

**DECISION-MAKING, SENSATION-SEEKING, AND
RISK APPRAISAL IN SMOKING AND NON-
SMOKING UNIVERSITY STUDENTS**



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**DECISION-MAKING, SENSATION-SEEKING, AND RISK APPRAISAL
IN SMOKING AND NON-SMOKING UNIVERSITY STUDENTS**



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BY

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2023

Declaration

I, Ayesha Ayyaz, certify that this is my original work and has never been submitted to some other institute or university for a degree. This research work has been compiled under the supervision of Dr. Afsheen Gul, Head of the Department of Applied Psychology, Kinnaird College for Women, Lahore, Pakistan.



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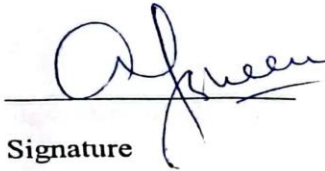
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Ayesha Ayyaz

Abstract

The research aimed to examine the relationship between decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking university students and to find out the predictors of risk appraisal in these university students. A cross-sectional research design was used. The sample of the study was university students (N=200), age range 18-27 years (M=22.5, SD=4.67) were selected using purposive sampling from different private and government universities of Lahore. The questionnaires used in the study were Decision-making Scale (Mann et al., 1997), Brief Sensation Seeking Scale (Hoyle et al., 2002), and Risk Appraisal Scale (Lipkus & Mays, 2018). In smoking students, the result showed a significant negative relationship between the aspects of decision-making and sensation-seeking, and risk appraisal. While in smokers the results showed a significant positive relationship between decision-making and risk appraisal and a significant negative relationship between both variables with sensation-seeking. After controlling for the effect of control variables, the buck-passing aspect of decision-making emerged as a significant predictor of perceived harm while decision self-esteem, vigilance, and disinhibition emerged as the significant predictors of worry about harm and addiction. Experience Seeking, thrill and adventure seeking, and boredom susceptibility turned out to be significant predictors of smoking behavior. The results can be used by researchers to develop targeted interventions aimed at reducing smoking behaviors in university students. The study highlights the role of sensation-seeking behavior in the development of smoking behavior among university students. This outcome may be used to increase awareness among the student population about the potential risks associated with smoking.

Keywords. Smoking university students, non-smoking university students, sensation seeking, decision-making, risk appraisal.

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List of Abbreviations

Abbreviations	Full Forms
MDMQ	Melbourne Decision-making Questionnaire
BSSS	Brief Sensation Seeking Scale
RAS	Risk Appraisal Scale
SPSS	Statistical Package for Social Sciences
M	Mean
SD	Standard Deviation
CI	Confidence Interval

List of Symbols

Symbols	Definitions
α	Cronbach's Index of Internal Consistency
f	Frequency
k	Total no. of Items
N	Total Sample
p	Significant Value
%	Percentage
β	Beta
ΔR^2	R^2 Change

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Chapter I

Introduction

The current study aims to find out the relationship between decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking university students.

The process of making a decision is a way of thinking that is based on the values, preferences, and beliefs of the person making the decision. Thinking through potential actions and settling on one that best meets one's needs is known as decision-making (Rothman, 2019). A final choice is the product of every decision-making process, which may or may not result in action being taken. There is always the last option after making a decision (Small & Lew, 2021). The distinct decision-making behavior shown by smokers may be explained by the argument that smokers routinely demonstrate less self-control. As a result, smokers are more likely to make decisions that are often rewarding, but which sometimes carry a risk of negative consequences (Volk et al., 2020).

Seeking out “varied, complicated, unique, and intense” emotions and sensations, and being willing to “accept legal, social, physical, and financial risks for such experiences,” are hallmarks of the personality characteristic known as “sensation seeking.” Previous studies have shown that those who seek out novel experiences are more likely to experiment with drug usage. Sensation-seeking has been linked to increased teen cigarette and alcohol usage in several studies (Jensen et al. 2017). To “seek sensations” is to actively seek out experiences that are unique, intense, complicated, and diverse in terms of the range of emotions they evoke (Benowitz et al., 2016). The nicotine in cigarettes has been shown to boost dopamine release in the brain, which may stimulate the central nervous system. As a whole, tobacco usage may improve people's

moods, which may encourage those with a strong need for feeling to take up the habit (Huang et al., 2014).

A habit of participating in activities or behaviors that are risky or highly susceptible to change without there being any justification for doing so is known as risk-taking behavior. This pattern of behavior is often linked to the usage of substances, gambling, sexual practices that involve a high level of risk, and extreme sports (e.g., mountain climbing) (Zinn, 2019). A level of risk-taking tends to remain stable over time and, as a result, is likely to predict smoking behavior in the future. This makes the propensity to engage in risky activities an important factor in smoking because it can play an important role in engaging in level unhealthy behaviors over time (Pfeifer, 2012).

Decision-making

In psychology, decision-making is considered to be the cognitive process that ultimately results in choosing a belief or a course of action from several different viable alternative possibilities. Things are possible for it to make reasonable or irrational sense (Rothman, 2019). Thinking, reasoning, and deliberation go into choosing a choice. Depending on the underlying assumptions of the decision-making model, the results and conclusions might vary greatly (Chapman, 2012). Different decision-making theories assume different things about the factors that influence people's choices. Some like objective rational decision-making, holds that people will make the same choices when presented with the same knowledge and preferences (Kaplan, 2023).

Recent studies have shown that drug users may cause changes in cognitive processes such as inhibition and decision-making, which may lay the groundwork for addiction and

subsequent relapses (Chapman, 2012). Imaging studies on the brains of humans and neuropsychological tests on nonhuman animals' brains have shown that chronic drug use causes structural changes in the highly developed frontal cortex of the brain. This region is responsible for regulating cognitive processes such as planning, decision-making, the inhibition of responses, and memory (Lunenburg, 2010).

One way to look at the process of decision-making is as an activity that aims to solve a problem and provide an answer that is either ideal or, at the very least, acceptable. It is a process that may be more or less rational or illogical and can be based on either explicit or tacit information or beliefs (Schoemaker & Russo, 2014). As a result, it can be more or less rational or irrational. In intricate procedures for making decisions, tacit knowledge is often put to use to fill in the blanks. When making a choice, it is common practice to draw on both implicit and explicit forms of knowledge to complete the task at hand (Marchau et al., 2019).

Models of Decision-making

It involves the evaluation and selection of various options available to attain a specific objective. Throughout time, diverse decision-making models have been formulated to elucidate the process by which individuals arrive at decisions. The rational decision-making model is considered to be one of the earliest models of decision-making (Kraplin et al., 2019). It posits that individuals are rational beings who engage in a systematic evaluation of all available options before selecting the one that maximizes their expected utility.

Subsequent studies have indicated that individuals frequently depart from the rational decision-making paradigm as a result of cognitive constraints, predispositions, and mental shortcuts. Consequently, various alternative decision-making models have been suggested to

elucidate the actual process of decision-making by individuals. The bounded rationality model is a theoretical construct that recognizes the inherent limitations of human cognitive capacity, thereby constraining individuals' ability to comprehensively assess all feasible alternatives. Consequently, individuals resort to heuristics and cognitive shortcuts to streamline the process of decision-making (Bomhof-Roordink et al., 2019). The prospect theory is an alternative model that posits that individuals' decision-making processes are shaped by their subjective evaluations of potential gains and losses, as opposed to the objective outcomes of their choices (Panwar et al., 2019).

A behavioral economics model is a well-received approach to decision-making that acknowledges the impact of various contextual factors, such as emotions and social norms, on individuals' choices. The aforementioned model places significant emphasis on comprehending the contextual backdrop within which decisions are rendered, and the potential impact of these contextual factors on the decision-making processes of individuals (Marchau et al., 2019). Decision-making models offer a comprehensive structure for comprehending the decision-making process of individuals, and facilitate the development of effective strategies by researchers and practitioners to enhance decision-making outcomes (Kraplin et al., 2019). It is crucial to acknowledge that the intricacy of human decision-making cannot be entirely encapsulated by any singular model. The suitability of various models may vary depending on the decision-making task and the context in which it is being applied (Bomhof-Roordink et al., 2019).

Decision-makers among Smokers

Abuse of drugs hurts cognitive processes including decision-making and inhibition. One of the consequences of being under the influence of alcohol or drugs to a significant degree is

impaired judgment. Because of this, it is much simpler to shirk obligations and center one's attention on enjoying one's feelings in the here and now than making choices that will have a constructive effect on one's future. People's relationships, duties, and hope for the future all fall apart as they grow more reliant on pharmaceuticals to induce sensations that simulate pleasure (Verdejo-Garcia et al., 2018).

Smoking is known to have detrimental consequences on both the body and the mind, and one area where this is especially true is in one's capacity to make sound judgments. Decision-making is a multi-step mental process that requires considering several factors before settling on a final choice (Jenkins & Schneider, 2018). Attention, memory, and executive skills are all disrupted by smoking, among other cognitive abilities. One of smoking's most obvious effects on judgment is a reduction in attention and concentration. According to research, smokers have a harder time focusing on one thing for an extended period and making fine-tuned decisions than non-smokers (Snider et al., 2019). This may make it more challenging for smokers to pay attention to the details that matter while making choices, perhaps resulting in subpar decision-making results. Smokers may have trouble focusing on difficult decision-making activities, such as weighing the pros and cons of several alternatives, or may ignore critical facts while doing so.

Smoking impairs not just focus, but also memory functions crucial to good decision-making. Working memory is the mental capacity to temporarily retain and modify information (Friedman et al., 2006), and this capacity is negatively impacted by smoking. As a result, it might be difficult for smokers to keep competing choices in mind and consider their relative merits. Long-term memory, crucial for drawing lessons from the past and making well-informed future choices, may also be impaired by smoking (Zhang et al., 2010).

The ability to plan, solve problems, and restrain one's impulses are all examples of executive functions that contribute to good judgment. However, smoking may hinder these capabilities by disrupting activity in brain areas responsible for executive control (Huang et al., 2014). In particular, the prefrontal cortex, which is responsible for higher-order cognitive functions, shows decreased activity in smokers (Lawrence et al., 2003). Smokers may have trouble considering all of the repercussions of a decision, leading them to act on impulse and prioritize short-term gains above the long-term costs of their habit.

Sensation-seeking

Sensation-seeking, sometimes known as excitement-seeking or thrill-seeking, is the inclination to desire new and diverse feelings, emotions, and experiences. Individuals with this trait are always on the lookout for new and exciting experiences, and they are not afraid to put themselves in harm's way in pursuit of the profound emotions they crave. Sensation-seeking is the desire to try out strange, new, and intense things. Marvin Zuckerman, a pioneering psychologist, said that "sensation seeking is a personality trait that is defined by the search for new, varied, complex, and intense feelings and experiences and by the willingness to take physical, legal, social, and financial risks for such experiences" (Zuckerman, 2009).

Subsequent research suggests that high sensation-seeking affects every aspect of people's lives, including their participation in dangerous sports, the satisfaction they experience in their relationships before and during the marriage, their preferences in art, music, and entertainment, their food preferences, their driving habits, their job choices and how satisfied they are with them, their sense of humor, their creativity, and their social attitudes. High sensation seekers are more prone to engage in risky behaviors such as abusing alcohol, smoking, and drugs, and using illegal narcotics (Zuckerman, 2009). Additionally, they are more likely to be drawn to

occupations that involve high levels of stress. Further investigation by Zuckerman led to the discovery of data pointing to a physiological as well as a biochemical foundation for the attribute of sensation-seeking: It seems that people who desire high levels of feeling process stimuli distinctly, both in the brain and in their physiological responses (Park & Stangl, 2020).

