encounters were assessed over the past three months. Participants reported the number of times they used alcohol and other drugs prior to having sex, whether or not they engaged in protected or unprotected sexual intercourse.

Participants also reported on the sexual pleasure and affinity, rating the perceived pleasure of seven sexual behaviors related to HIV infection along a 5 point scale. The range was from 1 (Not at all pleasurable) to 5 (Extremely pleasurable). These behaviors included receptive and insertive anal intercourse with or without protection such as condoms, mutual masturbation, and insertive and receptive oral intercourse.

The participants were instructed to imagine a situation where they were tempted to engage in unprotected intercourse, to assess HIV-risk avoidance intentions. They were asked to respond to the six risk-reduction intention items, which were telling a partner to practice safer sex, switching from risky to safer behaviors, avoiding substance use before sex, and refusing to engage in unsafe sex. The participants responded to an 8-point scale ranging from 1 (Definitely will not do) to 8 (Definitely will do).

Correlations were made between Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual Compulsivity, and pleasure was rated on seven sexual practices, which were:

(1) Insertive anal intercourse without a condom;

(2) Receptive anal intercourse without a condom

(3) Mutual masturbation;

(4) Insertive anal intercourse with a condom;

(5) Receptive anal intercourse with a condom;

(6) Insertive oral-genital sex;

(7) Receptive oral-genital sex.

The Sensation-seeking Scale correlated with frequencies of alcohol and drug use prior to sexual engagement, unprotected anal intercourse, and number of unprotected anal intercourse partners. The Nonsexual Experience Seeking Scale was related to substance use in relation to sex, and also related to number of unprotected anal intercourse acts and partners. Sexual Compulsivity was associated to substance use and high-risk sexual acts, and was associated with Self-Esteem inversely (CAIR, 1995).

With regard to Sexual Pleasure Ratings, correlations were done between Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual Compulsivity, with ratings of perceived pleasure the seven sexual

practices. The results demonstrated that Sexual Sensation-seeking, and to a lesser degree, Nonsexual Experience Seeking, correlated with a range of unsafe and safe sexual practices, but Sexual Compulsivity did not relate to a variety of sexual pleasures. (CAIR, 1995).

There were correlations between the Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual Compulsivity Scales, and six behavioral intentions to reduce the risk for HIV infections. Sexual Sensation-seeking and Nonsexual Experience Seeking did not consistently show patterns of association with risk-reduction intentions. Sexual Compulsivity was inversely associated with all of the six intentions, which suggests that men with sexual compulsions were the least likely to reduce their risk for HIV infection (CAIR, 1995).

It can be concluded from this study that Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual Compulsivity Scales were reliable and correlated with meaningful constructs as expected. Sexual Sensation-seeking and Sexual Compulsivity Scales have different patterns of association with HIV-risk factors among gay men, and sensation-seeking infers a range of sexual behaviors at different levels of risk for HIV infection (CAIR, 1995).

The second study, Study 2, used the same versions of the Sexual Sensation-seeking, Nonsexual Experience Seeking, Sexual Compulsivity, and Self-Esteem Scales administered in Study 1. However, the participants were men and women from inner city social welfare and substance use treatment agencies. The majority were African American (95%). The remainder were white (5%). They were of low education, and had low income. Thirty-six percent reported being in monogamous sexual relationships for at least one year, and ninety percent had at least one child. Sixty-two percent reported unprotected vaginal intercourse, and eleven percent unprotected anal intercourse in the past three months. An average of 34.6% sexual acts were protected by condoms. Fifty-six percent of the men and twenty three percent of the women had two or more sexual partners in the previous three months. Twenty-four percent of the participants had shared needles for drug use, forty one percent had an injection using drug sexual partner, and fifty three percent had had one sexually transmitted disease (STD). Fifty one percent used alcohol prior to having sex, and forty two percent used the drugs prior to having sexual intercourse in the past three months. Seventy two percent were tested for HIV antibodies. Seventy eight percent were HIV-negative, 3% were HIV-positive, and 19% did not know their HIV test results (CAIR, 1995).

The same versions of the scales in Study 1 were used. The Sexual and substance use behaviors used the same measures but revised for use with men and women. The six sexual pleasure/affinity and six HIV-risk avoidance intention items were included but content was changed to reflect heterosexual practices (CAIR, 1995). These were:

(1) Vaginal intercourse without a condom;

(2) Anal intercourse;

(3) Masturbating partner;

(4) Vaginal intercourse with condom;

(5) Giving oral sex to partner;

(6) Receiving oral sex from partner.

It was shown that men and women significantly differed on the Sexual Sensation-seeking Scale. Men scored higher than women in gender differences in Sensation-seeking and Sexual Compulsivity. However, men and women did not differ on the Nonsexual Experience Seeking Scale (CAIR, 1995). The Sexual Sensation-seeking and Sexual Compulsivity Scales correlated positively with the frequency of unprotected sexual intercourse and number of sexual partners. Sexual Compulsivity negatively correlated with Self-Esteem and positively correlated with frequencies of intercourse and sexual partners. All three measures were not related to

substance use prior to sexual acts in this sample. Correlations between Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual Compulsivity with perceived pleasure ratings of the six sexual behaviors indicated that Sexual and Nonsexual Sensation-seeking correlated with a range of unsafe and safe sexual practices. Sexual compulsivity was linked to fewer sexual practices. We could conclude that sensation-seeking and sexual compulsivity were related positively to pleasure in a range of sexual practices (CAIR, 1995).

The correlations between the Sexual Sensation-seeking, Nonsexual Experience Seeking, and Sexual predicting HIV-risk behaviors showed that sensation-seeking correlated with a range of sexual practices, and that sexual compulsivity inversely correlated with self-esteem and had a positive correlation with resistance to HIV-risk reduction. Therefore, sensation-seeking and sexual compulsivity appear to be reliably and validly assessed using these three brief scales in both studies (CAIR, 1995).

There were slight but important differences in Sensation-seeking and Sexual Compulsivity Scales in the samples of gay men and inner city low-income men and women. Gay men showed a correlation in their alcohol and drug use behavior and sexual and nonsexual sensation-seeking. There was no correlation for this for inner city men and women. Because some of this

population came from community agencies, which serve people with substance abuse disorders, the variables may have been minimized here. With inner city men and women, sexual compulsivity was correlated with a wide range of sexual acts, which also differs from the findings in gay men. These findings may reflect the heterogeneity of the heterosexual sample. Gender differences were observed as well, with women being lower sensation seekers than men. Sensation-seeking among inner city men and women was related to greater resistance to efforts to reduce HIV risk than in gay men. Sexual orientation is a factor, as well as gender. Most importantly, sensation-seeking is a multidimensional construct, and needs extensive measures to assess its subcomponents (Zuckerman, 1984). These two studies did not discern the relationship of specific aspects of sensation-seeking and sexual compulsivity to sexual risk behavior (CAIR, 1995).

THE RELATIONSHIP BETWEEN SEXUAL COMPULSIVITY AND SEXUAL RISK-TAKING

Recent studies indicate that sexual compulsivity is related to sexual risk-taking, which may lead to HIV infection. The definition of sexual compulsivity is "an insistent, repetitive, intrusive, and unwanted urge to perform specific acts often in ritualized or routinized fashions" (Kalichman & Rompa, 1995, p. 587). The participation in these activities is thought to be persistent and escalating, and may result in negative consequences for self and others. It is still debated whether sexual compulsivity is a "pathological condition", but it has been studied and measured, according to Carnes & Adams (2002), in psychological, sexological, and public health research. Kalichman et al. (1994) focused on the personality traits such as sensation-seeking, and its relationship to sexual risk-taking behaviors. Recent attention to sexual compulsivity sprung from an interest in sensation-seeking, as the continuing cause for high risk behaviors, in spite of the potentially fatal or at least harmful consequences (Dodge, Reece, Cole & Sandfort, 2005).

The term sexual compulsivity has been used interchangeably with sexual addiction, sexual impulsivity, and hypersexuality, and it has been

measured and studied as a distinct theory in relation to HIV risk behavior using the Sexual Compulsivity Scale by Kalichman & Rompa (1995). The SCS tries to assess underlying compulsive personality traits that could be tied to a resistance to change risky sexual behavior. The instrument assesses participants' response to whether they agree or disagree to ten statements related to compulsive sexually intrusive thoughts, preoccupations, and behaviors. These were derived from a 12-step self help manual for people in recovery from "sexual addiction" in a clinical setting. Responses were given on a scale that ranged from 1 (not at all like me) to 4 (very much like me). Findings showed that the higher levels of compulsivity were positively related to psychological constructs such as sexual self-control, self-esteem, and loneliness. However, this sample did not show significant links with risky sexual behavior as to the frequency of engaging in these behaviors.

Kalichman & Rompa (2001) did a study which found relationships of sexual compulsivity and more frequent sexual behaviors such as the numbers of sexual partners, and other studies have related sexual compulsivity to several indicators of psychopathology, such as trait anxiety, obsessive-compulsiveness, pessimism, depression and borderline personality disorder. In summary, the SCS has been shown to be reliable and valid in several samples in people who can be classified as high risk for HIV,

including MSM, those who abuse substances, and inner-city low –income men and women. Several studies have shown that compulsivity was significantly related to sexual risk-taking behaviors in the samples of these populations. This present study was used to determine the reliability and validity of the SCS in heterosexual college students, one of the several populations that need to be explored. It was determined that sexual compulsivity was related to more frequent sexual risk-taking behaviors and more sexual partners. The associations between sexual compulsivity and select demographic variables were explored as well (gender, age, and ethnicity). Then, it was shown that sexual compulsivity was predictive of sexual risk-taking behaviors with regards to HIV/STD infection. Eight hundred ninety nine college students completed the demographics section, providing information on their age, class standing, size of hometown, and relationship status, gender, sexual orientation or identity, and ethnicity. Sexual compulsivity was measured using Kalichman & Rompa's (1995) Sexual Compulsivity Scale. Sexual behaviors, specifically frequencies of various sexual activities with men and women, as well as number of partners in the past three months were measured. Participants were asked to report how many times and with how many partners they had had sexual activities with. In addition to many sexual activities listed in this study, the authors

chose to study public sex behaviors among heterosexual college students, because prior studies indicated that sexual compulsivity may be related to public sex, but this phenomenon was only examined among MSM engaging in sex in public and commercial sex environments, according to Reece & Dodge (2003). The survey also measured the number of times the participants engaged in unprotected anal, vaginal, and oral sex. Subscales were created to assess risky sex, with regard to possible HIV/STD infection. Men were asked for the number of partners and times for unprotected oral sex and unprotected insertive vaginal and anal intercourse, and women were asked for the number of partners and times for unprotected oral sex and unprotected receptive vaginal and anal intercourse. The participants who responded to the survey were demographically described as 37% men, 63% women, the mean age was 20.2 years, 89% were Caucasian, 5% African American, and the remaining 6% were other ethnicities. These demographics were representative of the student population at the university where the sample was taken. Forty six percent of the participants were currently in an exclusive sexual relationship, 21% were involved in nonexclusive sexual relationships, that is, either having multiple intimate relationships with several different sexual partners, or currently participating in sexual activity with multiple partners but not maintaining an intimate

relationship. Thirty three of the participants were not sexually active. It was found that women were more likely to be in an exclusive sexual relationship than men, who were more likely to be involved in nonexclusive sexual situations. Age and ethnicity did not contribute to any differences in sexual activity. It was found that individuals who reported a broader range of sexual partners and more frequent sexual activity had higher sexual compulsivity scores. A significant relationship was found between public sex activities and sexual compulsivity, and participants who reported a wider range of public sexual activities and frequent encounters were more likely to have higher sexual compulsivity scores. Finally it was found that there was an important association between sexual compulsivity and self-reported sexual relationship status. Participants who reported current involvement in nonexclusive sexual situations were significantly more apt to have higher sexual compulsivity scores than those who had exclusive sexual relationships, and those who were not presently sexually active. Men's mean scores of sexual compulsivity were higher than women's, and there was also a significant relationship between sexual compulsivity scores and age. Participants reported that when they were younger, they were more likely to have had higher mean scores of sexual compulsivity. There were no significant differences in results in levels of sexual compulsivity when

ethnicity was compared (Dodge, Reece, Cole & Sandfort, 2005). In terms of risky sexual behaviors, sexual compulsivity was positively linked to risky sexual behaviors in both male and female participants. The participants who had higher sexual compulsivity scores were more likely to have participated in unprotected oral, vaginal, and anal sex in the last three months. When controlling for demographic variables, the relationship between risky sexual behaviors and sexual compulsivity remained significant. This study demonstrated that sexual compulsivity seems to be a relevant construct for describing high levels of sexual practices with multiple partners in the sample of heterosexual college students, as in studies of high risk individuals and those living with HIV. The SCS was shown to have high reliability, and there was support for the results which showed that individuals who reported higher frequencies of partner sex, solo sex, and public sexual activities were more apt to have higher sexual compulsivity scores, and participants who reported involvement with multiple sex partners, also had higher sexual compulsivity scores than those who reported being involved exclusively in a sexual relationship and those who had no sexual relationship at the moment. Relationships were also found between sexual compulsivity, age and gender, and men and women who had higher scores on the SCS also reported more frequent unprotected oral, vaginal, and anal sex in the past three months.

This study is only limited as to representation because the sample in the study may not truly reflect the general population with similar demographics, if they are not in college. In this study, sexual compulsivity was a predictor of unprotected sexual activity. But it is still not understood how sexual compulsivity functions in relation to sexual risk. As previously noted in this paper, Zuckerman and Kuhlman (2000) presented a "biosocial model" in order to explain sexual and other kinds of risk-taking, and they hypothesized that risk-taking is related to impulsive sensation-seeking, aggression, and sociability, as well as other biological traits which are linked to general risk-taking and sensation-seeking personalities. As it stands, this study showed that the SCS was more highly correlated to solo sexual activities rather than partner or public sex activities, that is, it seems that sexual compulsivity is more successful in predicting masturbatory behaviors than partner or public sex behaviors (Dodge, Reece, Cole & Sandfort, 2005).

Given that participants scored higher on the SCS at a younger age, and men scored higher on the SCS, this may mean that the SCS may have to take into account sexual desire and sexual exploration as well. Sexuality research suggests a stronger sexual desire in men. These differences are thought to be due to not only biological differences between men and women, but also due to the numerous and complex gender-related socio-

cultural factors that contribute to human sexuality, including the roles imposed on males and females and double standards assigned to female sexuality. The differences in SCS due to age represent the differences in human sexual desire during the lifespan, and this may be developmental in nature. During the early college years the interaction of biological and especially social factors, such as dormitory living, mass media, and new opportunities at the university setting level also reinforce the fact that age is linked to sexual desire. These college students have easy access to multiple sexual partners and many sexual opportunities. The college surroundings often encourage and promote a sense of social and sexual exploration among students, and what may be seen as sexual compulsion by some, may actually be normal sexual exploration by the college student. The different forms of sexual expression may be unique to the university students themselves; therefore, future studies are needed to see if the individuals who scored higher on the sexual compulsion scales also had negative health outcomes. This way, appropriate education and intervention efforts can be created.

THE ROLE OF SEXUAL INHIBITION AND SEXUAL EXCITATION IN MEN

In a survey by Jansse, Vorst, Finn and Bancroft (2002), the individual differences in the propensity for sexual inhibition and excitation were measured, using the Sexual Inhibition and Sexual Excitation (SIS/SES) scales. Previously, questionnaires focused on sexual response patterns rather than attitudes, values, and behavioral tendencies. This more recent study examines the neurobiological mechanisms underlying these personality traits. There has been more research on the excitatory system, and there was a need to substantiate the evidence of the inhibitory mechanisms within the CNS. Evidence at this time does not allow the description and anatomic localization of the inhibitory system in the same manner as the excitatory system has been localized and written about, therefore, the theoretical model depends on conceptual systems (Janssen, Vorst, Finn, & Bancroft, 2002).

The SIS/SES questionnaire items were written by a group of researchers affiliated with the Kinsey Institute. A range of examples of two types of sexual situations were defined, one of which would be exciting sexually without any threat involved, and the other would be threatening, involving some kind of risk or danger, or the likelihood of punishment as a

consequence. Then questions were formulated to allow the participant to describe how he would usually respond in each situation, with regard to penile erection or sexual arousal. All questions were directed at the assessing sexual response patterns for that individual.

The Behavioral Inhibition/Behavioral Activation Scales were used as well. This questionnaire explored the extent to which the excitation and inhibition measure would specifically show sexual rather than general activation/inhibition tendencies. The BAS involved three sub-scales: reward responsiveness, where there is a positive response to the occurrence, or at least an anticipation of a reward; drive, showing persistence in the going after desired goals; and fun seeking, showing a desire for new rewards and going after a potentially rewarding event on the spur of the moment. Jansse, Vorst, Finn and Bancroft (2002) theorized that sexual inhibition and excitation are specific, and correctly predicted modest correlations between the BIS/BAS and SIS/SES.

The Neuroticism and Extraversion/Introversion Scales (Eysenck & Eysenck, 1975) were also used. These measured extraversion or positive emotionality, and neuroticism or negative emotionality, and psychoticism or constraint. Eysenck's extraversion and neuroticism were paralleled with impulsivity and anxiety by Gray (1987). These two dimensions are a better

reflection of the two components of behavioral inhibition and activation, and share some common ground with the BIS/BAS. Janssen, Vorst, Finn & Bancroft (2002) expected low to modest correlations with the SIS/SES, and actually got weak correlations between neuroticism and SES and SIS1.

The Harm Avoidance Scales were used. Since it was theorized that inhibition was relevant to risk-taking, with low-inhibition males being more apt to take sexual risks and high-inhibition males less prone to take sexual risks, Janssen, Vorst, Finn & Bancroft (2002) wanted to assess the specifics of these traits by using the Harm Avoidance Scale, which measures a person's likelihood of avoiding or taking risks generally. Recent evidence shows the Harm Avoidance Scale highly correlated with high levels of behavioral inhibition in a study of electrical shock as punishment. It is negatively correlated with thrill and sensation-seeking (Zuckerman, 1994) and with the impulsivity scale of Eysenck (Jannsen, Vorst, Finn & Bancroft, 2002). This scale overlapped with the SIS1 and SIS2, and no negative correlation was found with the SES. This suggests that SES is not only a sexual manifestation of a thrill-seeking or sensation-seeking characteristic.

The Demographic and Personal Information Questionnaire (DPIQ) was used and contained questions on demographic information, sexual preferences, sexual activity/frequency, and sexual problems.

Fisher's (1998) Sexual Opinion Survey (SOS) was used, measuring the tendency to respond to sexual cues along a negative-positive dimension of affect and evaluation, called erotophobia-erotophilia. There was a moderately high correlation between erotophilia/erotophobia and SES. The correlation with SIS2 was weaker and negative, and there was no relationship to the SIS1.

The Sociosexual Orientation Inventory was used. It was predicted that males with a strong tendency for sexual excitation and/or a weak tendency for inhibition would be more promiscuous in their sexual relationships and have more sexual partners than would the males with a weak tendency for sexual excitation and with strong inhibitions. This inventory measures low restriction and high restriction, with low restriction showing a tendency to engage in uncommitted and multiple sexual relationships, and high restriction the tendency to be committed to an exclusive sexual relationship. The SOI was able to predict sexual risk-taking in the sense that unrestricted people were more likely to participate in unprotected, risky sexual intercourse. The SOI was more specific in that it included three questions directly related to sexual risk-taking and were analyzed separately. These were:

(1) How many different partners have you had sexual intercourse with in the past year?

(2) How many partners have you had sex with on one and only one occasion?

(3) How many partners have you had sex with during the past three years without anyone using a condom?

The highest correlation was between the SOI and SIS2. There was also a modest correlation with SES. There was no correlation between SOI and SIS1.

Of the three variables, (3), the number of partners with whom no condom was used, was the clearest indicator of sexual risk-taking. As predicted, the SIS2 correlated with this measure of sexual risk-taking. However, the level in general of risk takers in the sample was not high.

Hays, Hayashi, & Stewart's (1989) Social Desirability Scale was used as well, because some questions had moral significance. With this scale there was a weak correlation between this and the SIS2, which included questions about breaking social norms.

With regard to inhibition, it was found that there are four situations in which the male inhibits the sexual response:

(1) When there is a threat in the sexual situation;

(2) When there is a need to focus on an avoidance response during a nonsexual threat;

(3) When there is impaired fertility, or a distraction from other tasks due to repeated sexual activity and ejaculation within a short time frame;

(4) During times of chronic stress, which results in suppression of reproductive behavior.

Both (1) and (2) involve information processing and cognitive appraisal of threat. A built-in mechanism independent of the environment is involved in (3), the post ejaculatory refractory period, and (4) may involve an unconscious mechanism for controlling population density.

Janssen, borst, Finn and Bancroft (2002) assumed that there is individual variability in the use of such inhibition, and believed that typical levels of inhibition are adaptive, high levels are associated with vulnerability to sexual dysfunction, and low levels associated with an increased level of sexual risk-taking (Bancroft, 2002). The individual variation in the responsiveness of the excitatory and inhibitory systems in males may be due to learning, and is in part genetically determined. In this particular study, most of the evidence relating to inhibition came from males. The individual differences in sexual responsiveness were measured using several instruments, with the theory of dual control of the male sexual response

which involves a balance between central mechanisms of excitation and inhibition (Bancroft, 1999; Bancroft & Janssen, 2000). The specific focus was on psycho physiological response patterns that are usually associated with two types of sexual situations: non-threatening, therefore, most relevant to assessing propensity for excitation, and threatening, relevant to assessing propensity for inhibition. With regard to inhibition, the adaptiveness of this propensity is more recognizable based on the assumption that in specific situations, a certain sexual response would be inappropriate or maladaptive, and inhibition of sexual response is a biological way of dealing with such situations. The maladaptiveness of high excitation proneness in certain situations may depend upon the extent of inhibition proneness which accompanies it. In other words, high excitation along with low inhibition could be a problem in certain situations. High inhibition, or inhibition of sexual response, may be a biologically adaptive way of dealing with dangerous situations. Low inhibition in itself may be maladaptive, especially with regard to reproduction (Janssen, Vorst, Finn, & Bancroft, 2002).