Psychologists are interested in the relationship between risky behaviors and sensation-seeking such as drug experimentation, speeding, and risky sex, as well as psychiatric disorders ranging from substance use disorder to bipolar disorder—areas in which the public health implications are most clear. In addition to understanding why some people enjoy the fright factor while others studiously avoid it, scientists are interested in the relationship between risky behaviors and sensation-seeking (Giannini & Loscalzo, 2020). It is hoped that by gaining an understanding of the neural mechanisms that underlie such behaviors, both the systems level and at the molecular level, it will be possible to develop therapeutic interventions (whether they be behavioral or pharmacological) that might prevent the negative effects of risk-taking or help people channel their taste for adventure toward safer pursuits. This understanding will be achieved at both the systems level and the molecular level (Zuckerman, 1979).

The danger is not what drives thrill seekers. They are eager to take on new tasks and take in everything that life has to offer, regardless of the potential risks. As a result, individuals could be less likely to avoid dangerous pursuits like rock climbing, gambling, cliff diving, or trying new substances. Despite the obvious risks involved, risk-taking is essential to our evolutionary success. It is possible that humans would not have found new partners, inhabited the world, or thrived as a species if they had not had the guts to go into risky, uncharted terrain (Zuckerman, 2007).

Types of Sensation-seeking

It is a characteristic of an individual's personality that pertains to the inclination to actively pursue novel and intense experiences. The classification of various types is contingent upon the fundamental motivations and behaviors that propel an individual's inclination toward stimulation. The following are prevalent categories of sensation seeking:

Adventure and Thrill Seeking

The pursuit of novel and exciting experiences is an inherent human inclination that is often associated with seeking thrills and adventure. The concept of adventure can manifest in various ways, ranging from high-risk activities such as skydiving and bungee jumping to venturing into uncharted territories and experimenting with novel experiences. Engaging in activities that offer excitement and novelty can be an enjoyable and beneficial pursuit, however, it is crucial to prioritize safety and responsibility in the process. Before participating in any activity that may pose a threat to one's well-being, it is imperative to acquire knowledge regarding the potential hazards and implement suitable measures to ensure safety (Keane et al., 2020).

Seeking adventure and discovery does not always need putting oneself in harm's way. There exist several methods to discover novel locations and experiment with novel experiences while avoiding potential hazards. There exist numerous prospects to infuse enthusiasm into one's life without compromising safety, such as experimenting with novel cuisines or enrolling in a dance course (Gibson, 1996). Ultimately, the pursuit of excitement and exploration can yield constructive and satisfying outcomes, provided that it is executed prudently and securely.

Experience Seeking

Embracing an experience-seeking mindset may offer numerous potential benefits. Firstly, the pursuit of novel experiences can aid individuals in breaking away from habitual patterns and circumventing the risk of ennui or stasis. Through exposure to novel challenges and stimuli, individuals may acquire fresh proficiencies or augment pre-existing ones, thereby amplifying their perception of efficacy and self-regard. Moreover, the pursuit of new experiences can serve as a potent mechanism for individual development and introspection. Through the process of exposing oneself to novel circumstances and individuals, individuals can acquire fresh perspectives on their strengths, limitations, and principles. Consequently, individuals can enhance their ability to discern their objectives and preferences, and consequently, make deliberate decisions regarding their desired lifestyle (Duell & Steinberg, 2019).

Undoubtedly, experience-seeking is also accompanied by potential risks. Engaging in novel experiences can be a daunting or potentially hazardous endeavor, and individuals must exercise caution and prioritize their boundaries and well-being when venturing into uncharted territories. Achieving a balance between pursuing novel experiences and upholding consistency and regularity in one's daily routine is crucial. In general, the advantages of seeking experiences can be significant and can contribute to individuals' ability to lead more satisfying and purposeful existences (Duell & Steinberg, 2019). Through the acceptance of novel challenges and prospects, individuals can expand their perspectives, enhance their self-awareness and comprehension of the environment, and establish significant and enduring recollections.

Disinhibition

The term “disinhibition” describes the propensity for people to act in ways that they normally would not. Behaviors like impulsivity, risk-taking, and even aggressiveness are all signs of disinhibition. Disinhibition may be caused by several different things. Intoxication from drugs or alcohol is a typical contributor since it reduces inhibitions and clouds judgment. This might cause the person to act in ways they typically would not, such as engaging in risky activities like driving or having sexual relations without protection. Disinhibition may also be influenced by one’s social environment. Sometimes people do things they wouldn’t ordinarily do while they’re in a group because they feel less responsible for their conduct. This phenomenon is known as deindividuation, and it often occurs in places where people feel anonymous, such as vast crowds or the internet (Mullins-Sweatt et al., 2019).

There are advantages and disadvantages to a lack of inhibitions. On the plus side, it may cause people to be more open to new experiences, which in turn can boost their creativity and spontaneity. However, it also carries the risk of undesirable outcomes including addiction, criminal activity, and interpersonal difficulties. Knowing one’s propensities for impulsiveness and risk-taking might help one avoid the potentially disastrous effects of disinhibition. Family, friends, and mental health specialists are all resources that may help individuals regulate their habits and make better choices.

Sensation-seeking for Intellectual Stimulation

The term “sensation-seeking for intellectual stimulation” describes a person’s propensity to look for unusual, difficult, and demanding situations to exercise their mind and brain. People that exhibit this characteristic tend to be the kind who are eager to learn and try new things.

People who score highly on sensation-seeking measures are more likely to seek out intellectual stimulation through puzzle-solving, investigating new ideas and concepts, reading, and discussing them with others. In addition to thrill and adventure seeking, experience seeking, disinhibition, and sensitivity to boredom, research reveals that sensation-seeking for intellectual stimulation is a distinct element of the wider sensation-seeking construct. Sensation-seeking for intellectual stimulation, in contrast to the aforementioned aspects, is more directly related to cognitive engagement and investigation (Ravert & Donnellan, 2021).

Those who have a high sensation-seeking for intellectual stimulation score are more likely to be able to deal with uncertainty, think abstractly, and come up with original ideas. Careers or pastimes that provide intellectual challenge and the opportunity to solve problems may appeal to such people. Sensation-seeking for intellectual stimulation has both positive and negative consequences (Breivik et al., 2017). The positive aspects include more intellectual engagement and inventiveness. People who put too much stock on their mental well-being are at risk of isolating themselves from others and neglecting their emotional and physical well-being.

Sensitivity to Aesthetics

Aesthetic sensibility is the capacity to recognize and enjoy aesthetic qualities in a variety of mediums, such as fine art, music, literature, architecture, and the natural world. Aesthetic appreciation is the awareness of and emotional reaction to an object's or experiences' aesthetic features. Those who are highly attuned to aesthetics are typically described as having "a keen eye" or "refined taste." They have a keen eye for the intricacies of color, texture, shape, and composition in works of art and design (Cavalcante et al., 2022). They are more affected by the artwork's emotional and symbolic qualities, as well as its cultural and historical setting.

Attentiveness to beauty is not exclusive to the visual arts. It's not only limited to visual art; it may be used in any kind of written or spoken word. Those with a refined aesthetic sense will like the variety, complexity, and nuance found throughout musical forms. They can pick up on the lyrical, melodic, harmonic, and rhythmic undercurrents that give the music its depth and meaning. The same is true of literature; individuals with a keen eye for form can recognize and enjoy exquisite language, rich characters, and compelling narratives. Aesthetic appreciation, meanwhile, is a cultural and societal experience rather than a just personal one. Aesthetic preferences are impacted by a culture's values, beliefs, and traditions, and hence vary from one group to the next. Aesthetics in the West tend to stress independence, creativity, and uniqueness, whereas Japanese aesthetics value simplicity, elegance, and harmony with nature (Giannini & Loscalzo, 2020).

Sensation-seeking may be a desirable feature that can lead to personal growth and development; however, it can also be hazardous if it leads to reckless action or causes injury to oneself or others. It is crucial to keep in mind that although sensation-seeking can be a positive trait, it can also lead to these negative outcomes (Anderson et al., 2021). It is necessary to strike a balance between actively seeking out new experiences and acting responsibly and keeping in mind the possibilities of negative outcomes.

Sensation-seeking among Smokers

Researchers have shown that smokers had considerably higher scores on assessments of sensation-seeking characteristics compared to non-smokers. Previous studies have revealed that an increased desire for sensations increases one's likelihood of beginning drug use (Zhao et al., 2018). A significant number of studies have shown that a desire for sensation is a risk factor for the use of cigarettes and alcohol by adolescents. People who engage in risky actions in the social,

physiological, economic, or legal spheres, because they are looking for emotionally fresh, intense, complicated, and diverse experiences, are said to be seeking sensations (Hoffmann, 2021).

The nicotine in cigarettes might potentially activate the central nervous system, which in turn would increase the quantity of dopamine produced in the brain. Irritability, hallucinations, and other negative symptoms are common side effects of alcohol poisoning. In general, combining the use of tobacco and alcohol may make people happy, which in turn can encourage additional behaviors related to the use of cigarettes and alcohol in those who have a strong need for sensations (Osibogun et al., 2020). It is easier for high school students who have higher levels of sensation-seeking to underestimate the risk of tobacco and alcohol use, which in turn results in more tobacco and alcohol use behaviors among junior high school students. Additionally, high school students have a lower ability to assess risk. Consequently, a desire for new experiences is a risk factor for the use of cigarettes and alcohol among students in high school (Hwang & Park, 2015).

Risk Appraisal

An assessment of the likelihood that a certain occurrence in the future will take place is what is meant by the phrase risk appraisal. Assessment of risk, perceived probability, risk perception, and perception of vulnerability are all conceptually similar phrases. It is possible to do a risk assessment of both globally important occurrences (such as natural catastrophes and acts of terrorism) and those that are directly relevant to the individual (e.g., developing a disease, or losing a child). People's perceptions of danger have a significant impact on the choices they make and the ways they behave in many aspects of their lives, such as their relationships, their jobs, and their health (Barnum & Armstrong, 2019).

Women who do not believe they are at risk for breast cancer are unlikely to receive mammograms because they are less likely to pursue occupations in which there is a low possibility of having a job. College students are also less likely to choose careers in which there is a low chance of getting a job. Risk Appraisal may result in poor behavior and decision-making that is counterproductive, it is necessary to devise solutions that can rectify these evaluations. The average person has a completely different way of thinking about risk than specialists do, and this gap might have repercussions for public policy (Breivik et al., 2017).

When assessing the dangers they face, people often make mistakes. They have a propensity to overestimate the likelihood of minor risks while underestimating the likelihood of major hazards, and they tend to believe that happy occurrences are more likely to occur than bad ones. A cognitive bias known as “unrealistic optimism” describes the tendency for a disproportionately high number of people to believe that their degree of personal risk is lower than that of their peers. People also tend to exaggerate the likelihood of situations that have a low chance of happening but result in significant repercussions (e.g. airplane accidents, nuclear reactor explosions). Experiencing one of these situations is often accompanied by feelings of fear and helplessness, as well as the possibility of severely undesirable repercussions. The general public often holds the misconception that high-risk endeavors provide only limited benefits, although professionals hold the exact opposite belief (McKay et al., 2018).

In general, people are good at predicting the chance of a single event (such as landing a job), but they struggle when asked to estimate the probability of many events happening together (e.g., getting a job and being promoted). And they have a hard time grasping the exponential nature of risk; for instance, smokers are often unaware that their chance of developing lung cancer, as compared to that of nonsmokers, rises dramatically with each year they puff on

tobacco (McKay et al., 2018). As a result of the nature of the risk perception measurement and the information available to the responder at the time, people's risk perceptions are sometimes fabricated on the spot. As a result, this may be why risk assessments do not always lead to the expected behavioral outcomes (Frick, 2021).

Risk Appraisal among Smokers

For several different reasons, tobacco use among young people offers an essential example for understanding the impacts of risk messaging on dimensions like risk assessments, and behavioral attitudes. This is because of the prevalence of tobacco use within this age group. Smoking tobacco is related to an increased risk of using other tobacco products in the future, such as cigarette smoking. This is especially true for young individuals who use hookahs (Khouja et al., 2021). Hookah and tobacco use among young people are impacted by a variety of psychological variables, some of which risk messaging may be able to influence to promote behavior change. The widespread usage of tobacco among young people is largely attributable to the generation's misconception that using the product is neither hazardous nor addictive (Arab, 2015).

Relationship between Decision-making, Sensation-seeking, and Risk appraisal

Among young people, sensation-seeking is especially predictive of hazardous conduct because it is an unstable feature with higher levels found throughout youth and adolescence. Due to their arrogance, so-called "thrill seekers" fail to see the dangers of certain events and make maladaptive decisions. The second is that those who seek thrills are usually aware of the danger but choose to ignore it in favor of experiencing the excitement including addictive behaviors. The danger that thrill-seekers perceive in such situations lowers if undesirable results are

avoided, encouraging them to increase their frequency of risky behavior. It has been observed that adolescents and young adults may be more willing to accept risks because of their greater propensity for sensation-seeking (Karl, 2018). As a result, thrill-seeking, decision-making, and their effect on risk appraisal are the factors that should be taken into account while analyzing the actions of the individuals involved in risky behaviors including smoking.

The interrelated concepts of decision-making, sensation-seeking, and risk appraisal are fundamental in influencing an individual's behavior and actions. The interrelation of these factors is intricate and mutually influential. Sensation-seeking is a behavioral inclination characterized by the pursuit of novel and stimulating experiences, which is closely associated with engaging in risky conduct. Individuals with high levels of sensation-seeking tendencies tend to exhibit a greater propensity for engaging in risk-taking behaviors across multiple domains, such as financial, social, and physical domains. The aforementioned conduct can be attributed to the individuals' inclination towards activities that are deemed thrilling and invigorating, thereby fulfilling their desire for new experiences and daring pursuits.

Risk appraisal pertains to an individual's capacity to assess the possible outcomes of a specific action or decision. The process entails evaluating the probability of various results and contemplating the possible advantages and disadvantages of each alternative. Individuals possessing expertise in risk assessment tend to make better-informed judgments and exhibit reduced propensities to engage in hazardous conduct. Decision-making is a cognitive process that involves selecting an option among several alternatives. This process is influenced by a variety of factors, such as cognitive biases, past experiences, individual preferences. The process of making decisions can be impacted by various factors, including but not limited to, sensation-seeking, risk appraisal, and both internal and external factors (Karl, 2018). Sensation-seeking

people tend to make snap judgments without thoroughly understanding the repercussions of their actions.

Conversely, individuals who possess strong risk appraisal skills may tend to make cautious decisions, after conducting a comprehensive evaluation of the available options. Hence, the intricate and interrelated nature of correlation between decision-making, sensation-seeking, and risk appraisal is noteworthy. The propensity for sensation-seeking behavior may heighten the probability of engaging in hazardous activities. However, undertaking a risk appraisal can aid individuals in making judicious choices and circumventing avoidable risks. The capacity to make sound decisions that strike a balance between the pursuit of thrill and the necessity for security and constancy is an indispensable element of thriving in life.

Theoretical Framework

Decision-making Theories

The term “fuzzy-trace theory” (FTT) was coined by Charles Brainerd and Valerie F. Reyna. It is a cognitive theory that makes use of dual-trace notions to foretell and explain cognitive processes, particularly in the domains of thinking and memory. False memories and their formation, risk perception, medical probability judgments, decision-making, biases and estimating, and decision-making errors are only some of the phenomena that have been explained by the theory, which has been used in domains as diverse as human development, cognitive psychology, and social psychology (Reyna et al., 2015).

This theory proposes the premise that individuals do not take risks because they deliberately choose to do so but rather because they respond rather than decide. Therefore, the deliberate and introspective evaluations of their risk and benefit assessments typically foretell their actions.

Instead of taking such calculated risks, adults, in accordance with the fuzzy-trace theory, opt for a more meaning-based strategy centered on distilling the essential "gist" of crucial choices. The result is that grownups are less likely to engage in behaviors that endanger their health.

Experiments on adolescents and adults making unsafe decisions have shown that the conduct of adults can be described by their unstable personality traits like sensation-seeking and maladaptive decision-making (Reyna et al., 2015).

The concept of reinforcement learning (RL) refers to the capacity to learn the links between stimuli, behaviors, and the occurrence of either pleasurable events, which are referred to as rewards, or painful events, which are referred to as punishments. The anterior cingulate cortex, a brain area important for learning from experience and making better decisions about future behavior, provides the basis for this theory. In accordance with the principles of reinforcement learning, which indicate whether the current feedback is good or negative and entail the assessment of future risks, and which are related to decision-making behavior, this occurs (François-Lavet et al., 2018).

Sensation-seeking Theories

Zuckerman and his work are primarily associated with the hypothesis of sensory seeking. Simply defining sensation-seeking implies its close relationship to risk-taking. Sensation seeking, as described by Zuckerman, is “a characteristic characterized by the pursuit of unique, diverse, complicated, and intense feelings and experiences and the readiness to incur physical, social, legal, and financial risks for such experience.” Genetic research has shown that experience of craving accounts for at least 60% of individual variation. Low levels of the enzyme monoamine oxidase (MAO) and high levels of dopamine and adrenaline in the brain are linked to a desire for intense sensory experiences, often known as sensation seeking. So, those who seek

out extreme sensations are under-stimulated yet have a robust reward system. They are always on the lookout for novel experiences and drawn to going out and discovering things for themselves (Carrol et al., 1982).

Compared to low-sensation seekers, high-sensation seekers see circumstances as less hazardous, and as a result, they react to situations with a given risk with less fear and more pleasant emotions. In wartime, when unanticipated difficulties and hazards are present, this is of paramount importance. Zuckerman determined that extreme sensation seekers can endure a bigger spectrum of suffering from a variety of stimuli. They have a positive outlook and are better able to cope with the difficulties of daily life. Those who have a high need for thrills are more prone to engage in dangerous activities. They are more prone to engage in high-risk activities because they tended to see every given scenario as less dangerous than it is. Sensation-seeking individuals may be more likely to take risks with potential for loss because their brains and bodies are less sensitive to the negative outcomes of such risks while making decisions in the face of uncertainty (Zuckerman, 1979).

According to the reckless behavior theory, adolescents' increased propensity for risky behavior might be linked, in part, to their heightened need for novel experiences. According to the reckless behavior theory, an increase in the need for sensations throughout adolescence and adulthood may be somewhat to blame for the rise in risky behaviors that occur during this time. The term "recklessness" is also chosen over "thrill-seeking" because numerous activities (such as parachute jumping, rafting, and rock climbing) may be exhilarating while still being socially acceptable, and the possibility for major repercussions that might come from them is minimal. In irresponsible conduct, on the other hand, simple safeguards that may be taken are disregarded even though even though knowledge, and is being purposefully reduced (Arnett, 1992).

Risk-Appraisal Theories

The theory of planned behavior (TPB) is a cognitive theory that was developed by Ajzen (1991). This theory suggests that an individual's choice to participate in a certain action such as gambling or addictive behaviors may be predicted by the individual's intention to engage in that conduct and that is justified by the individual's tendency toward sensation-seeking. It is generally accepted that people's intentions accurately reflect the degree of work they are prepared to put forth to carry out certain conduct. There is a positive correlation between the intensity of motivation to act and the frequency with which that action is carried out. (Ajzen, 1991).

A further idea that attempts to explain why people accept risks is known as risk compensation or risk homeostasis. According to this notion, individuals have a propensity to engage in riskier behaviors if they have a heightened feeling of confidence. Alternatively stated, individuals adjust the extent to which they participate in dangerous activities dependent on the availability of preventive precautions. Similarly, people engage in smoking behavior because they perceive it as the least harmful of all the drugs (Wilde, 1994).

The argument put up by the situated rationality theory is that it is incorrect to assume that safe acts are necessarily rational and that high-risk behaviors are fundamentally illogical. To put it another way, the assumption that a risk-taker is just "mad" or seeking thrills is not nearly as illuminating as the possibility that there is a reasonable explanation for why individuals choose to take risks (Cafri et al., 2009).

The argument made by the habituated action hypothesis is that repeating high-risk conduct without experiencing any negative consequences might lead to a reduction in the perceived level of danger associated with continuing to engage in that behavior. Those who consistently engage in high-risk behavior without experiencing negative repercussions may, over time, grow desensitized to the dangers of doing so. For instance, consumers of tobacco products see the possibility of dying from an overdose as “an everyday occurrence” that comes with the territory of their habit (Weyman & Kelly, 1999).

Literature Review

The purpose of the study is to explore the association between decision-making, sensation-seeking, and risk appraisal in smokers and non-smoker university students. This section's objective is to conduct an in-depth analysis of the prior research that was published and served as the foundation for the present inquiry. University students have a high rate of smoking, which is associated with several health problems. Several factors, such as decision-making, sensation-seeking, and risk appraisal, influence whether or not someone decides to smoke. The purpose of this literature review is to present a synopsis of current research on the connections between decision-making, sensation-seeking, and risk assessment among collegiate smokers and non-smokers.

Among college students, the decision-making process and smoking have been the subject of several studies. According to research by Li et al. (2022), university students who smoke have worse judgment than their non-smoking counterparts (Li et al., 2022). Al-Zalabani et al. (2018) found that compared to non-smokers, smokers are more prone to act on impulse. Research like this suggests that college student's capacity to make decisions is relevant to their smoking habits (Al-Zalabani et al., 2018).

Smoking is harmful to health, however, despite this fact, a sizable minority continues to indulge in the habit. Ert et al. (2013) sought to clarify the mental models that lead smokers to take unnecessary risks. They imply that the difference in choice-making between smokers and nonsmokers is not primarily due to a greater tolerance for risk. We propose that the capacity to resist temptations is more likely to be the connecting factor between smoking and risk-taking. Experiments have shown that smokers are more susceptible to temptation than nonsmokers when presented with opportunities for rapid gratification. Tobacco users may be led astray even in a

hypothetical setting like the Iowa Gambling Task by the easy availability of riskier options that consistently provide high payoffs. These results indicate that smokers' propensity to give in to immediate temptation rather than pursuing rewards explains the risk-taking behavior associated with tobacco use (Ert et al., 2013).

The purpose of the research conducted by Rotarescu and Ristache (2016) was to evaluate the impact that smoking has on the decision-making processes of persons who are at risk through the application of Kahneman's theory of estimated chances. The smoking group included persons who had never smoked as well as those who had smoked in the past but had given up the habit at some point. This might be a plausible reason for the indifference toward danger. The findings revealed a connection between the habit of smoking and the way decisions are made when faced with potential danger. Smokers were more likely to make choices that included taking risks, while non-smokers showed resistance to taking chances (Rotarescu & Ristache, 2016).

Important aspects of nicotine dependency include problems with decision-making and impaired control over one's impulses (ND). Our objective was to investigate the impact that smoking-related priming cues have on inhibitory control in ND and later decision-making, as well as the relationship between these priming effects and valence evaluations, nicotine deprivation, and yearning. Kraplin et al. (2019) observed evidence for small group effects that suggested those with ND made more dysfunctional decisions and reacted more quickly in response to smoking-related signals than they did to neutral cues. This was in comparison to people who had never smoked. The temporal sequence in which a cue is presented has a direct bearing on the cue-induced modifications that occur in decision-making in ND. Cues associated with smoking seem to evoke subsequent alterations in valuation signals as well as attentional and

inhibitory processes in former smokers that are distinct from those seen in never-smokers (Kraplin et al., 2019).