Janssen, Vorst, Finn and Bancroft (2002) studied high inhibition proneness linked with vulnerability to sexual dysfunctions, and low inhibition to sexual risk-taking. Their study found two inhibition factors, the

first assessed situations where the most obvious threat was the expected failure of sexual response; the second was the threat of the expected consequence of sexual response, and not sexual failure. They used the descriptive titles of "Inhibition Due to Threat of Performance Failure" (SIS1) and "Inhibition Due to Threat of Performance Consequences (SIS2) to distinguish the responses based on the threats. The SIS1 pertained more to anticipating failure of response, and this was an internal threat. The SIS2 focused more on external threats, such as the possibility of pregnancy, sexually transmitted diseases, but could also cover a variety of threats such as threat of rejection, humiliation, or betrayal. Janssen, Vorst, Finn and Bancroft (2002) therefore distinguished between a male who typically has high levels of inhibited genital responses (high SIS1), and a situation which is seen to be threatening, leading to increased central inhibition (SIS2). They further expounded on the thought that external threats, related to SIS2, might be reduced with psychological treatment, whereas high inhibition might be more responsive to inhibition-lowering pharmacotherapy, rather than psychological interventions.

The question is at what stage in the developmental process are these traits established? How do genetic factors figure in the equation? Recent developments in techniques for assessing genetic variants of significant

meaning to sexual excitation include dopamine receptor subtypes; with inhibition, serotonin transporter genes are being looked into. This leaves much room for studies of behavioral genetics, molecular genetics and early environmental studies to shed some light on this very important source of individual differences in sexual responsiveness (Janssen, Vorst, Finn & Bancroft, 2002).

AFFECTIVE DISORDERS AND INCREASED SEXUAL RISK-TAKING IN GAY MEN

Typically, it is thought that negative mood states are associated with decreased sexual interest, and to some extent, sexual responsiveness. The mood states most associated with this thought are depression and anxiety. However, recent studies show increased sexual interest and responsiveness related to affective disorders, and in addition, an association between sexual "compulsivity" and negative mood state has been noted, with several studies showing a compulsive use of the Internet for sexual purposes (Bancroft, Janseen, Strong, & Vukadinovic (2003).

The relationship between mood and sexuality in heterosexual men as also explored in another study (Bancroft et al, 2003), and will be discussed later. A greater percentage of men reported a decreased sexual interest when depressed or anxious, but a significant number reported an increase in sexual interest, with the remainder having to change. Qualitative studies show that the relationship between depression and sexuality was more intricate and complex than the relationship between anxiety and sexuality. When men were anxious they used sex more as a mood regulator, a method of reducing the negative arousal or stress, or the anxiety distracted them from sexual

stimuli. Men with depression seemed to have the need for validation through intimate contact, or avoided intimate contact, depending on the personality of the individual.

Based on the dual control model (Bancroft, 1999; Bancroft & Janssen, 2000) where sexual response depends on a balance of excitatory and inhibitory functions in the brain, Bancroft, Janssen, Strong and Vukadinovic (2003) theorized that most men who have normal levels of excitation and inhibition tendencies would probably not become sexually aroused in situations which created negative mood states, because as discussed earlier the negative mood would increase inhibition for sexual responsiveness. But, men who had high excitation levels and low inhibition levels of sexual response would probably respond to sexual stimuli with arousal which in other situations would create negative mood. The SIS and SES were again used in this study. The participants were asked to complete an interview to obtain qualitative data relevant to sexual risk-taking, and also included questions relating to mood and sexuality. They gave a selected age range, patterns of risk-taking, and the impact of mood on their sexuality.

Bancroft, Janssen, Strong and Vukadinovic (2003) used the following questionnaires:

Mood and Sexuality Questionnaire (MSQ). This asked participants to state what happens to sexual interest, as well as their erectile responsiveness, when depressed, and when anxious or stressed.

Zemore Depression Proneness Ratings (ZDPR; Zenmore, Fisher, Garratt & Miller, 1990). This measures the tendency for depression with regard to frequency and severity. Three questions asked how often the participants get depressed, how long the depression lasts, and how deeply depressed they become. The respondents who indicated that they had never been depressed or anxious scored significantly lower on the ZDPR.

Spielberger Trait Anxiety Inventory (STAI; Speilberger, Gorsuch, & Lushene, 1970). This is a frequently used, long-established trait measure for anxiety. Those respondents who said they had never been anxious scored very low on the STAI scores as expected, compared to those who had reported feeling anxious at one time or another.

Sexual Inhibition/Sexual Excitation Scale (SIS/SES; Janssen et al., 2002). This was explained earlier, measuring the propensity for sexual excitation (SES); propensity for sexual inhibition due to the threat of performance failure (SIS1), and propensity for sexual inhibition due to the threat of performance consequences (SIS2). The respondents who said they had never been depressed or anxious scored lower on the SIS1 scale.

Sensation Seeking Scales (Form V; Zuckerman, 1971, 1994). The subscales are “Thrill and Adventure Seeking”, “Experience Seeking”, “Disinhibition” and “Boredom Susceptibility”. The respondents who said they had never been depressed or anxious scored higher on the SSS than the respondents who said they had been depressed or anxious at one time or another.

Demographic and Sexual History Questionnaire. This covered demographics, recent and current health problems, use of medication, sexual orientation, relationship status such as “exclusive” or “non-exclusive”, or “no current relationship”, number of recent sexual partners and number of “one time”, or casual partners in a lifetime, frequency of sexual activity, whether it be anal intercourse, any type of sexual activity with another person, or masturbation, and questions about erectile and ejaculatory problems.

A significant number of men in this study (14%) indicated that they were more likely to engage in risky sexual activity when depressed. This was tied in with not caring about the consequences. The “what the heck” phenomenon is thought to be more common among gay men, and may show a sense of fatalism in relation to sexual risk-taking that has been noted in gay men. But this may also be because it is easier for most gay men to find a

casual partner when they feel depressed than heterosexual men, given that men are generally less inhibited than women about sex.

The increased sexual activity when depressed was reported as a consequence of increased sexual interest but also a need for contact with, or validation from another person. In some cases sex made the person feel better, albeit temporarily.

For some men, anxiety increased their focus on sex, if only to help them relieve the stress by engaging in some form of sexual activity. The SES was associated with the probability of increased sexual interest in anxiety states, but not depression. Zillman (1983) came up with the "excitation transfer" concept, which explains that people with high excitation tendencies and low inhibition tendencies are more likely to transfer the arousal associated with anxiety, to increase the arousal to a sexual stimulus.

Some of the gay men in this study who reported being depressed stated that the mood reduced their concern about risk and erectile failure, and the same applied to those who were anxious.

The problem with this study was that the extent that it can be applied to clinical depression and anxiety. The results of this study are more

relevant to more reactive states of negative mood rather than to a clinical diagnosis.

In a study by Adam, Sears, and Shellenberg (2000), they examined negative self-images and moods. They interviewed their participants, who stated that depression or a negative mood state heightened their orientation to sexual risk-taking, which obscured their considerations for safety. Some of the participants stated that they used sex as a way of escaping from negative feelings. One man stated:

"This was the first time in my life where I, like, with somebody had really let go and we were really just animal about each other. It was just wild…[Unsafe sex has happened] a couple of times in the bathhouse because I've felt very lonely and very sad, really needed affection, and allowed myself to open myself up so much so that I just went beyond my boundaries and my own limitations".

This quote is important because it exemplifies the distance between a sense of responsibility connected to safe sexual practices, and feelings of abandon and freedom that are a part of sex when it is used as a method to escape negative mood states. Escapes from daily life to the ecstatic can be tinted with self-negation, which represents an escape from oneself. Odets (1995) made observations in his private practice that practicing unsafe sex

was a covert or overt attempt to self-destruct. In Adam's (2000) study, one participant could not distinguish between self-destructive intent and his sexual risk-taking:

"I am one of those stupid, even ridiculous people who favors unsafe sex, who promotes safe sex, teaches safe sex to everybody, who always has a condom on himself, but who never uses it, for two reasons….The first is that for quite a while I exposed myself to the dangers of unprotected encounters in order to try to catch AIDS. It was a disguised form of suicide. The second reason was that I considered that it was one of those things that happens, an occupational hazard. If I was going to get it, I would get it. If I didn't, I didn't".

For this particular man, a troubled life of childhood abuse, alcohol and other drug addiction resulted in a general state of unhappiness and a depressed mood state. These could be associated with self-destructive tendencies in general, and engaging in unsafe sex in particular was a part of this pattern.

In another study by Bancroft & Vukadinovic (2004), they mentioned a study by Black, Kehrberg, Flumerfelt, and Schlosser (1997) which linked "out-of-control" sexual behavior and a comorbidity with psychiatric conditions, including a long history of substance abuse (64%), anxiety

disorders (50%), and mood disorders (39%). Researchers are therefore paying more attention to the SSRIs and how these can affect sexual risk-taking behaviors. However, the extent to which these pharmaceutical interventions may benefit individuals in terms of mood improvement or inhibition of sexual response is not known.

What needs reconciliation is the thoughts that most people who experience depression and anxiety also experience a decline in sexual interest and/or responsiveness in these mood states, and the thought that anxiety and depression contribute to risky sex behaviors. Bancroft (2002) studied high risk sexual behavior in both gay and straight men, and found low inhibition when faced with external threat (explained elsewhere in this study as sexual inhibition due to the threat of performance consequences) was predictive of non-use of condoms; during sexual arousal in potentially dangerous sexual interactions, low inhibition reduced the likelihood of using a condom. Bancroft (2004) also measured sexual risk-taking when depressed and this predicted the number of casual partners would be higher but did not predict lower condom use.

In this particular study, seventeen of thirty one subjects reported being more likely to act out sexually when depressed, and nineteen said they acted out when anxious or stressed. Eleven said they acted out sexually when both

depressed and anxious. "Acting out" refers to having sex without thinking about the consequences, which could be risky. One gay man who went on a compulsive cruising binge stated: "I tell myself not to do it, but I do it anyway." Another man stated: "I want to do it, yet I know it's unhealthy for me"(Bancroft, 2002).

PSYCHIATRIC DISORDERS AND SEXUAL RISK-TAKING IN YOUNG ADULT WOMEN AND MEN

A study by Caspi, Dickson, Moffitt, Paul, & Ramrakha (2000) attempted to show the relationship of psychiatric illness to sexual risk-taking. They studied young adults at age 21, in New Zealand. There were 992 participants, 487 of which were women. They measured anxiety, depression , eating disorder, substance dependence, antisocial disorder, mania, schizophrenia spectrum, and measured sexual behavior. It was found that the young adults who were diagnosed with substance dependence, schizophrenia spectrum, depression, and antisocial disorders were more likely to participate in risky sexual intercourse, get an STD, and had sexual intercourse at an early age (before 16 years). Adults with mania reported risky sexual intercourse and got an STD. The researchers above found that psychiatric comorbidity increased the likelihood of sexual risk-taking behaviors , and that there is a clear association between risky sexual behavior and psychiatric disorders. This may indicate a need to coordinate sexual medicine with mental health services in treating people (Caspi, Dickson, Moffitt, Paul, & Ramrakha, 2000).