Fecteau et al. (2014) conducted a study to investigate the decision-making behaviors among tobacco smokers. The majority of people who smoke tobacco and want to stop do not succeed in accomplishing their aim. The decision-making system of an addict is often marked by faulty cognitive control and a high desire for reward. This is an essential facet of addiction that is not given nearly enough attention, but it should be. The participants were given two tDCS regimens, each lasting five days (active or sham). At a current of 2 milli-amperes, stimulation was applied to the right DLPFC for a period of half an hour. Before and after each session, participants had their nicotine cravings, cigarette intake, and decision-making abilities evaluated (Fecteau et al., 2014).

The key findings include a statistically significant decrease in cigarette use after active stimulation compared to sham stimulation. This impact lingered for as long as four days after the stimulation program had been terminated. When it came to making decisions, smokers who had received active stimulation as opposed to sham stimulation during the Ultimatum Game were more likely to turn down offers of smokes but did not do so when presented with financial offers. Neither the presence of smoke nor the presence of money as a reward resulted in a statistically significant shift during the Risk Task (Fecteau et al., 2014).

Chen et al. (2020) conducted a study to determine whether or not substance users are more likely to make dangerous decisions, as well as the influence of polysubstance use status, time of abstinence, drug type, and treatment status on risky decision-making. To find case-control studies or cross-sectional studies that employed behavioral tasks to evaluate hazardous decision-making in drug users, a literature search was carried out with no constraints placed on

the date range covered by the search. It was determined using a model with random effects. To evaluate the reliability of the evidence, GRADE criteria were used. According to the findings, drug use is linked to poor hazardous decision-making, which suggests that treatments focusing on risky decision-making in substance users should be created for relapse prevention and recovery (Chen et al., 2020).

It is not well understood how water pipe tobacco users and nonsmokers compare harm perceptions regarding waterpipe tobacco smoking (WTS), as well as how these harmful views are connected to risk evaluations and intentions to participate in water pipe tobacco smoking. Lipkus and Mays (2018) studied young adults who smoked tobacco via water pipes, compared them to nonsmokers who were both sensitive and resistant to the effects of secondhand smoke, and found that all three groups were affected differently. Turkprime was utilized to do online recruitment of young persons in the age range of 18 to 30 who had either used tobacco from a water pipe within the last 30 days or had never used water pipe tobacco. It was determined if non-smokers were vulnerable to the disease or not (Lipkus & Mays, 2018).

Measures of harm beliefs and risk assessments (i.e., perceived hazards and concerns were completed by the participants. The research was conducted on a total of 247 smokers and 418 non-smokers. The level of support for harmful beliefs that represented WTS as safe was highest among smokers, followed by susceptible nonsmokers, and then non-susceptible nonsmokers who did not smoke. The vast majority of harmful beliefs were shown to have a strong relationship with risk evaluations with waterpipe tobacco, except for vulnerable nonsmokers (Lipkus & Mays, 2018).

The use of tobacco is linked to several risky behaviors, including a risk-taking mindset. According to several studies, the correlation between smoking and dangerous decision-making in

both adolescents and adults has been brought to the public's notice. Even though not a lot of research has been done on the subject, the little that has been done shows that those who smoke tend to make dangerous choices. Personality qualities like sensation-seeking play a role in why people who smoke are drawn to taking risks and making choices that are fraught with danger (Rotarescu & Ristache, 2016).

Students who smoke cigarettes are more likely to participate in other potentially harmful activities, such as drinking to excess and engaging in sexual activity without protection. The research conducted by Copeland et al. (2009) aimed to answer the questions of whether smokers perceive a lower level of danger associated with these actions than nonsmokers do, and if the rate of smoking affects how risk is perceived. According to the results of the research, smokers reported a considerably lower risk, a greater benefit, and a greater engagement in hazardous activities than nonsmokers did. College students' perceptions of the dangers posed by high-risk activities affected their decisions to smoke. A shift in their sense of danger may, as a result, cause them to engage in other high-risk activities (Copeland et al., 2009).

Research conducted by Halpern-Felsher et al. (2004) sought to compare the attitudes of teenage smokers and non-smokers about the health hazards and potential advantages of taking up the habit. A total of 395 students participated in an online survey on their attitudes against smoking and their own personal smoking histories, habits, and goals. Both current and future teen smokers have lower perceptions of their vulnerability to adverse smoking-related effects than their nonsmoking peers. Even would-be smokers and smokers reported a lower risk of becoming addicted. Youth who smoke or who aspire to start smoking are more optimistic about their chances of enjoying a smoking-related advantage than their counterparts who do not engage in any of these behaviors (Halpern-Felsher et al., 2004).

Pfeifer (2012) researched to elucidate the connection that exists between an individual's level of health risk aversion and their propensity to smoke. The most important takeaway from this study is that those who are more prone to taking risks are also much more likely to smoke and have a greater need for the number of cigarettes smoked daily. According to the theoretical frameworks, one possible explanation for the relationship between risk-taking and smoking is that those who take more risks anticipate experiencing fewer adverse effects as a result of their smoking habits. Those who are willing to take risks are thus more prone to participate in harmful behavior (Pfeifer, 2012).

Research on the role of risk appraisal in the decision to smoke among college students has also been conducted. According to research by Wang et al. (2018), smokers are less likely to accurately assess the dangers of tobacco use compared to non-smokers (Wang et al., 2018). Students who see smoking as having fewer negative consequences are more likely to light up (Niu et al., 2020). According to these results, risk perception may play a role in college students' propensity to smoke.

Harmsen et al. (2006) used the Sensation Seeking scale and nicotine dependency to examine whether cigarette users showed evidence of poor decision-making. There were two categories of smokers identified: those who were reliant on cigarettes and those who were not. The decisional balance scale was used for the assessment, and the results showed that those between the ages of 17 and 19 had the greatest scores for sensation seeking, with those values gradually decreasing with advancing age. This high mean age may cover an already established connection between sensation-seeking and nicotine dependency given the information presented here. The results of longitudinal research involving young people might indicate whether or not SSS-V scores have the ability to predict nicotine dependency and future smoking, or whether or

not Sensation has an association with an already established nicotine dependence (Harmsen et al., 2006).

Hwang and Park (2015) conducted a study among high school students in the Republic of Korea to examine the correlation between the three categories of smoking behavior (never smoking, trying smoking, and current smoking) and the four dimensions of sensation seeking (disinhibition, experience seeking, adventure and thrill-seeking, and boredom susceptibility). Two different models were used for practice in multivariate multinomial logistic regression analysis. Model 1 included the four sensation-seeking subscales as independent variables. In Model 2, they added additional control variables to Model 1 to account for the influence of these other factors (i.e., characteristics relating to demography, school, family, persons, and friends). According to the results of the research, those who desire extreme sensations engage in dangerous conduct largely to achieve the arousal that is connected with the action. In light of this reality, it is desirable to examine intervention measures that encourage high sensation seekers to get engaged in healthy activities that are socially acceptable, such as sports, rather than engaging in smoking behavior (Hwang & Park, 2015).

The purpose of the study by Latorre Román et al. (2014) is to investigate the connection between sensation seeking, the use of alcohol and/or cigarettes, and athletic participation among teenagers. The need for excitement and the ability to let go of inhibitions are variables that are somewhat predictive of tobacco use, as is the ability to let go of inhibitions when it comes to alcohol intake. Sensation-seeking is a personality feature that has been linked to the early intake of drugs like alcohol and cigarettes, and some characteristics of sensation-seeking have been identified as reliable indications of the tendency to consume such substances (Latorre Román et al., 2014).

Adolescent cigarette usage is significantly linked to sensation seeking. But there has not been much research done on how it relates to youth e-cigarette usage. Case et al. (2017) looked at the connections between different types of e-cigarette usage and sensation seeking among teenagers in Texas, both in the short and long term. Weighted multivariate logistic regression was used to examine the associations between ever-e-cigarette use and sensation-seeking, susceptibility to current e-cigarette use, and e-cigarette use. Those with a greater propensity toward and the likelihood of ever smoking electronic cigarettes had mean sensation-seeking ratings that were higher. Only the correlation between higher levels of average sensation seeking and first e-cigarette use persisted over time among the correlations evaluated. Neither the cross-sectional nor the longitudinal investigations identified any statistically significant associations between sensation seeking and current or former e-cigarette use. Texas adolescents who were more adventurous and open to trying new things were more likely to experiment with electronic cigarettes.

Sensation-seeking has also been connected to the habit of smoking among college students. Yu et al. (2020) discovered a positive correlation between sensation-seeking and cigarette smoking among Chinese college students (Yu et al., 2020). Leeman et al. (2014) found that seeking for novel experiences was a major predictor of smoking start among Latino college students (Leeman et al., 2014). These results provide support for the hypothesis that sensation-seeking contributes to smoking among college students.

Summary of the Literature Review

There are a certain number of specific studies conducted on the decision-making, sensation-seeking, and risk appraisal in smokers and non-smokers of university students. It has been observed by reviewing the literature that sensation-seeking is an unstable trait and people

with this trait are often involved in excitement and thrill-seeking behavior, they do not think before acting, they just act and are involved in risky behavior. Sensation-seeking and disturbed decision-making result in poor risk appraisal. Overall, the literature suggests that decision-making, sensation-seeking, and risk appraisal are important factors in smoking behavior among university students.

The Rationale of the Study

This study was conducted to determine the relationship between decision-making, sensation-seeking, and risk appraisal among university students. This study was an attempt to investigate the predictors of risk appraisal in smoking and non-smoking university students. The purpose of this research was to identify relevant factors that correlate with and predict risk appraisal in male college students who smoke and who do not smoke. Around the globe, a substantial amount of research is being carried out on various aspects that are connected to appraisal. To the best of the researchers, research on this particular mix of factors has never been conducted inside the framework of Pakistan. The research would also be conducted to determine the difference between smoking and non-smoking university student in terms of the difference in the proposed variable.

It has been noted that a poor risk assessment is associated with sensation-seeking, which in turn might lead to disordered decision-making. It is expected that risk appraisal is going to be a greater factor in intentions to get engaged in tobacco smoking. Examining the connections between sensation-seeking, decision-making, and risk assessment in university students who smoke cigarettes and those who do not smoke cigarettes can help fill the gaps that have been identified in the research. In conclusion, the amount of study that has been done on these variables is quite little, and there are gaps in the research that should be investigated.

Objectives of the Study

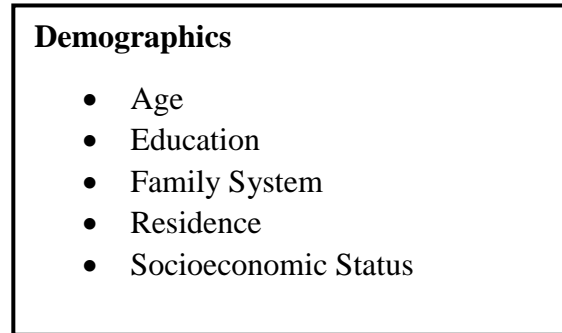
- To examine the relationship between decision-making, sensation-seeking, and risk appraisal among smoking and non-smoking university students.
- To find out decision-making and sensation-seeking as predictors of risk appraisal among smoking and non-smoking university students.
- To investigate the differences between decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking university students.

Hypotheses of the Study

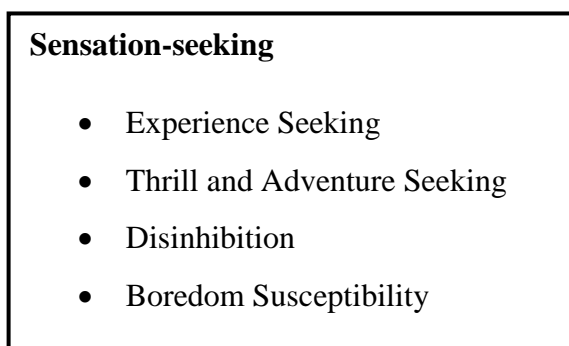
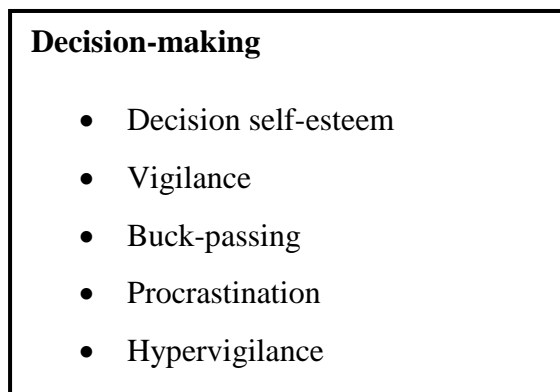
1. There is likely to be a significant relationship between decision-making, sensation-seeking, and risk appraisal among smoking and non-smoking university students.
2. Decision-making and sensation-seeking are likely to predict risk appraisal among smoking and non-smoking university students.
3. Decision-making, sensation-seeking, and risk appraisal are likely to predict smoking and non-smoking university students.
4. There are likely to be significant differences in decision-making, sensation-seeking, and risk appraisal among smoking and non-smoking university students.

Proposed Model

Covariates



Predictor



Outcome

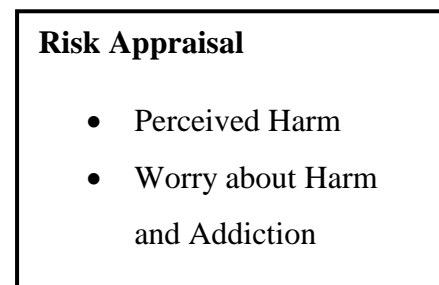


Figure 1.1 showing the proposed model of the relationship between decision-making, sensation-seeking, and risk appraisal

Chapter II

Method

Research Design

The cross-sectional study design was used in this research.

Participants (Sample and Sample Strategy)

The total sample size of the study was 200 male university students who were selected by using G power analysis. The participants were divided into two groups including smokers (n=100) and non-smokers (n=100). The data was collected from the private and government institutions. The participants were selected by using purposive sampling techniques from different private and government universities.

Inclusion Criteria

- Participants over 18 years of age were included in this study
- Participants who smoked at least 5 to 10 cigarettes a day will be classified as smokers and those who do not smoke at all as a non-smoker.
- Participants who smoke waterpipe tobacco once a week were included in the study.
- Participants who will be willing to participate were included.

Exclusion Criteria

- Participants who had ever or current use of the psychoactive substance were excluded from this study.
- Participants with chronic medical/mental illness were excluded from this study.

Table 2.1*Demographic Characteristics of Sample of Smoking and Non-smoking University Students*

Variables	M (SD)	f (%)
Age	22.5 (4.67)	
Socioeconomic Status		
Upper Class		41(20.5)
Middle Class		148(74)
Lower Class		11(5.5)
Education		
Graduation		125(62.5)
Post-graduation		74(37.0)
Family System		
Joint Family System		102(51)
Nuclear Family System		98(49)
Residence		
Day Scholar		118(59)
Hostelite		82(41)

Operational and Conceptual Definitions

Decision-making

Leon Mann defined decision-making as “the process of identifying and selecting a course of action to solve a specific problem or address a particular opportunity, based on a set of criteria and constraints, and considering the possible consequences of different options.” In essence, decision-making involves evaluating alternatives and choosing the best option based on a set of factors, including goals, values, resources, and information. It is an essential skill that individuals, groups, and organizations must possess to achieve their objectives effectively (Janis & Mann, 1977). It is defined operationally as the scores obtained on Melbourne Decision-Making Questionnaire by the participants.

Sensation-seeking

According to Zuckerman (1979), “Sensation seeking is a personality characteristic that is characterized by the demand for innovative, diverse, and complex sensations and experiences and the readiness to face physical and social risks for such experience. The high-sensation seeker is attuned to the feelings occurring inside themselves and seeks out external stimuli that would amplify those experiences (Zuckerman, 1979).). It is defined operationally as the scores obtained on Sensation-seeking Scale by the participants.

Risk-Appraisal

An assessment of the likelihood that a certain occurrence in the future will take place is what is meant by the term “risk appraisal.” Assessment of risk, perceived probability, risk perception, and perception of vulnerability are all conceptually similar phrases. It is possible to do a risk assessment of occurrences that are both internationally important (such as acts of terrorism or natural catastrophes) and those that are individually relevant (e.g., developing a

disease or losing a child). People's perceptions of danger have a significant impact on the choices they make and the ways they behave in many aspects of their lives, such as their relationships, their jobs, and their health (Horvath & Zuckerman, 1993).). It is defined operationally as the scores obtained on Risk Appraisal Scale by the participants.

Demographic form

To gather knowledge about exclusive information about smoking and non-smoking university Students such as age, family system, socioeconomic status, residence, and education, a self-constructed demographic information sheet was used.

Melbourne Decision-Making Questionnaire

The Melbourne Decision-making Questionnaire is a tool for gauging how people handle difficult decision-making scenarios. It consists of 28 items. It distinguishes between five approaches to decisions Vigilance involves weighing all available options and making educated choices. Hypervigilance is characterized by an overly cautious and tense attitude, whereas procrastination entails putting off important choices. Buck Passing is to abdicate responsibility by passing the buck to others. (Mann et al., 1997).

Cronbach's alpha internal consistency coefficients and total item correlations were used to analyze the MDMQ's reliability. Each of the MDMQ's five subscales has a high degree of internal consistency, with a Cronbach's alpha of between .80 and .82 for self-esteem, .77 for vigilance, .75 for procrastination, and .79 for hypervigilance. Correlations between items and total scores varied from .60 to .77 on the self-esteem scale, .42 to .61 on the Buck-Passing subscale, .50 to .65 on the procrastination scale, and .57 to .68 on the hypervigilance scale.

Brief Sensation-Seeking Scale

The sensation-seeking behavior is assessed by the use of the Brief Sensation Seeking Scale (BSSS), a self-report questionnaire. The BSSS measures sensation-seeking along four dimensions (boredom susceptibility, experience seeking, disinhibition, thrill and adventure seeking) via its eight items. You may rate how you feel about each statement on a five-point Likert scale ranging from "strongly disagree" to "strongly agree." Totaling the scores reveals the degree to which the individual is searching for novel experiences. BSSS has been widely used in research to explore the relationship between sensation-seeking behavior and various aspects of personality, including impulsivity, risk-taking, and drug use. However, it is important to note that the BSSS should be used in conjunction with other measures and should not be used as a sole indicator of sensation-seeking behavior. The reliability of the scale is 0.80. (Hoyle et al., 2002).

Risk-Appraisal Scale

The Risk Appraisal scale consists of four measures that reflect participants' assessments of the dangers posed by hookah tobacco (i.e. perceived risks, worry about risks). The total risk assessment score was created by averaging the scores of the four items, which exhibited excellent internal consistency ($\alpha = 0.81$), with higher values suggesting greater risk appraisals. Within the context of mediation analysis, risk appraisal items were investigated as a latent variable. This measure is used to evaluate factors such as the perceived risk of harm, fear of potential harm, perceived risk of addiction, and anxiety about potential addiction (Lipkus & Mays, 2018).

Procedure

After receiving approval from the institutional review board, written consent was obtained from all study participants. Prior to participation, each participant was provided with a

comprehensive overview of the study's objectives, methodology, and scope. It was ensured that participants' privacy was protected and that their data would only be used for research study. There were no penalties for dropping out of the research, since participation was entirely voluntary. Permission to use the scale was obtained from its original authors, and participants were informed of the study's purpose before signing the consent form. The study was cross-sectional, and participants were categorized as either smokers or non-smokers. Participants were given a detailed explanation of the study's plan and were requested to complete the questionnaire. The questionnaire took approximately 15-20 minutes to administer. Participants were informed of their right to withdraw from the study at any time and to seek clarification on any issues related to the research.

Ethical considerations

To plan this study, some ethical deliberation was kept in mind.

- The authors' permission was obtained through email before using the tools in this study.
- An authorization letter signed by the head of the department and supervisor of the Department of Applied Psychology at Kinnaird College for Women University in Lahore was provided to the relevant authorities to obtain approval for data collection.
- Detailed informed consent was obtained from the participants, ensuring their voluntary participation, and providing them with a briefing about the purpose of the study.
- Participants were informed about the confidentiality of their information and were assured that their information would only be used for research purposes.
- Anonymity of the participants and confidentiality of the data were maintained.
- Participants were given the right to leave the study at any time if they felt uncomfortable.

- The dignity of those who participated in the research was treated with the utmost respect, and any deceit or exaggeration about the purpose and goals of the study was avoided.
- The study ensured that there was no physical or psychological harm to the participants.
- Participants were assured that their responses would only be used for academic purposes.
- The findings were reported accurately and precisely.
- Correct representation of the results was ensured.

Statistical Analyses

The Statistical Package for Social Science version 23 was used for the analysis of the data. This research also includes descriptive data such as means (M), standard deviations (SD), and percentages among other descriptive statistics. A test of normality was performed to examine the normality of the data. The reliability tests were carried out so that the reliability of the scales could be determined. In this study, the level of Alpha was set to be 0.5. Pearson product-moment correlation was used to investigate the relationship between decision-making, sensation-seeking, and risk appraisal. To assess decision-making and sensation-seeking as predictors of risk appraisal in smoking and non-smoking university students, multiple hierarchical regression was also used.

Chapter III

Results

The findings of the present research are presented in this chapter. The data collected for the study were analyzed using SPSS version 23, and details of the descriptive and inferential statistics are covered in this chapter.

Descriptive Statistics

The present study conducted an analysis of the measures' reliability to determine the internal consistency of the data obtained through these measures. The findings of the reliability analysis are further elaborated upon in the following section.

Table 3.1*Psychometric Properties of Major Study Variables in the Sample (N=200)*

Variables	<i>k</i>	M	SD	α	Skewness	Kurtosis	Actual Range	Potential Range
MDMQ	28	.96	.42	.92	-.23	-1.57	.8-1.64	0-56
Decision Self-esteem	6	2.86	1.43	.71	.47	-.93	0-6	0-12
Vigilance	6	1.0	.54	.79	.13	-.94	0-2	0-12
Buck-passing	6	.92	.51	.75	.06	-1.07	0-1.83	0-12
Procrastination	5	.97	.48	.76	.11	-1.07	0-2	0-10
Hypervigilance	5	.95	.48	.74	-.11	-.97	0-1.8	0-10
BSSS	8	2.98	1.09	.90	-1.47	-1.29	1-4.88	8-40
Experience Seeking	2	2.61	1.26	.72	.43	-1.16	1-5	2-10
Thrill and Adventure Seeking	2	3.17	1.19	.70	-.22	-1.12	1-5	2-10
Disinhibition	2	3.09	1.33	.74	.17	-1.34	1-5	2-10
Boredom	2	3.04	1.29	.79	-.10	-1.28	1-5	2-10
Susceptibility								
RAS	4	3.8	1.4	.79	.40	-1.06	1.5-6.75	4-28
Perceived Harm	2	3.53	1.71	.74	.36	-1.21	1-6.5	2-14
Worry about Harm and Addiction	2	4.07	1.44	.71	.12	-.86	1-7	2-14

Note, MDMQ= Melbourne Decision-making Scale, BSSS= Sensation-seeking Scale, RAS= Risk Appraisal Scale, *k* =No. of items, α = Cronbach's alpha, M= Mean, SD= Standard Deviation.

The findings presented in Table 3.1 indicate that the distribution of the sample is devoid of any significant skewness and kurtosis values. All values are within the acceptable range of ± 1.96 , which suggests that the distribution is approximately normal. Table 3.1 displays the Cronbach's Alpha values for all scales, which collectively demonstrate the questionnaires' reliability ranging from fair to excellent in the study.

Inferential Statistics

To test the hypotheses of the present study, Multiple Hierarchical Regression and Pearson Product Moment Correlation were used. In addition, binary logistics was performed to determine the decision-making, sensation-seeking, and risk appraisal as the predictor of smoking status in smoking and non-smoking university students. An Independent sample t-test was also used in the present study to determine the differences in decision-making and sensation-seeking and risk appraisal in smoking and non-smoking university students.