The onset pf psychiatric disorders and risky sexual behaviors tend to peak in young adulthood, and little is known about the relationship between the two. Both have important health implications. Therefore this study measured psychiatric disorders, using a reporting period of the past year, and assessing the following disorders according the to Diagnostic and Statistical Manual of Mental Disorders, third edition, revised (DSM-III-R): anxiety, including phobias and panic disorder, depression, including major depressive disorder or dysthymia, or both, antisocial disorder, including antisocial personality disorder, residual conduct disorder, or both, mania, and schizophrenia spectrum. The spectrum included participants who responded "yes" to positive symptoms of schizophrenia, which included bizarre beliefs, and sensory perceptions. Any experiences occurring under the influence of drugs or during a major depressive episode were ruled out. The spectrum for schizophrenia included symptoms of schizotypal personality disorder to schizophrenia, and the mental health was clearly impaired. Sexual behavior was measured in the past 12 months using a questionnaire based on the 1990 British national survey of sexual attitudes and lifestyles. This included reports on risky sexual intercourse, that is, those who said they had sexual intercourse with three or more partners in the past year and who sometimes or never used a condom; sexually transmitted

diseases, that is, respondents were asked about STD's and if they ever contracted one, and how often; early sexual intercourse, that is, members were asked about their age at first intercourse. As earlier mentioned in this paper, it was theorized that the earlier one had intercourse as an adolescent, the riskier the sexual behaviors would be later on in life. Correlations among gender, socioeconomic background, psychiatric disorder and risky sex were examined and found to differ. The links between psychiatric disorders and risky sexual intercourse, STDs, and early sexual intercourse were all positively correlated in this study. These links did not differ greatly for men and women, therefore the data was combined. In addition, the links in this study applied to all of the socioeconomic groups. This study also shows that participants with anxiety disorders were more likely to have gotten an STD. The participants with depressive disorders, substance dependence, and antisocial disorders were more likely to have engaged in risky sexual intercourse and contracted an STD, and were also younger at age of first sexual intercourse. Participants with mania had engaged in risky sexual intercourse, and reported contracting an STD. Those along the spectrum of schizophrenia reported that they engaged in risky sexual intercourse, reported contracting STDs, and were younger when they first

had sexual intercourse (Caspi, Dickson, Moffitt, & Paul, & Ramrakha, 2000).

This study also showed the association between co morbid psychiatric illnesses and risky sexual behavior. The co morbid psychiatric disorders, the most common being depression substance dependence, and antisocial disorders, are more strongly related to sexual risk-taking behaviors than any single psychiatric disorder alone. Results show that psychiatric disorders and risky sexual behaviors occur in young adults aged 21 with unusual dominance. A larger percentage of those with psychiatric disorders engage in sexual risk-taking compared to others in this age group without any psychiatric disorder. Gender was not a moderator in this study, nor was socioeconomic background. This shows that young people with one or more psychiatric disorders function less effectively in society than those without the disorder/s, which means that there could be damaging consequences to their health by engaging in sexual risk-taking behaviors, such as unplanned pregnancy and STDs. The results of this study also confirmed findings of an association between sexual risk-taking and externalizing problems such as in conduct disorder and substance abuse. The strongest association of risky sexual behavior was with antisocial personality, mania, drug and alcohol dependence, and other disorders characterized by disinhibition or a pattern

of impulsive behavior. In addition, it was found that young adults who have symptoms of schizophrenia were more likely to engage is sexual risk-taking behaviors, develop STDs, and had sexual intercourse at an early age. Depression was linked to these same results. When depression was combined with antisocial disorder or substance disorder, the risk was increased. Rates of depression are found to escalate from age 15 to 21 years, and this is the same time sexual activity emerges (Caspi, Dickson, Moffitt, Paul, & Ramrakha, 2000). However, the reasons depressed young adults engage in risky sexual behavior and substance abuse may be due to their feelings of hopelessness, worthlessness, and disregard for self, or may be an attempt to self treat their depression. However, the harmful consequences from sexual risk-taking may precipitate a depressive episode (Caspi, Dickson, Moffitt, Paul, & Ramrakha, 2000).

The weakness of this study was that there was no assessment of the full spectrum of DSM-III-R disorders. Therefore, the concurrence of psychiatric disorders and risky sexual behavior may be underestimated. The concurrence of psychiatric disorders and sexual behavior was examined cross sectionally. Longitudinal analyses are needed to determine the transient nature of the association, which may vary by disorder. Early detection of mental health problems may prevent risky sexual behaviors,

therefore it is important to coordinate the sexual medicine with mental health services in the treatment of young people and perhaps other populations (Caspi, Dickson, Moffitt, Paul, & Ramrakha, 2000).

CONTEXTUAL ISSUES IN SEXUAL RISK-TAKING IN GAY MEN

"Barebacking" is described as the deliberate and conscious choice to engage in anal sex without using condoms and knowing that it is risky, Suarez (2001) studied the motivation for engaging in unprotected anal intercourse (UAI). The rates of UAI have fallen dramatically among homosexuals throughout the 1980's and 1990's, because of concerted efforts to target HIV at risk populations via interventions that emphasized the high risk of UAI. These interventions promoted regular condom use. Men who have sex with men (MSM) account for approximately 50% of current AIDS cases and are still the most at-risk population.

UAI in the form of "barebacking" has received a lot of attention in the media recently. Barebacking is "the deliberate and conscious choice to engage in risky sexual behavior knowing that there are risks involved", and has an almost "cult-like" following, with its own terminology, pornography, websites, and e-mail listservs. Barebacking is terminology for UAI between casual and anonymous partners, but also includes oral sex with swallowing of semen, and gloveless fisting. Since this group has great visibility in the

media, it has the potential to propagate safer sex norms within the gay community.

Suarez examines the motivation to engage in UAI with anonymous or casual partners, where desires to express intimacy, trust and love are not important as between primary partners. His review includes contextual issues such as the cognitive, behavioral, and environmental factors that make a person choose to use AIDS preventive behavior or neglect it.

Some researchers found that risky sex can be termed a “rational” decision if the benefits of risky sex (pleasure, intimacy) are stronger than the threat of AIDS. The viral load in an infected person is a factor that is considered, sexual practices such as withdrawal, insertive or receptive UAI, and the anti-HIV measures used, such as condoms or spermicides. These factors are used to rationalize their behavior and negotiate a comfortable level of risk (Suarez, 2003).

The most widely talked about contextual factor which affects sexual decision-making has been the improved medical management of HIV, that is, highly active antiretroviral therapies (HAART). There are studies that indicate that men have reevaluated their adherence to safer sexual practices because of the effectiveness of HAART. Some men believe that since HAART lowers the viral loads in some men to low or undetectable viral

levels, that they are less likely to transmit HIV to others, and are therefore safer sexual partners. Others feel that HIV is no longer paralleled with certain death because it is manageable with medications. Both of these thoughts may explain UAI in MSM.

There is a small bit of evidence that HAART reduces transmission risk, because suppression of seminal viral loads is linked to the suppression of peripheral viral load to levels that are undetectable, and some studies examining the effects of antiretroviral therapy on heterosexual transmission of HIV have shown that certain antiretrovirals are capable of reducing HIV transmission from an infected partner to an uninfected partner during vaginal intercourse. Research has positively correlated peripheral viral load with infectiousness, according to Suarez (2003). However, one must keep in mind drug resistance for the virus, which is initially found in semen. Therefore, to discard safe sex practices because of assumptions that infections are decreased can actually increase the risk of infection, and possibly with a stronger strain which has resisted prior treatment (Suarez, 2003).

There is an increasingly prevalent belief that HIV infection can be actually cured with HAART regimens, and this may be contributing to the elevated levels of HIV risk behaviors among HIV seropositive people. A

study was done to assess the extent of this belief in seropositive MSM. These men believed that HIV is either curable, or will soon be curable. They also described their risky sexual behaviors, including unprotected insertive and receptive anal sex, and unprotected oral sex to ejaculation. Their behavioral intentions with regard to their performing these behaviors was also assessed. The MSM who had high levels of risky sexual behavior also had stronger beliefs that a cure for HIV was imminent. As the treatments for HIV expand, some people decide that HIV preventive measures are no longer necessary. While these new HIV treatments may reduce the viral load in the bloodstream for some individuals, it is not sure whether they become less infective for others (CDC, 1999). This is because the viral load in the bloodstream does not necessarily correspond to the viral load in the sexual fluids. Even after learning about their HIV status, some seropostive people continue to have risky sex, at times with uninfected partners. The continuation of this type of behavior has been linked to depression, and we have looked at this, substance abuse, which we will address later on, and a perceived lack of ability to negotiate safer sex, as well as a belief that their current or potential partner is already HIV positive (Suarez, 2003).

Unfortunately, the effectiveness of HAART is dependent upon compliance to treatment regimens, the side effects of treatment, and resistance to the treatment. If people continue to have risky sex they may transmit the treatment resistant strain of HIV to their partner, who may also get STDs. Therefore, it is advised that people on HAART continue to avoid risky sexual practices.

AIDS burnout is another factor that needs to be considered in sexual risk-taking. Years of trying to cope with HIV and changes in sexual practices can lead to burnout. The hope that HIV may be cured or at least managed can increase risky behaviors (Kalichman, 1998). Barebackers frequently report getting tired of safe sex, and also stated that there is a lack of prevention programs that get through to people explaining the reasons to avoid unsafe sex (Suarez, 2003).

Furthermore, today people with HIV look healthy, virile, and physically fit for the most part. People with HIV have been “normalized”, due to the therapies available today. HIV is no longer depicted as a devastating killer. It is now seen as a less serious and manageable condition.

There are several groups of men who differ on level of negotiated risk. This typology describes four groups of gay/bisexual men who practice UAI, and each group may require different prevention methods. The

contextual factors vary amongst the groups and play a role to some extent in UAI. These groups are:

(1) Seroconcordant Couples. These are men who engage in UAI within committed, HIV-matching relationships. They may be HIV positive or negative, but these couples are motivated by feelings of love and trust, and want to express emotional intimacy. In these relationships, the risk of introducing or re-introducing HIV is minimal, and the risk of transmitting hepatitis or other STD's is small. However, if a partner is unfaithful, UAI then becomes very risky. But because the UAI in this group is based on love, trust, and intimacy, any behavioral change in this group is unlikely.

(2) Rational Risk Takers. This group is comprised of men who know they are infected, have rationally considered the risks of specific sexual acts, who have negotiated safety agreements, and HIV-negative individuals whose only UAO is insertive, and protected. Other individuals in this group may be of similar serostatus and discuss their HIV status. However, disclosure is not always honest or accurate, and some people do not. The men who mislead their potential partners are more likely to engage in risky behaviors with unknown partners. Yet men continue to use this method of sorting to prevent infection, and there is the possibility of HIV, hepatitis, or other STD infection. The underlying contextual issues appear to

be sorting and weighing of the scientific data on infection, the reinforcement of engaging in UAI, and perhaps AIDS burnout (Suarez, 2003).

(3) Irrational Risk Takers. These men deny their own risk or use nonscientific or irrational information to make decisions about UAI. This group includes men who receive UAI with casual or anonymous partners, and also people who use faulty information, such as physical appearance, and base their decision on whether they think that person looks like they have HIV. Some men in this group also lack self-respect, and respect for others. Some hold a fatalistic view, and believe that if God wanted them to get infected, they would be already. An HIV positive person in this group may think that since the partner did not talk about using a condom, that he must also be infected. An HIV negative person may also think that his partner is uninfected if condoms are not mentioned. The individuals in this group self-negotiate the risks they are willing to take. The problem lies in the faulty thinking used to assess risk. The logic of this group seems to be influenced by the excitement of the moment, the desire for pleasure, intimacy issues, and sensation-seeking (Suarez, 2003). Alcohol and drugs also play a part in influencing sexual risk takers in this group, and will be discussed later on.