Table 3.2

Pearson Product Moment Correlation Coefficient among Decision-making, Sensation-seeking, and Risk Appraisal in Smoking University Students (N=200).

Variables	<i>n</i>	M	SD	1	2	3	4	5	6	7	8	9	10	11
Decision Self- esteem	100	1.80	.87	----										
Vigilance	100	.57	.29	-.07	----									
Buck-passing	100	.51	.31	.10	.05	----								
Procrastination	100	.59	.27	.07	.09	.33**	----							
Hypervigilance	100	.57	.27	.07	.17	.10	.26**	----						
Experience Seeking	100	3.20	1.23	-.26**	-.06	-.11	.01	.04	----					
Thrill and Adventure Seeking	100	3.93	.78	-.07	.01	-.13	.12**	.02	.31**	----				
Disinhibition	100	3.98	.89	-.12	.01	-.08	-.05	.06	.35**	.45**	----			
Boredom	100	3.93	.82	-.01	-.10	-.01	-.00	.16	.04	.23**	.25**	----		

Susceptibility

Perceived Harm	100	2.98	1.27	.06	.01	.12	.13	.09	-.12	-.11**	-.05	.11	----	
Worry about Harm	100	3.60	1.16	.10	.03	-.00	-.03	-.02	-.04	-.14	.12	-.18**	.09	----

and Addiction

Note: M= Mean, SD= Standard Deviation

* $p < .05$. ** $p < .01$. *** $p < .001$

Pearson Product Moment Correlation analysis was used to investigate the relationship between decision-making, sensation-seeking, and risk appraisal in smoking university students. Results showed that only one dimension of decision-making i.e. decision self-esteem has a weak significant negative relationship with experience-seeking. This shows that smoking students who are more interested in experience-seeking have low decision self-esteem.

Table 3.2 also showed that thrill and adventure-seeking have a weak significant positive correlation with procrastination and a weak significant correlation with perceived harm. It shows that smoking university students who are more attracted to thrill and adventure-seeking are more likely to procrastinate and have the least perception of risks. The results also showed that Boredom susceptibility has a weak significant correlation with worry about harm and addiction. This shows that the smoking students who score more on boredom susceptibility are less worried about harm and addiction to smoking behavior.

Table 3.3

Pearson Product Moment Correlation Coefficient among Decision-making, Sensation-seeking, and Risk Appraisal in Non-smoking University Students (N=200).

Variables	<i>n</i>	M	SD	1	2	3	4	5	6	7	8	9	10	11
Decision Self- esteem	100	3.92	1.04	----										
Vigilance	100	1.44	.35	.18	----									
Buck-passing	100	1.33	.31	-.11	.14	----								
Procrastination	100	1.35	.32	-.20*	-.02	.12	----							
Hypervigilance	100	1.34	.23	-.07	.07	-.05	.19	----						
Experience Seeking	100	2.02	.98	-.11	-.13	-.06	-.04	-.07	----					
Thrill and Adventure Seeking	100	2.40	1.01	.02	-.16	-.06	-.06	-.14	.74**	----				
Disinhibition	100	2.21	1.09	.007	-.17	-.03	.03	.47*	.59**	.61**	----			

Boredom	100	2.15	1.04	-.04	-.18	-.12	-.08	-.24	.59**	.58**	.58**	----		
Susceptibility														
Perceived	100	4.07	1.91	-.01	.22*	.02	-.05	-.13	.14	.16	.14	.18	----	
Harm														
Worry about	100	4.55	1.54	.05**	-.07	.06	-.00	-.09	.14	-.20*	.09	.14	.75**	----
Harm and														
Addiction														

Note: M= Mean, SD= Standard Deviation

* $p < .05$. ** $p < .01$. *** $p < .001$

Pearson Product Moment Correlation analysis was used to investigate the relationship between decision-making, sensation-seeking, and risk appraisal in smoking university students. The results show that Vigilance has a weak significant positive correlation with perceived harm. It means that non-smoking students who are vigilant have strong risk perceptions. Table 3.3 also shows that there is a strong significant correlation between disinhibition and hypervigilance which means that the non-smoking students who are hypervigilant usually show disinhibited behavior.

The results also show worry about harm belief has a weak significant relationship with decision self-esteem and a weak significant relationship between worry and thrill and adventure seeking. It means that non-smoking students who have a strong

decision self-esteem are more worried about the harm and addiction to smoking behavior. The results also show that the non-smoking students who are thrill and adventure seekers are less worried about harm and addiction to smoking behavior.

Table 3.4

Binary Logistic Regression Showing Decision-making, Sensation-seeking, and Risk Appraisal as Predictors of Smoking and Non-smoking Behavior in University Students (N=200).

Predictors	B	S.E	Wald	OR	95% CI	
					LL	UL
Decision self-esteem	1.67	.57	1.46	1.16	.89	1.25
Vigilance	.89	1.07	.27	.80	1.62	2.78
Buck-passing	.41	.86	0.79	.90	.88	3.75
Procrastination	-.13	.81	1.19	.87	.76	1.65
Hypervigilance	.58	1.19	.28	.32	1.87	4.87
Experience Seeking	1.49	2.42	2.76*	.44	.78	1.24
Thrill and Adventure Seeking	.43	.63	2.49**	.76	1.97	4.98
Disinhibition	-.39	.55	1.32	.02	1.01	2.54
Boredom Susceptibility	-.98	.29	3.84*	.01	.59	1.67
Perceived Harm	-.23	.22	.98	1.88	1.57	2.78
Worry about Harm and Addiction	-1.75	.24	1.20	.89	.98	1.92
Model χ^2 (df)	27.71**(8)					
Negel kerke R^2	.71					

Note: ^a coding for gender (Smokers = 1; Non-smokers = 2) * $p < .05$. ** $p < .01$. *** $p < .001$

A binary logistic regression was performed to ascertain the decision-making, sensation-seeking, and risk appraisal on the likelihood that participants are smokers or non-smokers. Hosmer-Lemeshow Goodness of Fit test showed that the logistic regression model is an adequate fit to the data. The logistic regression model was statistically significant, $\chi^2(8) = 27.71, p = .001$. The model explained 71% of the variance in smoking status and correctly classified 100% of cases. Experience Seeking, thrill and adventure seeking, and boredom susceptibility turned out to be significant predictors of smoking behavior. If participants show decreased levels of experience Seeking, thrill and adventure seeking, and boredom susceptibility personality traits, then chances are they are more likely to be non-smoking than smoking university students.

Table 3.5

Multiple Hierarchical Linear Regression showing Decision-making and Sensation-seeking as Predictors of Perceived Harm in Smoking and Non-smoking University Students (N = 200).

Predictors	B	95% CI for B		S.E B	β	R ²	ΔR^2
		LL	UL				
Step I						0.10**	.10**
Constant	2.37	1.78	2.95	.30	-----		
Decision Self-esteem	.15	-.07	.37	.11	.13		
Vigilance	-.44	-1.12	.24	.35	-.14		
Buck-passing	.67	-.05	1.39	.37	-.20*		
Procrastination	.30	-.49	1.08	.40	.08		
Hypervigilance	.28	-.59	1.14	.44	.07		
Step II						.12**	1.01**
Constant	1.30	-.29	2.89	.80	-----		
Decision Self-esteem	.16	-.07	.39	.12	.13		
Vigilance	-.31	-1.01	.38	.35	-.10		
Buck-passing	.78	.05	1.50	.37	-.23*		
Procrastination	.32	-.46	1.10	.40	.09		
Hypervigilance	.41	-.48	1.29	.45	.11		
Experience Seeking	-.07	-.33	.17	.13	-.06		
Thrill and	.21	-.13	.54	.17	.14		

Adventure Seeking

Disinhibition	-.09	-.39	.20	.15	-.07
Boredom	.17	-.12	.46	.15	.13

Susceptibility

Note: CI = confidence interval; LL = lower limit; UL = upper limit

* $p < .05$. ** $p < .01$. *** $p < .001$

Multiple Hierarchical Linear regression was run to identify the predictors of risk appraisal in smoking and non-smoking university students. Five dimensions of decision-making and four dimensions of sensation-seeking were entered as predictor variables in the regression model. Perceived harm was entered as an outcome variable.

After conducting the regression analysis, no influential cases were identified in the data. Moreover, it was found that all of the regression assumptions were satisfied. Specifically, the assumption of independent errors was verified using the Durbin-Watson statistic, which yielded a value within the acceptable range of 1 to 3. The assumption of no perfect multicollinearity was tested by assessing the tolerance values, and it was confirmed that the assumption was met since all the values exceeded the threshold of .2. In addition, the assumptions of homoscedasticity, linearity, and normally distributed errors were also satisfied. These findings suggest that the regression model is reliable and that the results can be interpreted with confidence.

In model, I, five dimensions of decision-making i.e. decision-self-esteem, vigilance, buck-passing, procrastination, and hypervigilance entered and the regression model was significant, $R^2 = .10$, $F(5, 199) = 4.54$, $p < .001$. In model II, four dimensions of sensation-seeking along with five dimensions of decision-making were entered and the regression model turned out to be significant, $R^2 = .12$, $F(9, 199) = 2.97$, $p < .001$. When the effect of model I was

excluded from model II, model II still remained significant, $\Delta R^2 = .02$, $F(5, 184) = 1.10$, $p < .001$. Among all the predictors entered buck-passing emerged as a significant positive predictor of risk appraisal among smoking and non-smoking university students. This suggests that university students who have buck-passing characteristics usually attribute their responsibilities to others while making decisions and are less likely to have a strong perception of risks.