(4) YMSM. This is the last group which is comprised of young men who have sex with men (YMSM), who also participate in UAI. They appear to lack experience with the devastation of AIDS, and have a pessimistic view about the future. This may lead to risky behavior. The younger men lack respect for the potentially devastating effects of AIDS, and therefore tend to adopt riskier sexual practices (Suarez, 2003). Younger people today also tend to view aging as a negative factor, and may see HIV as a way of escaping a dreaded future. Some young men actually chose a "father" to get the virus so that they could control how and when they got infected, rather than leaving it to chance. The reason for the pessimism about life and the future was attributed to a homophobic society which young men found hard to manage.

HIV prevention must evolve around these trends of complex sexual patterns. The present campaigns that address condom use and abstinence are less effective, because they have not incorporated the above aspects of sex. Furthermore, they have mechanized and dehumanized sexual behavior. Traditional interventions are unlikely to work for the groups mentioned above. Harm reduction, motivational interviewing, and some traditional approaches al combined may prove to be more successful (Suarez, 2003).

With those people resistant to using condoms, harm reduction campaigns may be beneficial, such as suggesting early withdrawal in UAI, vaccinations for hepatitis, which reduces risk. Less optimal protection would be engaging in UAI as the insertive partner, and occasional condom use, which can greatly reduce the risk of HIV transmission. The harm reduction advantages are that behavior is more likely because the client decides on the strategy; it does not force the client to be where the interventionist wants him to be; it moves him toward a goal; and it provides tools which the client can use if and when he decides to change his behavior. It also provides an atmosphere which is non-judgmental and in which changes are more likely to occur than in an atmosphere which is judgmental, may add to the discrimination which MSM already face, and is unlikely to promote safer sex (Suarez, 2003).

There is also an assertion that with all maladaptive behaviors, there is some ambivalence, which can be used as a tool to reduce resistance and motivate men to change their risky sexual behavior. For some, sexual behavior is a way of coping. Those unwilling to give up risky sex may benefit from an approach similar to that used with those who use alcohol and drugs to cope. As the client leans toward protecting himself, he may also be more open to traditional efforts that promote condom use (Suarez, 2003).

For those individuals who are motivated to change their behavior but are bogged down by contextual issues, prevention interventions that help increase self-worth and self-esteem may be more effective. The interventions may be more effective if they are peer lead, and concentrate on getting gay and bisexual men to care about themselves more. This could include mentor programs for MSM, comprehensive sexuality programs that include the management of sexual arousal and the promotion of healthy and responsible choices in sexual behaviors. Longer term therapy could address entrenched personality factors that may contribute to continued risky sexual behaviors (Suarez, 2003).

Selective serotonin reuptake inhibitors (SSRIs) have the ability to reduce sexually compulsive behaviors, and may reduce risk behaviors in motivated men. SSRIs stabilize mood, which can decrease risky sexual behaviors. The SSRIs have demonstrated effectiveness in reducing the number of sexual partners, which is an HIV risk factor (Suarez, 2003).

Interventions should also address the limitations of antiretroviral medications. They are not effective for everyone, and have serious side effects. Encouraging open discussion of serostatus is very important. Too often, risky sex decisions are based on the way the partner looks, and the behaviors the partner is willing to partake in. Men need to be made aware

that their interpretation of an individual's serostatus to be similar to their own when engaging in risky behavior could prove to be fatal (Suarez, 2003).

In a study done by Adams, Sears, & Schellenberg (2000), participants who were interviewed attempted to read implicit signs of a partner's HIV status as a method to see if they were "safe" for sex. This same process has been observed among young heterosexual men and women in the U.S. and Canada, and in gay men in studies in several countries. This further reinforces Suarez's (2003) research described above. The emphasis was shifted to the sexual partner instead of the sexual act, by observing various cues. Sometimes, HIV-negative status is inferred when the partner has connections to heterosexuality, or illusions of being straight:

"The guy fit within a certain kind of fantasy of mine that made me want to, and also I felt this—stupid reason—because he fit into this certain criterion, I felt he was a safer candidate to have unsafe sex with….He gave the illusion of being straight—his haircut, his body type, his attitude, what he would or wouldn't do".

Another participant made the decision to have risky sex based on the assumption that his partner was HIV-negative because he had had a couple of female partners. This notion that unsafe sex is justified because it is

heterosexual stems from a belief that homosexual men are not safe (Adams, Sears, & Schellenberg, 2000).

The boundaries between safe and unsafe sex were ambiguous amongst participants in four instances:

(1) unprotected sex in couple relationships;

(2) being the insertive partner in anal sex;

(3) anal intercourse without ejaculation;

(4) fellatio with ejaculation.

People who practiced unsafe sex inside the relationship had ambiguous feelings about this because safe practices outside of the relationship were not guaranteed.

People also believed that the receptive role was more risky in AI than the insertive role, although there has never been a distinction between positions as to which one is safer in safe-sex education programs. Both roles are classified as high risk, despite recent epidemiological evidence that acknowledges that more cases of HIV infection are attributed to the receptive role. Men still put themselves at risk by judging the insertive role to be less risky, because it is unknown how much the risk is reduced by being in this role.

Participants believed that anal intercourse was risky, but that the level of risk was ambiguous. This appeared to depend on the success of the insertive partner to withdraw before ejaculation. They believed that when "no fluids were shared", that the risk of infection was reduced. The participants seemed to use a common-sense assumption that less semen means less risk to justify their assessment of the risks of unprotected anal sex. However, these may be false assurances, because it is impossible to determine how much preejaculatory fluid has been deposited in the rectum, and the fact that the transmission of infection through penile-anal intercourse is efficient.

Oral sex was viewed differently in the USA and Australia, perhaps because of national differences in education and prevention programs. Australian men viewed oral sex with ejaculation safer than did men in the USA, who tended to view this as having similar risk levels as anal sex. In Canada, authorities also view insertive oral sex as a negligible risk. Men in Canada who were interviewed lived close the USA, had access to American media (TC, radio, magazines), and some were exposed to American safe-sex messages by crossing the borders during visits to the U.S. and specifically to bars. However, Canadian guidelines did not distinguish between fellatio with or without orgasm (Adam, Sears, & Schellenberg, 2000).

Some men practiced what they thought was safe sex by not swallowing, and seem to rely on a combination of official knowledge, such as oral sex is low risk, and unofficial knowledge, such as less semen = less risk, and then adopt these routines in their sexual practices. The Canadian guidelines are a bit contradictory because they state that risk "can be reduced by avoiding ejaculation of semen in the mouth", yet classify receptive fellatio with or without taking semen in the mouth as low risk.

The participants in this study appeared to incorporate official knowledge with unofficial knowledge to arrive at a solution which worked for them. Factors other than knowledge played a central role in deciding to have unsafe sex, and rationalizations as well. Because of this, some men's sexual practices may be very risky (Adam, Sears, & Schellenberg, 2000).

SELF-ESTEEM INSTABILITY AND SEXUAL RISK-TAKING IN GAY MEN

Martin and Knox (2002) did a study using a modified version of the State Self-Esteem Scale (SSES) in order to examine self-esteem instability and its relationship to risky sexual behavior among gay and bisexual men. This scale measured intimacy, loneliness, social support, and ways of coping. The results showed that the men who engaged in unprotected anal intercourse with nonprimary partners had more unstable self-esteem than men who did not engage in unprotected anal intercourse. These men with unstable self-esteem reported greater degrees of loneliness, greater avoidance coping mechanisms, and less social support. When there was injury to self-esteem, there was more of a likelihood that the participant would engage in risky sexual activities. Self-esteem may be the motivator for risky sexual behavior or maintenance of safer sex habits. Some psychologists believe that improving a gay man's self-esteem might reduce the possibilities that he would engage in risky sex. Gay Men's Health Crisis is interested in promoting "gay self-esteem" (Gay Men's Health Crisis, 1995). Low self-esteem is seen as an obstacle preventing safe sex habits.

However, results do not support the theoretical association of risky sexual behavior with low self-esteem, therefore, this model may not be helpful in understanding risky behavior in this population. People's risky sexual behavior tends to occur sporadically, rather than continuously, therefore Martin & Knox (2002) believe that it may be linked to temporary states of low self-esteem rather than an entrenched personality trait of low self-esteem. Therefore, they believe that risky sexual behavior may be linked to instability in self-esteem, and that even men with relatively stable self-esteem might participate in risky sex during brief states of low self-esteem.

Self-esteem is viewed as one of the signs of a cohesive self. Ideal childhood development should result in an adult self that has traits of cohesiveness, vigor, and harmony. When there is a lack of empathic responsiveness, individuals are susceptible to episodes of fragmentation and depletion, one aspect of which may be low-self esteem. People who have cohesiveness, vigor, and harmony are usually capable of maintaining a relatively stable level of self-esteem, can regulate their stress levels, and pursue realistic goals. Those who are more unstable in self-esteem might have periods of unmanageable stress, and difficulty making and meeting life goals (Martin & Knox, 2002).

Unstable self-esteem may be caused by conflict, disappointment, loss, betrayal, or rejection in personal relationships which are significant to them. It also may be attributable to personal failures with regard to performance on tasks, dealing with stressful events such as physical changes, illness, negative financial events, and the death of a partner. Some people have the ability to cope with these events, and others lack it. Some people have such fragile self-esteem that even a little snub or disappointment can wound it. For this reason it is important to try to understand people's reactions to positive and negative events. It was found that people with self-esteem vulnerability, or instability, experienced depression when repeatedly exposed to stressful life events. Martin & Knox (2002) measured self-esteem instability in a sample of gay men to examine the differences in self-esteem instability between gay men who practiced safer sex and gay men to practiced unsafe, or risky sex. They theorized that men engaging in risky sex were more likely to have unstable self-esteem and that the level of instability would be greater than those who did not engage in risky sex. They found that men who engaged in unprotected anal intercourse with a casual partner had higher instability in self-esteem than men to did not engage in UAI. All participants' self-esteem instability correlated positively with loneliness, avoidance coping, and lack of social support from friends

and family. Self-esteem instability correlated negatively with intimacy and cognitive coping (Martin & Knox, 2002).

These findings support the theory that self-esteem instability influences some gay men to participate in risky sexual behavior. Those who did participate in UAI casually had higher self-esteem instability than those participants who did not engage in UAI. This self-esteem instability may motivate men to engage in risky sex outside of their primary relationship. These people experienced low support socially and in their relationships, and they were lonely and had limited intimacy. The greatest link was between unstable self-esteem and loneliness, but it is unknown what occurred first, the loneliness or the unstable self-esteem. Because the participants in the study who had high instability in self-esteem also experienced more loneliness, it is thought that they might be experiencing less intimacy in their close relationships, and may be experiencing problems in their interpersonal relationships. Therefore, unstable self-esteem may not be a purely intrapsychic phenomenon, but may be closely related to fluctuations in people's perceptions of important relationships.

Men who used avoidance mechanisms to cope with stress were also more likely to have unstable self-esteem. The low self-esteem states, along with the loneliness, might cause different coping responses, one of which

may be unplanned, impulsive, and risky sex. Alcohol and drugs is another avoidance coping mechanism, and this might help explain the use of alcohol and drugs and sexual risk-taking, which we will examine in more detail in the next chapter.

THE INFLUENCE OF ALCOHOL AND OTHER DRUGS ON SEXUAL RISK-TAKING

It is believed that alcohol intoxication may influence sexual risk-taking because of its disinhibition on sexual behavior, and is thought to increase the number of sexual partners and inhibit the use of safe sexual practices, such as condom use. This may increase the probability of exposure to HIV and STDs. The study by Fromme, D'Amico, & Katz (1999) supports the hypotheses that alcohol-related impairment reduces the drinker's perception of personal risk, and that drinkers engage in risky sexual practices because they expect the outcomes to be positive. Different studies have come to contradictory conclusions, stating that alcohol and other drug use during sex decreased the use of safe sexual practices, and others stating that there was no relationship between alcohol use and unprotected sexual intercourse. Although sexual arousal has been tested in laboratories and found to increase with the use of alcohol, the disinhibitory effects of alcohol or expectancy on HIV-relevant practices were not proven.

The impairment theory focuses on the pharmacological effects of alcohol on thought processing abilities. The expectancy theory focuses on beliefs about sexual behavior with regards to drinking. The question is

whether drinking is a motivational factor in sexually risky behaviors, or whether alcohol-related cognitive and behavioral impairments cause the drinker to make unsafe sexual decisions or participate in unsafe sexual practices (Fromme, Elizabeth J. D'Amico, & Katz, 2002).

The expectancy model is fashioned on the belief that alcohol enhances sexual experience, and provides a socially acceptable excuse for behaviors. People sometimes combine alcohol and sexual behavior for potentially positive outcomes, and justify their risky sexual behaviors or sexual indiscretions on alcohol. Individuals sometimes justify the failure to use condoms during sex to being intoxicated. A few individuals also tend to use alcohol to loosen up their sexual inhibitions, but do not associate alcohol with self-reported sexual risk-taking. Therefore, the association between alcohol and unsafe sexual behavior is vague.

On the other hand, another explanation for sexual risk-taking when using alcohol is that alcohol is a psychoactive drug that impairs the drinker's ability to evaluate sexual risk. The individual may not be able to process all of the cues involved in decision making. The drinker is more focused on immediate gratification and this attention reduces his or her ability to think about the possible negative consequences (STDs or HIV).

It is also thought that alcohol may disinhibit behavior for which there are inhibitory and instigatory cues. It is believed that since women face greater risks, such as pregnancy and social constraints against having many casual sexual partners, and walk a "cognitive tightrope" between traditional female roles, which represent attractiveness and attentiveness to men in dating situations, and the potential for harm, as in sexual assault, which forces women to be on guard in these cases. Women are thought to be more inhibited with regard to sexual risk-taking than men, and consequently, it is thought that alcohol may loosen this inhibition in women more than in men. Inhibition conflict is evident in failure to regularly use condoms, and the infrequent condom user may be torn between the risks and benefits on condom use. Alcohol may disinhibit this thought process. However, it was found that if condom use is a regular practice, alcohol does little to change that habit.

Fromme, D'Amico, & Katz (2002) believe that both the positive expectancies of having sex and the use of alcohol at that time explain sexual risk-taking. The motivation to combine alcohol with sex is based on positive outcome expectations. When the individual perceives risk, this is more likely to inhibit unsafe sex. Therefore these authors theorize that alcohol diminishes the perception of risk due to its impairment effects on the

ability to process possible negative consequences, albeit selectively. Those people who experience greater inhibition with regard to sexual practices, and those who infrequently practice unsafe sex, may be the least affected by alcohol. Those people's perceptions about possible positive outcomes of sex are not thought to be affected by alcohol, but the thoughts about negative consequences are. The sexual act is thought to bring immediately reliable and positive consequences. Potential negative consequences are delayed and do not happen often. For example, some young adults reported 21 positive outcomes for having sex, and only 1 negative outcome. Therefore, the negative consequences have a weaker effect than the positive ones. Alcohol is thought to impair the cognitive processing of weaker information, therefore, it was predicted accurately that intoxication reduced perceptions of negative consequences, or potential risk, but had little effect on positive consequences for risky sexual behavior (Fromme, D'Amico, & Katz, 2002).

In this particular study, it was hypothesized that intoxication would contribute to weaker perceptions of risk, but positive predrinking outcome expectations would contribute to stronger perceptions of benefit. The belief that there is an interaction between expectancy set and predrinking sexual expectancies was also a theory, and participants believed that if they used alcohol, it would disinhibit their sexual behavior and they would derive

greater benefits, which would make them more likely to engage in risky sex when they drank alcohol. It is also thought that the participant's gender and frequency of condom use are moderating effects on postdrinking and pre-sexual risk-taking. It is also thought that the use of alcohol in sexual risk-taking decreases perceptions of risk with a casual rather than a regular partner (Fromme, D'Amico, & Katz, 2002).

In this study, the majority of participants had sexual intercourse during the past six months. Almost half of them reported having one sexual partner, one fifth had two partners, and almost a quarter had three or more partners during the past six months. Over one third believed that a regular partner was someone they have known for four or less weeks, and almost a quarter of the participants said they never used condoms when having sex. Men engaged more frequently in risky sex with someone they had just met, than women. With regard to the effects of alcohol on perceptions of risk, it was shown that participants who received alcohol had lower ratings of risk perception, and showed that negative outcomes were unlikely to influence their decision to have casual risky sex. The positive outcome expectancies of benefit and involvement weighed stronger with the participants, and they were more willing to engage in risky sexual practices with a casual partner.

However, those with lower sex expectancies were less likely to engage in sexual risk-taking (Fromme, D'Amico, & Katz, 2002).

Out of all the participants, the high frequency condom users to also used alcohol perceived the lowest ratings of risk. Men reported perceiving lower risk than women. Alcohol seemed to influence perceptions of risk, and predrinking outcome expectations influenced postdrinking perceptions of benefit in sexual risk-taking. Participants who were intoxicated saw less risk associated with risky sexual practices with a casual partner. The participants who expected benefit and involvement by participating in risky sex would act on this whether or not they consumed alcohol. Those participants who consumed alcohol and then had lower postdrinking perceptions of sexual risk led the authors to conclude that these lowered perceptions were alcohol-induced impairments in cognitive processing, and not related to predrinking outcome expectancies or positive beliefs about drinking alcohol and engaging in sex. The participants who believed that drinking alcohol and engaging in risky sex had positive outcomes and that alcohol would disinhibit their sexual behavior were more likely to engage in sexual risk-taking, because they focused on the positive outcomes. These high sex expectancy participants indicated that they were more likely to engage in unsafe sexual behaviors with a new partner than those participants

who had lower expectations of a positive outcome. Therefore, positive outcome expectancies seem to provide some individuals with the motivation to engage in sexual risk-taking, whether they are intoxicated or sober (Fromme, D'Amico, & Katz, 2002).

It was ultimately shown that when the women in this sample used alcohol, that they did not get more disinhibited by the use of alcohol, as previously believed. The same applied to those infrequent condom users. Neither showed a major decrease in risk perception after drinking. In actuality, the frequent condom users reported lower perceived risk after consuming alcohol than all of the other participants. In the entire sample of participants, perceived risks for AIDS and pregnancy were low in general, and unrelated to frequency of sexual intercourse, number of sexual partners, or condom use. This may indicate a sense of invulnerability among young adults, which comprised this sample of participants. A second study asked the participants to list specific positive and negative consequences that might occur if they engaged in risky sex and consumed alcohol. It was found that the sober participants selected competent responses compared to intoxicated participants. The intoxicated participants listed less quality responses than those who were not intoxicated. The intoxicated participants also listed significantly fewer negative consequences, but approximately the same

number of positive outcome expectancies. Consequently, it can be concluded that alcohol selectively reduces the number and quality of negative consequences that people think about when faced with having sex. The retrieval of negative consequences seemed to be unimpaired for those participants who were sober, therefore, this supports the theory that there is a pharmacological reason for the effects of drinking on young adults' decreased perception negative consequences when engaging in risky sex (Fromme, D'Amico, & Katz, 2002).

Although these participants were aware of negative consequences in engaging in sexual risk-taking, in general they rated them as less likely to occur than the positive consequences. Therefore, the expectation for positive consequences and the alcohol-induced inhibition of negative consequences is thought to lead to risky sexual behaviors. However, it is unknown whether the negative consequences are actually less accessible from memory than positive consequences, or whether intoxicated participants were just unwilling to face negative consequences. Both studies indicate that alcohol intoxication may play an important role in sexual risk-taking by reducing perceptions of personal risk. Weakened risk perceptions result from a deficit in the ability to retrieve moments of negative consequences from long-term memory, and it was shown that intoxicated

participants indicated fewer negative consequences for engaging in risky sexual behaviors than sober participants. Both groups of participants listed approximately the same number of positive outcomes for engaging in risky sex. These studies point to an impairment in perceptions of risk when people have been drinking, rather than expectancy of consequences. Alcohol did not seem to have an effect on perceived benefits of unsafe sexual practices, and participants who thought that alcohol would disinhibit their sexual behavior also reported stronger perceived benefits and a greater likelihood of engaging in risky sex. Those participants who also perceived positive benefits were also more likely to engage in risky sex, without being intoxicated. When there is a combination of impairment in perceived risk and strong positive expectancies, this may contribute to drinkers' sexual risk-taking (Fromme, D'Amico, & Katz, 2002).

These findings on the participants' impaired thinking due to alcohol use shows that some young adults are in danger because of their risky sexual practices.

Other supporting studies read by Fromme, D'Amico, and Katz (2002) confirmed that college students who abuse alcohol engage in risk-taking behaviors more so than college students who do not. These alcohol abusing individuals also tend to be more rebellious against societal norms, and are

more distant emotionally. Alcohol abuse may be a marker for deeply-embedded risk-taking behaviors, which includes sexual risk-taking.

Cocaine use was stated as another factor in sexual risk-taking. We quoted the following from a study by Erickson & Murray (2002):

"She began to sniff cocaine right away and soon fell into a state of moral indifference, got involved in sexual relations, became incapable of carrying on her professional work, and broke with her family"; and,

"Within four years, cocaine cost me my job, my husband, and my self-respect, even my daughter."

It is postulated that more women than men use cocaine, and that these women who use cocaine and alcohol are prone to sexual corruption. In a 1926 treatise by Maier, he stated that cocaine increases the sexual drive of women, and that they become insatiable. Today, we assume that because individuals can easily become addicted to cocaine, sometimes prostitution is the only way some women can pay for this habit. With the reemergence of the use of cocaine, the association with this drug and sexual promiscuity has resurfaced. Often the young, attractive cocaine addict is supported by older male traffickers. Again, media has portrayed the sex-for-cocaine bartering in the singles scene. The underlying theme in all of this is the woman's loss of control over her behavior, due to cocaine dependence. However, research

on the effect of cocaine use as a sexual stimulant has shown that a group of heavy users of cocaine actually had a lower interest in sex, and that it is not a potent aphrodisiac. Lower doses were seen to enhance sexual desire, but higher doses created sexual dysfunction in both men and women (Erickson & Murray, 2002).