Emergred Model 1

Predictors

Decision-making

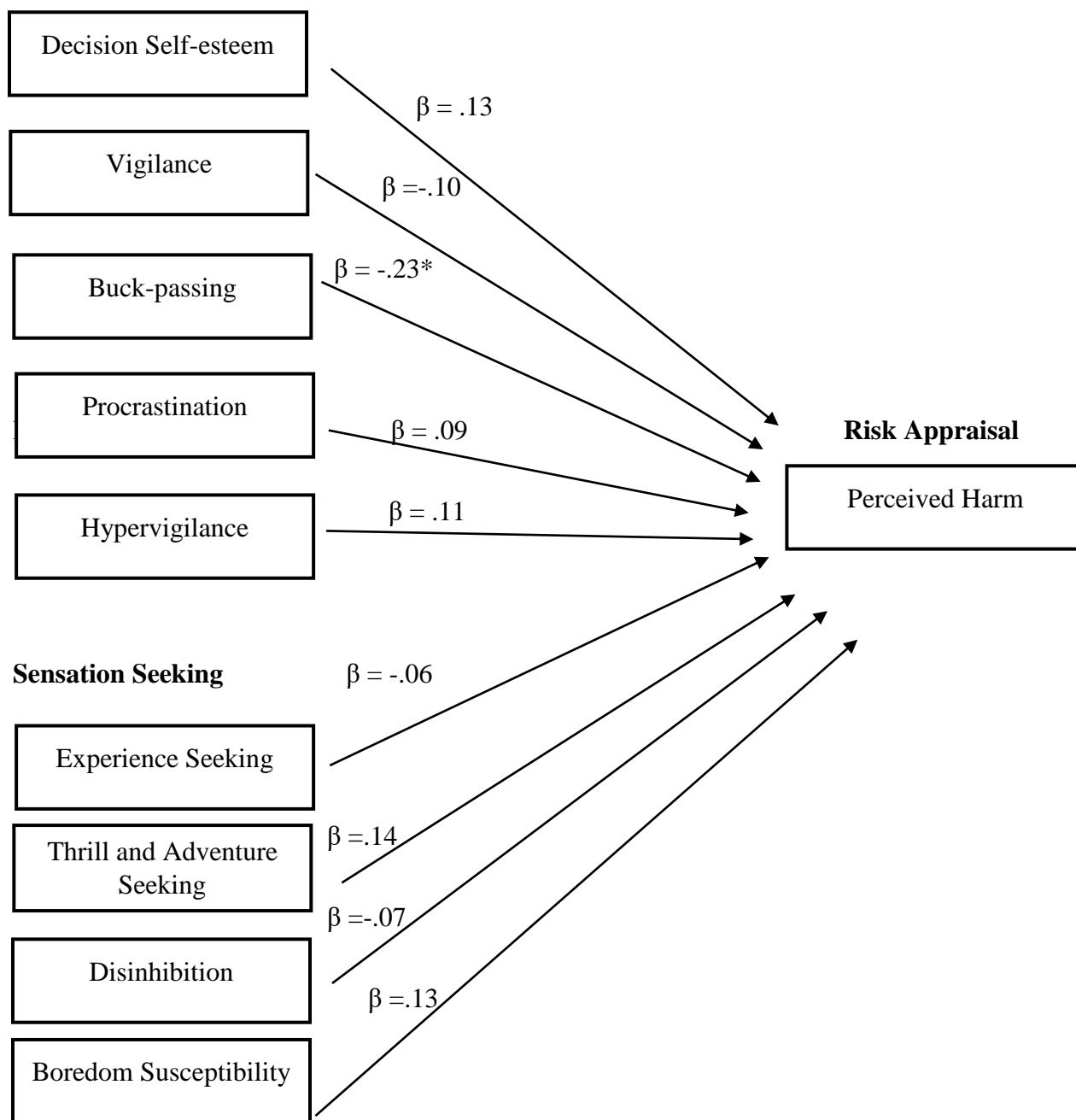


Fig 3.1. Emergred Model of the Predictors of Perceived Harm Component of Risk Appraisal in Smoking and Non-smoking University Students.

Table 3.6

Multiple Hierarchical Linear Regression showing Decision-making and Sensation-seeking as Predictors of Worry about Harm and Addiction in Smoking and Non-smoking University Students (N = 200).

Predictors	B	95% CI for B		S.E B	B	R ²	ΔR ²
		LL	UL				
Step I							
Constant	3.03	2.53	3.52	.25	-----	.10**	.11**
Decision Self-esteem	.18	-.01	.36	.10	.17*		
Vigilance	.03	-.55	.60	.30	.01**		
Buck-passing	.37	-.24	.97	.31	.13		
Procrastination	.17	-.50	.82	.33	.06		
Hypervigilance	.02	-.71	.75	.37	.01		
Step II						.12**	.02**
Constant	2.12	.78	3.46	.68	-----		
Decision Self-esteem	.20	.01	.39	.10	.20*		
Vigilance	.14	-.42	.73	.30	.05**		
Buck-passing	.43	-.18	1.05	.31	.15		
Procrastination	.23	-.43	.89	.34	.08		
Hypervigilance	.08	-.67	.83	.38	.03		
Experience Seeking	.04	-.17	.26	.11	.04		

Thrill and Adventure Seeking	-.06	-.35	.22	.14	-.05
Disinhibition	.02	-.23	.27	.13	-.02*
Boredom Susceptibility	.18	-.06	.42	.12	.16

Note: CI = confidence interval; LL = lower limit; UL = upper limit

* $p < .05$. ** $p < .01$. *** $p < .001$

Multiple Hierarchical Linear regression was run to identify the predictors of risk appraisal in smoking and non-smoking university students. Five dimensions of decision-making and four dimensions of sensation-seeking were entered as predictor variables in the regression model. Worry about harm and addiction was entered as an outcome variable.

After conducting the regression analysis, no influential cases were identified in the data. Moreover, it was found that all of the regression assumptions were satisfied. Specifically, the assumption of independent errors was verified using the Durbin-Watson statistic, which yielded a value within the acceptable range of 1 to 3. The assumption of no perfect multicollinearity was tested by assessing the tolerance values, and it was confirmed that the assumption was met since all the values exceeded the threshold of .2. In addition, the assumptions of homoscedasticity, linearity, and normally distributed errors were also satisfied. These findings suggest that the regression model is reliable and that the results can be interpreted with confidence.

In the model, I, five dimensions of decision-making i.e. decision-self-esteem, vigilance, buck-passing, procrastination, and hypervigilance entered and the regression model was significant, $R^2 = .10$, $F(5, 198) = 5.35$, $p < .001$. In model II, four dimensions of sensation-seeking along with five dimensions of decision-making were entered and the regression model

turned out to be significant, $R^2 = .12$, $F(9, 195) = 2.90$, $p < .001$. When the effect of model I was excluded from model II, model II still remained significant, $\Delta R^2 = .12$, $F(4, 190) = .83$, $p < .001$. Among all the predictors entered decision self-esteem and vigilance turned out to be the significant positive predictors and disinhibition was a significant negative predictor of worry about harm and addiction to smoking behavior. It means that university students who are vigilant and have strong decision self-esteem are more likely to be worried about harm and addiction to smoking behavior while university students who have disinhibited behavior are less likely to be worried about harm and addiction to smoking behavior.

Emergred Model 2

Predictors

Decision-making

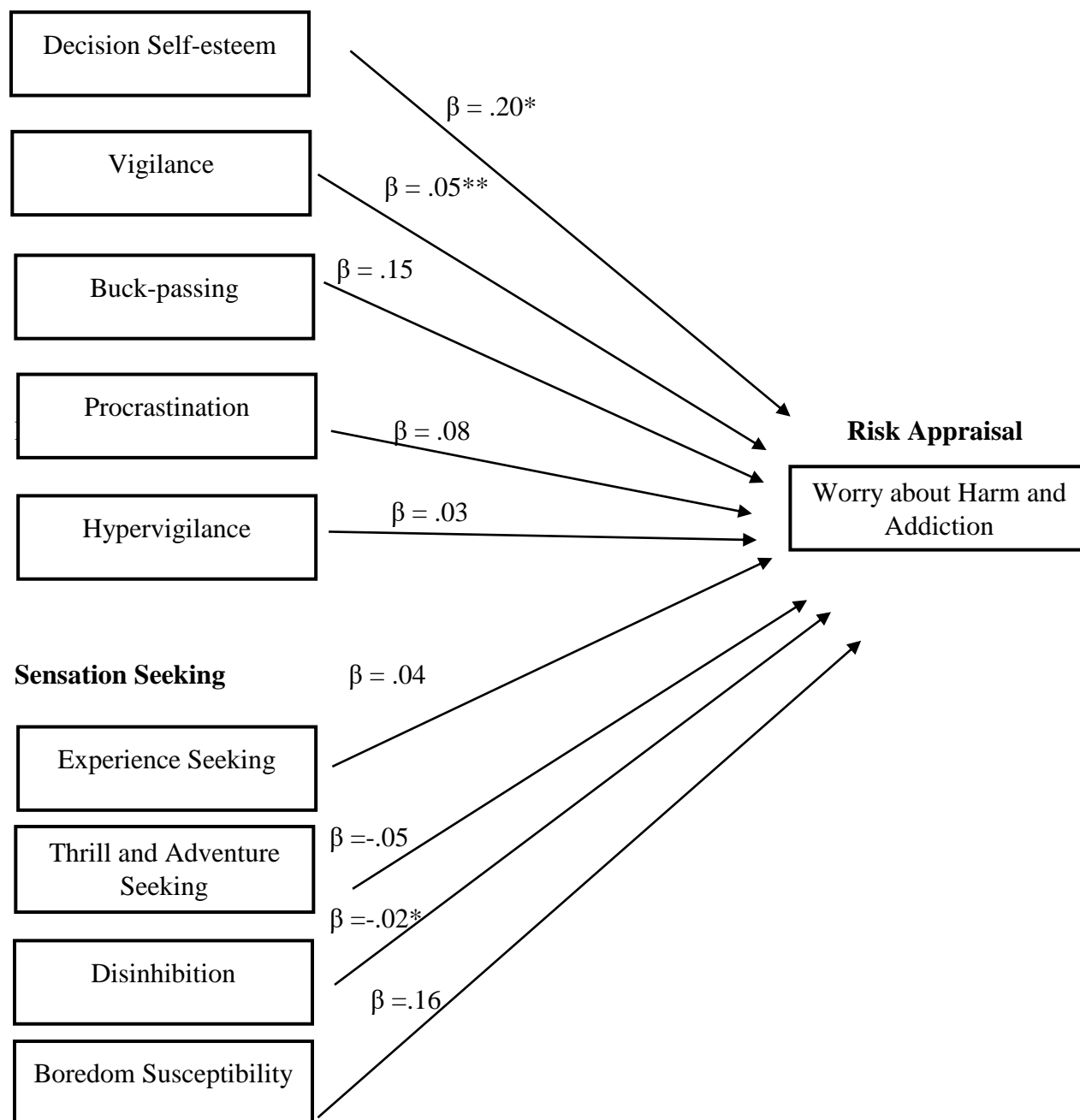


Fig 3.2. Emergred Model of the Predictors of Perceived Harm Component of Worry about Harm and Addiction in Smoking and Non-smoking University Students.

Table 3.7

Independent Sample t-test showing Smoking Status in Decision-making, Sensation-seeking, and Risk Appraisal among University Students (N=200).

Variables	Smokers		Non-smokers		<i>t(df)</i>	<i>p</i>	95% CI		Cohen's <i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			<i>LL</i>	<i>UL</i>	
Decision self-esteem	1.80	.87	3.92	1.04	-15.6(198)	.01*	-2.39	-1.85	2.26
Vigilance	.57	.29	1.44	.35	-19.1(192.5)	.04*	-.95	-.78	2.70
Buck-passing	1.33	.31	.51	.31	-18.6(198)	0.18	-.90	-.73	2.69
Procrastination	1.35	.32	.60	.27	-17.9(191.8)	0.21	-.84	-.67	2.57
Hypervigilance	.57	.23	.34	.27	-21.5(194.6)	.48	-.84	-.70	3.24
Experience Seeking	3.20	1.22	2.01	.98	7.53(188.7)	.009**	.87	1.50	1.08
Thrill and Adventure Seeking	3.93	.78	2.40	1.01	12.04(185.9)	0.05*	1.49	2.04	1.71
Disinhibition	3.97	.89	2.21	1.09	12.53(190.1)	.76	1.52	2.04	1.86
Boredom Susceptibility	3.93	.82	2.1	1.04	13.40(198.7)	.59	-1.55	-.64	1.95
Perceived Harm	2.98	1.27	4.07	1.91	-4.7(172.0)	.010*	-1.54	-.64	.69
Worry about Harm and Addiction	3.60	1.16	4.55	1.54	-4.9(183.9)	.003**	-1.34	-.57	.71

Note: Smokers=100, Non-smokers=200, *M* = mean; *SD* = standard deviation; CI = confidence interval; *LL* = lower limit; *UL* = upper limit

p* < .05. *p* < .01. ****p* < .001

Results in Table 3.7 suggest that the differences in smoking status are significant in terms of decision self-esteem, vigilance, experience seeking, adventure and thrill-seeking, perceived

harm, and worry about harm and addiction. The data shows that smokers are significantly more experience seekers and more interested in adventure and thrill-seeking than non-smokers. While non-smokers have significantly stronger decision self-esteem, are vigilant, have strong harm perception, and are more worried about harm and addiction to smoking behavior than smoking university students. While differences in smoking status were insignificant in terms of buck-passing, procrastination, hypervigilance, disinhibition, and boredom susceptibility.