It is presently thought that an even number of both men and women have tried and are currently using cocaine, and there is no increased growth with regard to gender. The above-referenced quote, that inferred that women are prone to sexual corruption through cocaine use, has re-emerged in the singles bars scene, where women who use cocaine tend to be less discriminate in their choice of sexual partners, thereby increasing sexual risk. These partners are more likely providers of cocaine. However, it has not been proven that these women's sexual risk-taking is due to cocaine use, and this thought may be based on the fact that women are subject to considerably more negative stereotyping and social repercussions than men are who engage in the same behaviors (Erickson & Murray, 2002).

In another study, Kalichman, Heckman & Kelly (2002) showed that substance use has a relationship to sexual risk-taking, and predicts engaging in unprotected anal intercourse in gay and bisexual men, as well as lapses to unsafe sexual behaviors after changing risk-taking behaviors. A corollary of

both substance abuse and high-risk sexual behavior is sensation-seeking, the tendency to pursue new, exciting and high levels of stimulation and arousal (Zuckerman, 2000). Sensation-seeking is associated with sexual activity related to HIV transmittion, that is, the number of sexual partners for both gay men and heterosexuals, and unfamiliar sexual partners reported by college students. Disinhibition and boredom susceptibility play a role in heterosexual relationships and sensation-seeking, according to some studies, and have shown that sensation-seeking is predictive of sexual risk behavior, and a greater number of sexual partners. Gold et al (1994) found in his studies that sexual adventure and excitement seeking distinguished unsafe from safer sexual encounters. Kalichman et al. (1994) noted that sensation-seeking was found to be the factor that differentiated gay and bisexual men who engage in unprotected anal intercourse from men who do not.

It is thought that sensation-seeking may be related to high-risk sexual behaviors, and that it may mediate the association between substance use and risky sex, and that alcohol abuse may be a marker for people who tend to have risk-taking personalities rather than a direct cause of high-risk behavior. Sensation-seeking may be a third variable in the relationship between substance abuse and sexual risk behavior. However, high rates of

HIV risk behavior and HIV infection among individuals in an alcohol abuse treatment program were studied (Kalichman, Heckman, & Kelly, 2002).

In this present study, Kalichman, Heckman, & Kelly (2002) sought to investigate sensation-seeking as a predictor of unprotected anal intercourse among gay and bisexual men, and its role as a third variable in the relationship between substance abuse use and sexual behavior. They theorized that sensation-seeking would predict the frequency of unprotected anal intercourse in a pool of gay and bisexual men over a three month period. These men were followed during this time. The relationship among high-risk sexual behavior, substance use, and sensation-seeking was investigated. The authors investigated whether sensation-seeking accounted for the association between substance use and sexual risk-taking, and hypothesized that sensation-seeking serves as an origin for multiple risk-taking behaviors, including substance use and sexual risk behaviors. Ninety nine homosexually active men comprised the sample. Measures were taken at an initial session and three months later again. The mean age of this sample was 35.9 years. They varied in race, socioeconomic status, and education. Eighty-one percent of the men reported involvement with at least one other male, and 46% had two or more male sexual partners during the

past three months. Ninety one percent of the men were tested for HIV, and 37% tested HIV-seropositive (Kalichman, Heckman, & Kelly, 2002).

Zuckerman et al.'s (1964) Sensation-seeking Scales were used, and Kalichman et al developed two independent measures of sensation-seeking; one assessed sensation-seeking as related to sexual interests and activities, sexual sensation-seeking, and the other assessed nonsexual experience seeking. The scales did not include items that reflected substance use. Sexually relevant themes were reflected in the SSSs. The non-sexual experience seeking scale was used as well and reflected themes such as engaging in risky sports and exciting non-sexual activities. The items on both scales had a four point response format which ranged from 1 (not at all like me) to 4 (very much like me). Substance use, i.e. the use of alcohol, cannabis, cocaine, and nitrite inhalants (poppers) in relation to sexual encounters over the past three months was also assessed by asking the participants to report the number of times in the past three months that they drank alcohol, used cannabis, cocaine, or poppers before engaging in sexual activity. This measurement would link the use of substances to sexual behavior, and hence provide a more exact measurement of the substance use-sexual behavior relationship. Substance use and sexual activity were linked together but unprotected anal intercourse (UAI) was not specified.

Whether or not UAI occurred, the measure allowed participants to report the use of substances prior to engaging in sexual activity. Sexual behaviors were self-reported in the last three months by using a standardized retrospective instrument whereby they could state the number of times they had insertive and receptive anal intercourse with a man, with or without a condom. They also reported the number of different partners they engaged in UAI with over that same period. UAI was the focus because this practice is the greatest contributor to HIV infection among gay men, according to Kingsley et al (1987). The participants reported the number of times they engaged in a given sexual practice. Frequencies of insertive and receptive UAI were summed and a single index of UAI was provided. The results of this study served to correlate sensation-seeking with substance abuse before sex and sexual risk behaviors. It was found that substance use before sex also correlated with sexual risk at both times of assessment. Drug use before sex, sexual sensation-seeking, and nonsexual experience seeking significantly correlated with frequency of unprotected anal intercourse at the initial and later assessment. A “path analysis” was used to show that Sensation-seeking and Substance Use were predictors of Risky Sex: this analysis was used on frequency of UAI, and included alcohol use, drug use, and sexual sensation-seeking as the predictors, with the theory that sexual

sensation-seeking would predict alcohol use, drug use, and unprotected anal intercourse, but that alcohol use and drug use would not be significant, independent predictors of UAI. The results of this study showed that sexual sensation-seeking significantly predicted alcohol and drug use, and UAI. But the use of alcohol and drugs did not directly influence the frequency of UAI. Sexual sensation-seeking accounted for 80% of the total link with UAI, and 8% of this was mediated by the use of alcohol, and 12% by the use of drugs. Therefore, it was concluded that the link between substance use and UAI is vague and unsubstantial, and sexual sensation-seeking seems to be the personality trait that accounts for the participation in UAI and substance use (Kalichman, Heckman & Kelly, 2002).

Further analysis in this study showed that sexual and non-sexual sensation-seeking significantly predicted unprotected anal intercourse. When alcohol and drug use was added into the equation, the change in variance was minimal, and alcohol and drug use was found to be a nonsignificant contribution to UAI. But the total equation was found to be significant. The study demonstrated that there is an association between sensation-seeking, substance use, and unprotected anal intercourse, at least in this sample tested. Sensation-seeking is the trait that explains a large number of relationships between substance use and HIV risk behavior. The

findings are consistent with prior research which showed associations between substance use and risky sex, and sensation-seeking had been theorized as a third variable linking these two activities. This study has found that there are theoretical and empirical ties between sensation-seeking and sexual behavior, and the results replicate previous studies whereby nonalcohol drug use is more closely associated with risky sex than alcohol use. Because of the disinhibiting effects of alcohol and drugs, and the risks involved in its use, substance use was thought to be a component of sensation-seeking. UAI in populations where HIV-seropositive prevalence rates are high, is a risk-taking behavior. The relationship between substance use and high risk sexual behavior may be explained by a sensation-seeking, or risk-taking personality trait, or impulsivity, that makes people use substances and have risky sex. However, it is unlikely that one personality trait acts as the only mediating variable, and it is possible that multiple and interactive personality traits, interpersonal, and social factors contribute to substance use, sexual and other risk-taking behaviors (Kalichman, Heckman & Kelly, 2002).

The limits of this study were that the sample was relatively small, therefore, the results should be generalized with care.

THE RELATIONSHIP OF BODY MODIFICATION AND RISK-TAKING BEHAVIORS

This relatively current study by Burger & Finkel (2002) attempts to relate body modification and risky behaviors like sexual risk-taking in a college student population. It was hypothesized that there is a positive relationship between body modification practices and very high-risk behaviors. It was also hypothesized that self-esteem would be the mediator between body modification and very high-risk behaviors. The above two authors used the Cognitive Appraisal of risky Events – Revised (Fromme, D'Amico & Katz, 1999; Katz, Fromme, & D'Amico, 2000), as well as The Coopersmith Inventory (Coopersmith, 1981). The hypothesis that there is a positive relationship between body modification practices and very high-risk behaviors was not only supported, but also suggested different levels of high risk behavior (Burger & Finkel, 2002).

Two of the most common behaviors in college populations are well known, and these are driving while intoxicated and unsafe sexual practices. Fifty percent of surveyed students reported driving while intoxicated, and thirty percent of fatal motor vehicle accidents were due to driving under the influence of alcohol in individuals aged 16 to 24 years. Eighty two percent

of college students are sexually active, but the majority of these students do not use condoms. Many of these college students modify their bodies in the form of piercings and tattoos. They see body modification as a way to express their newfound sense of independence. Others view body modification as a way to increase their sex appeal. Evidence suggest that some adolescents participate in high risk activities, such as body modification, to boost their self-esteem and self-image.

The CARE-R was given to the participants to measure risks involved in an individual's drinking behavior, drug use, and risky sexual behavior over the last six month period. Six risk-variables were assessed in this study:

(1) sex without protection with a regular partner;

(2) sex without protection with a stranger;

(3) female coercion;

(4) male coercion;

(5) illegal drug use;

(6) alcohol risks.

The frequency of these behaviors was also assessed.

A body modification measure was created that asked for the total number of body modifications. The participants were asked to list the

number and type of body modifications they have, what part of their bodies they modified, and where these body modifications were obtained. Body modifications meant at least one permanent tattoo or at least one body piercing. Pierced ears was not considered as a body modification for both sexes.

The results showed that males reported significantly more participation in unsafe sexual practices with a stranger than females, and males were also found to use more illegal drugs than females. Body modification greatly predicted three of the six high-risk variables above. Participants with body modifications were significantly more likely to engage in risky sexual behavior with a stranger than participants without body modifications. Therefore, males with body modifications had the biggest penchant for risky sex. The participants with the body modifications also tended to use high levels of alcohol. Body modification did not predict female coercion. Gender and body modification failed to add significantly to the prediction of sex with a regular partner. Nor did body modification add significantly to the prediction of male coercion (Burger & Finkel, 2002).

Self-esteem appeared to be an insignificant factor in the prediction of any of the six high-risk behaviors, that is, self-esteem had no mediational effect on risky behaviors. Overall results showed that gender and/or body

modification added significantly to the prediction of four the six high-risk behaviors mentioned above. However, it was expected that low self-esteem would be a mediating factor in the participation of risky activities. This was not proven to be the case for any of the six high-risk behaviors.

While body modification showed a positive relationship to other very high-risk activities, it was found that gender added significantly to the prediction of two of the six risk variables described: sex with a stranger and illegal drug use. Having one or more body modifications added significantly to the prediction of three of sex risk-taking behaviors: sex with a stranger, alcohol risk, and female coercion. Both gender and body modification played an insignificant role in predicting sex with a regular partner and male coercion (Burger & Finkel, 2002).

There was variance in risk-related levels, and these were high, moderate and low. The higher end of the spectrum describes activities that are more dangerous than others, and less socially acceptable. The high amount of variance in sex with a stranger was due to the fear of contracting HIV or STDs as a result of having unprotected sex. Despite reports that infidelity rates among regular partners was common, the participants did not think that unprotected sex with a regular partner was risky sexual behavior, and there were low levels of variance in this measure. The males who

believed that coercing females to have sex viewed this as less risky than females, who coerced men into sexual activity. This is perhaps due to the masculine traits of being more aggressive and competitive. Self-esteem was not proven to be a mediator between high-risk behaviors and body modification. However, other studies indicate that there is a relationship between engaging in high-risk activities and a person's self-esteem instability, and this is mentioned earlier in this paper. In conclusion, body modification proved to be the highest predictor of the riskiest behaviors in this study.

SUMMARY AND RECOMMENDATIONS

This paper focused on the multiple causes and factors involved in sexual risk-taking, and because of the many factors which contribute to sexual risk-taking, a qualitative study of the literature on this subject matter was done. Although various populations were mentioned, the studies mainly focused on the populations at highest risk, that is, the college population, gay and bisexual men. Because of the various factors involved in sexual risk-taking, such as lowered inhibition whether it be by lowered serotonin levels or higher dopamine levels, depression, anxiety, and general risk-taking personality traits, it would be safe to say that the idea that a single prevention strategy could not possibly deal with the multiple complex issues involved in sexual risk-taking. The issues are often personal and context-specific, and those who believe that they are not at risk often engage in practices that put them at risk. These factors exist in every day life and need to be mentioned in HIV-prevention programs.

The belief that HIV is or soon will be a curable disease has serious implications for HIV prevention information. People must be aware of the risk of transmission during a certain sexual acts. Without this awareness, a person is unlikely to give up the behavior in most cases. Often the

information a person has is incorrect, which will contribute to the maintenance of a certain behavior, such as judging the way a person looks and then deciding that that person could not possibly have HIV because he/she looks so healthy. Education is an important factor in the prevention of STDs and HIV.

The association between mood and sexuality was discussed in this paper, and it was concluded that depression and anxiety may lead to sexual risk-taking. Findings indicate that men with state anxiety and depression who take sexual risks respond poorly to cognitive-behavioral therapy. More studies addressing clinical and non clinical anxiety and depression, and its relationship to sexual risk-taking need to be done, with a focus on the use of the SSRIs (Selective Serotonin Reuptake Inhibitors) used as medication for people who are depressed or anxious, who have low inhibition, and who may be taking sexual risks (Bancroft, Janssen, Strong & Vukadinovic, 2003).

Young adults were studied to see the relationship between alcohol use and sexual risk-taking. It was concluded that alcohol impairs the cognitive processes that that the sexual risk takers were less likely to think about the negative consequences of having risky sex, and that they were more likely to think about the positive outcomes. There needs to be more research that

examines the distinction between deliberate processing and spontaneous processing to see whether alcohol intoxication impairs perceived risk when given the opportunity for the careful consideration of consequences. The tendency for citing negative consequences in the study was lessened by alcohol, that is, alcohol intoxication reduced the retrieval of negative consequences from the memory, and also decreased the perceptions of personal risk. Alcohol had little effect on positive outcome expectancies, and the participants in the study focused on the benefits of the act at that time (Kalichman, Heckman & Kelly, 2002).

We also took a look at the relationship between body modification and sexual risk-taking. Although people with body modifications were more apt to take sexual risks, this could be because they are prone to risk-taking behaviors in general and could have the risk-taking personality trait. The population studied was too small to generalize to the college population at large who had modified their bodies (Burger & Finkel, 2002).

Public policies need to be examined closely, because these are a source of stress for gay and bisexual men, and this could contribute to anxiety and depression. Some of these policies allow or prescribe discrimination against gay men, for example, policies that prohibit gay

marriage or the formalization of their relationship are examples, as is state legislation that criminalizes homosexuality (Martin & Knox, 2002).

Personality factors need to be addressed if interventions to reduce sexual risk-taking are to be effective. Personality factors play an important role in the design of one-on-one interventions. People who are depressed and find themselves taking greater sexual risks could keep journals and analyze their behaviors on a day to day basis. Alternative methods of mood regulation could then be thought of using cognitive behavioral therapy. For individuals who cruise for partners, and who derive a lot of excitement out of those encounters, a safe procedure could be built into place so that the sexual risk taker has condoms on hand. Interventions that focus on how the person is thinking "in the heat of the moment" would be most effective in reducing unsafe sex, because the subject would be confronted with his arousal-related thought process that allows his unsafe sexual behavior to occur. If the person hesitates to use condoms for fear of erectile failure, other methods to fight this could be used, such as Viagra. Personality factors explain a part of sexual risk-taking behaviors. Other factors play an important role and need to be addressed. Too little is known about human sexuality and sexual relationships, and the individual differences involved in sexual risk-taking (Kalichman, Heckman & Kelly, 2002).

These studies, as stated earlier, focused on college students, and mostly gay and bisexual men. Further research is needed to explore the importance of sexual risk-taking for more diverse samples of bisexual men, women, gay men, lesbians, transgenders, and heterosexuals, to see if they have different issues and needs than the high risk gay men and MSM, and to be able to address prevention programs accordingly.

The media has had and continues to have a great deal of influence on people's thinking and behaviors. It also provides an ideal opportunity to communicate information on sexual health. Other countries have been using this method for propagating information for decades, but the United States has not done so in a healthy manner. In Europe three fourths of the adult respondents said they received information on STDs from TV, books, and magazines, whereas in the United States only one fourth said that they got this information from the media (Keller & Brown, 2002). In third world countries, soap operas include plots on family planning and HIV prevention, and they have reported less clinic visits and changed health behaviors since the showing of these episodes.

There are several strategies that have been devised by health advocates concerning the media:

(1) Mass media campaigns, which target a relatively large number of people within a specified period of time. Radio, television, movies, or music that features socially responsible messages. This is also called edu-tainment, and is used throughout the world and has educational content in entertaining scripts. It utilizes Bandura's (1986) social learning theory, which presents an idea through drama. In Tanzania, twenty two percent of listeners of an entertainment-education radio soap opera called "Twende na Wakati" ("Let's Go With The Times"), showed a significant change in behavior, and adopted family planning as a result of listening to the soap opera. There was also an increase in the number of married women using a family planning method, from 29% to 41% in four years. Seventy clinics showed similar changes. This soap opera also had an effect on knowledge, attitudes, and adoption of HIV/AIDS prevention behaviors. Numbers of sexual partners of both men and women dropped, and there was more condom use. Nigeria and Uganda reported an increase in HIV prevention behaviors and contraceptives after seeing pro-family-planning music videos and being exposed to the HIV/AIDS Youth Communication Campaign. Few campaigns like this have been initiated in the United States, with the exception of "Campaign for Our Children", which was created to help reduce teen pregnancy in Baltimore, Maryland in the mid-1980's, and which

contributed to a significant decrease in teen pregnancies (Keller and Brown, 2002). Project ACTION is a U.S. social marketing campaign which was modeled after a project in Zaire, and is thought to have increased the use of condoms among teens and their casual partners from 72% to 90%, and also to have increased the number of abstinent teens from 75% to 82% in Portland, Oregon.

(2) Embedded messages; because the media is privately owned, and there are First Amendment concerns, U.S. sexual health advocates have been working with the media to include subtle health messages into existing entertainment. Non profit agencies work with producers to embed health messages. Initial results suggest that embedded messages work, but there needs to be more of them in the media. The media is unlikely to make controversial messages public because this may frighten advertisers away.

(3) Media advocacy; health activists have been generating news that attracts the attention of the news media regarding health issues and public policies, for example, sexuality education, contraception, and abortion.

(4) Media literacy; there is an educational effort to give people analysis and viewing skills so that they can understand sexual scripts better, which may result in personal changes.

(5) Small media; brochures, pamphlets, documentaries, and classroom curricula can also impact sexual attitudes and behaviors especially when real role models are used who described the positive steps taken toward the campaign goals of consistent and correct condom use, for example.

(6) Internet interventions; sexuality education sites specifically designed for teenagers are found on the internet, such as Planned Parenthood Federation of America, www.teenwire.org, Sex, Etc.'s www.sxetc.org, and ASHA's www.iwannaknow.org. In certain states there is a taboo on sexual information in curriculums in schools, and health educators teach abstinence until marriage. This may leave many teenagers and pre-teens vulnerable without prevention skills. The internet is able to relay information on demand for these children, and answer their questions or give out the information they are seeking. The internet can facilitate personal decision-making by enabling the children to assess and evaluate risk, helping them to think about potential outcomes. This is important when addressing sexual risk-taking. Access is most available to those who are the least at risk. Homeless and runaway youth, African American youth, and low-income populations are the most unlikely to have access to the Internet.

The intentional use of these with respect to sexual health could be very valuable. International studies have shown that women who have seen or heard family planning messages from the media are more likely to use contraceptives than those who do not (Keller & Brown, 2002). In cities where the media promotes safe sex media campaigns, there is an increased use of condoms by teenagers with casual partners, and there have also been fewer numbers of teens having sex (Keller & Brown, 2002).

The media could be an important source of information and influence on the sexuality of people. However, the media is a profit-making enterprise, and barriers are that there is a reluctance to take on controversial issues that may alienate viewers and advertisers. Because of our culture, sexuality is not openly discussed, and as long as sexuality remains a mystery, the media will continue to use sexual titillation to market their products and attract consumers.

Furthermore, in this study there is a detailed exploration of the few available hormonal studies and their effects on sexual risk-taking. Endocrinology is a relatively unexplored area and additional studies related to sexual risk-taking may help to shed some light in human sexual behavior. In addition, the new science of molecular genetics has made it possible to identify major genes influencing personality and forms of psychopathology.

A group of scientists in Israel were the first to find an association between novelty seeking (trait highly correlated with impulsive sensation-seeking) and the gene that codes for a class Dopamine receptor (DRD4) gene. (Zuckerman, 2000) Now that the human genome has been defined, many other genes contributing to these and other personality traits may soon be discovered.

According to the classic psychoanalytic theory, the concept of Thanatos, the instinct toward death and self-destruction has accompanied humans throughout their lives. Another famous Freudian concept, Eros, is that the life instinct is the opposing force and must be balanced by the death instinct. Assuming that our lives constitute a dance between two instinctual forces such as Thanatos and Eros, we can understand our craving for novelty or even excuse our need for excitement and adventure on a constant basis. A healthy person, according to the Freudian model, is someone who looks for ways to reduce stress and tension. The dance between Thanatos and Eros can easily become stagnant and rather monotonous. Human freedom of choice often dictates improvisations such as adding moves to a dance. These moves may often be directed to toward Thanatos or they may lead toward Eros. Those moves are translated as risks and humans have been known from pre-historic ages to be a risk-taking species, beginning with hunting

large and dangerous animals for food, to seeking a mate from distant and rather unfriendly group, which required an occasional break from the traditional and monotonous dance of life. Risk-taking has many negative aspects and can often prove destructive. On the positive side, risk-taking can easily be viewed as the force of discovery and possibly survival.

Thanatos and Eros can be seen as two different polarities on the same continuum. The Freudian psychoanalysts refer to this continuum as neuroticism, a personality trait, which could be viewed as an expression of a generalized need for activity. Risk-taking behavior can be seen as an activity which will provide stimulation to overcome boredom.

Sexual risk-taking, on the other hand, may eventually be viewed as a disorder in itself, due to the multitude of negative consequences that exist.

In conclusion of all our research, genetics and neurochemistry seem to be the biggest influences on sexual risk-taking, and risk-taking in general, and it would be of benefit to study these factors in detail, addressing different populations, so that adequate prevention campaigns and treatment could be developed accordingly.

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