Figure 3.3

Framing Results of t-test on a Decision Self-esteem Scale

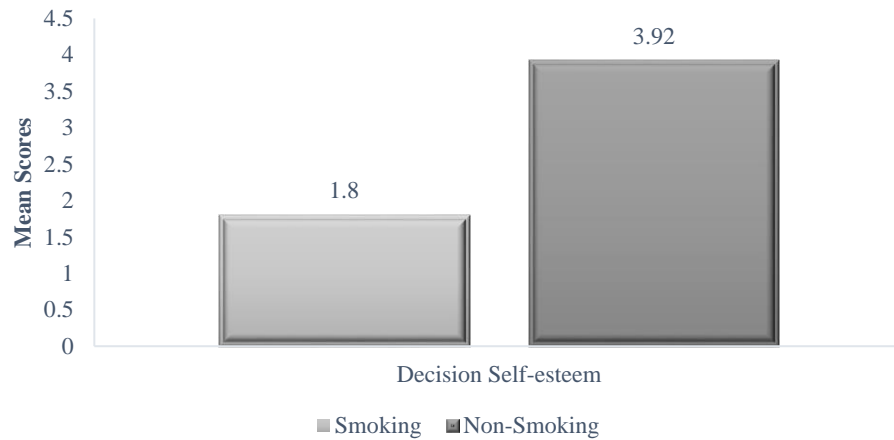


Fig 3.3 shows the difference in mean values of smoking and non-smoking university students on the decision self-esteem scale.

Figure 3.4

Framing Results of t-test on Vigilance Scale

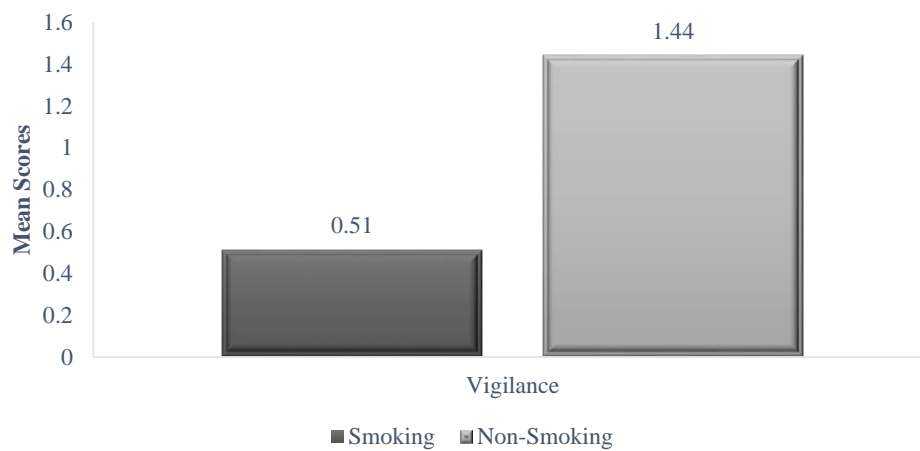


Fig 3.4 shows the difference in mean values of smoking and non-smoking university students on the vigilance scale.

Figure 3.5

Framing Results of t-test on Experience Seeking Scale

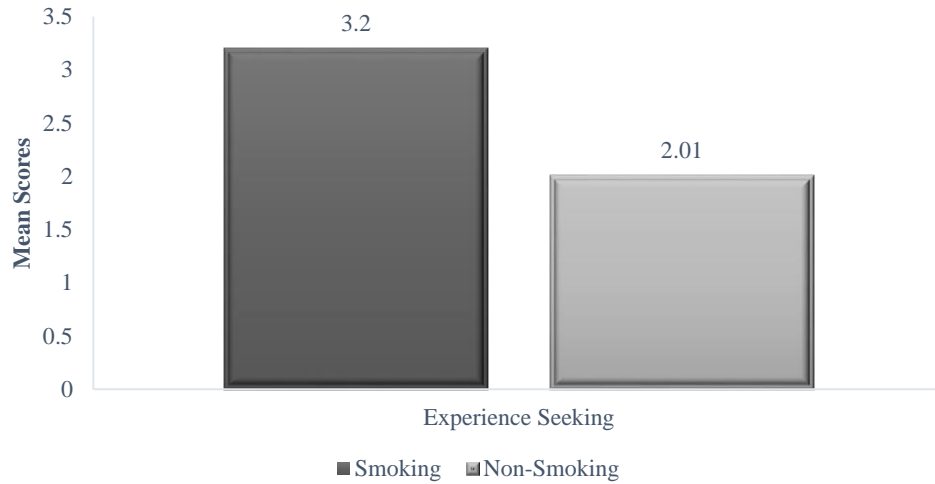


Fig 3.5 shows the difference in mean values of smoking and non-smoking university students on the experience-seeking scale.

Figure 3.6

Framing Results of t-test on Thrill and Adventure Seeking Scale

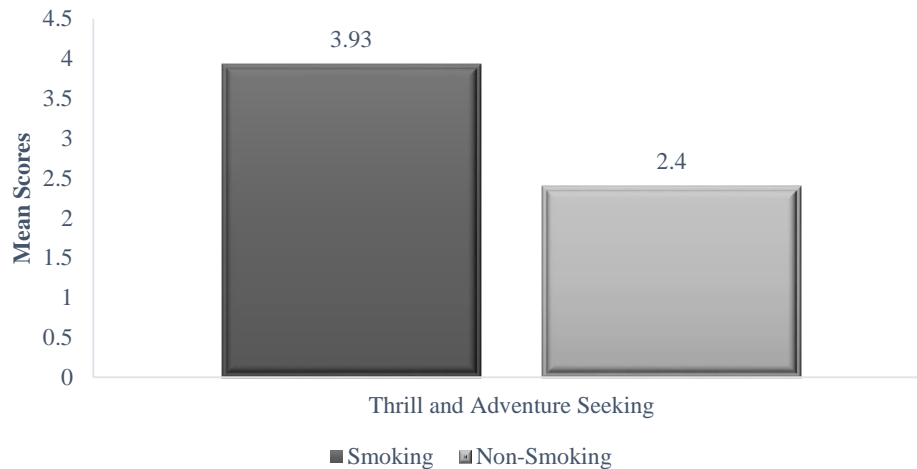


Fig 3.6 shows the difference in mean values of smoking and non-smoking university students on the thrill and adventure seeking scale.

Figure 3.7

Framing Results of t-test on Perceived Harm Scale

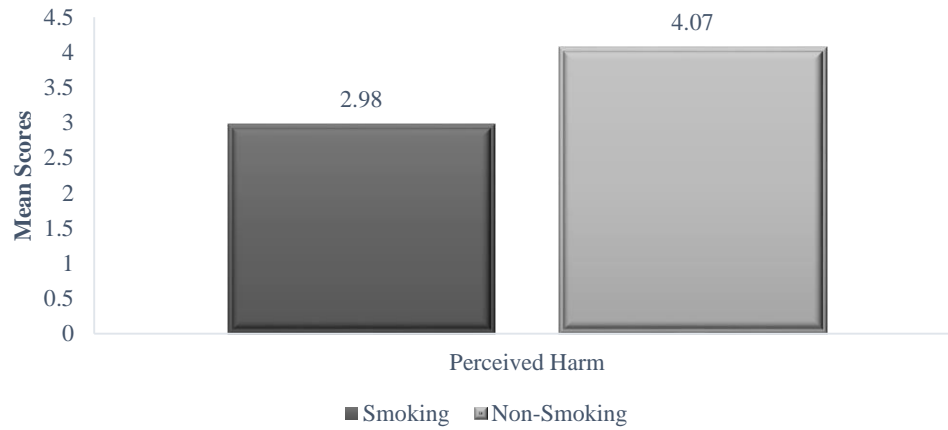


Fig 3.7 shows the difference in mean values of smoking and non-smoking university students on the perceived harm scale.

Figure 3.8

Framing Results of t-test on Perceived Harm Scale

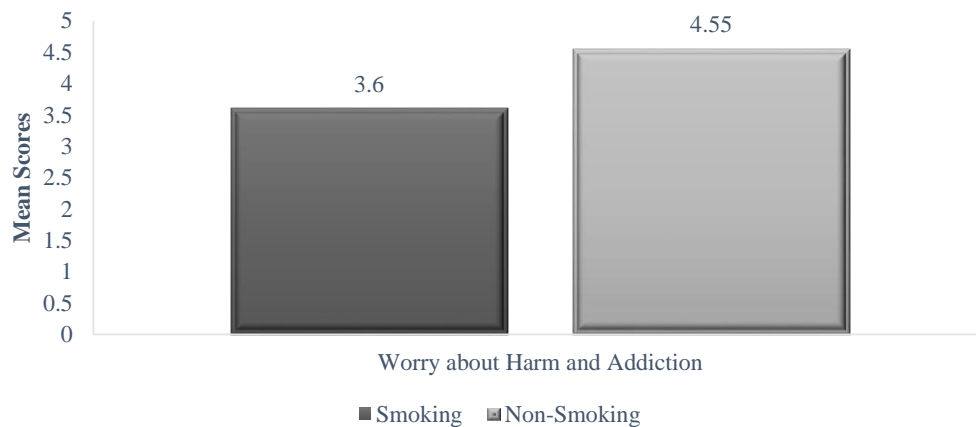


Fig 3.7 shows the difference in mean values of smoking and non-smoking university students on the worry about harm and addiction scale.

Chapter IV

Discussion

The main goal of the present study was to investigate the association between decision-making, sensation-seeking, and risk appraisal in university students who smoke and those who do not smoke. Additionally, the study examined the predictive role of these variables. The current section elucidates the findings of the study in the context of previous literature, and also provides cultural and theoretical interpretations of the results, wherever feasible.

Hypothesis I

It was hypothesized that there is likely to be a significant relationship between decision-making, sensation-seeking, and risk appraisal among smoking and non-smoking university students. Results showed that only one dimension of decision-making i.e. decision self-esteem has a weak significant negative relationship with experience-seeking. This shows that smoking students who are more interested in experience-seeking have low decision self-esteem. Thrill and adventure-seeking have a weak significant positive correlation with procrastination and a weak significant correlation with perceived harm. It shows that smoking university students who are more attracted to thrill and adventure-seeking are more likely to procrastinate and have the least perception of risks. The results also showed that Boredom susceptibility has a weak significant correlation with worry about harm and addiction. This shows that the smoking students who score more on boredom susceptibility are less worried about harm and addiction to smoking behavior.

Researchers from the University of Amsterdam examined the connection between sensation-seeking and decision-making. Those who scored higher than average on the sensation-

seeking dimension of the personality questionnaire made less prudent and riskier choices than those who scored lower. This inverse correlation between sensation-seeking and decision-making has been attributed to high sensation seekers' lack of inhibition or impulsivity, which causes them to prioritize short-term pleasure over long-term gain. Hwang et al. (2021) showed that sensitivity to boredom correlates only weakly with risk perception. Those who are easily bored may be somewhat more likely to take risks, but the strength of this association is insufficient to draw any firm conclusions about a person's propensity to act recklessly (Hwang et al., 2021).

Theoretically, Sensation-seekers may make quick decisions about smoking because they value short-term gratification more than long-term costs. People who seek out intense emotional experiences may also be less affected by the negative outcomes of their actions, such as smoking despite the known health risks. Higher levels of sensation seeking were associated with worse decision-making skills among smokers, according to research published in the journal *Addictive Behaviors*. A greater preference for rapid benefits over delayed rewards was also seen among high-sensation-seeking smokers, which may help explain why they keep their smoking behavior (Leeman et al., 2014).

There have been several recent studies that have examined the relationship between smoking status, sensation seeking, decision-making, and risk appraisal. One study conducted by Wang et al. (2021) investigated the differences in decision-making abilities and sensation-seeking between smokers and non-smokers. The study found that non-smokers demonstrated stronger decision-making abilities and had lower levels of sensation-seeking compared to smokers. The researchers suggested that these differences in decision-making and sensation-seeking may contribute to the differences in smoking behavior between the two groups (Wang et

al., 2021). One study conducted by Oser et al. (2014) found that non-smokers scored higher on measures of decision-making and risk appraisal than smokers. They also found that smokers scored higher on measures of sensation seeking. This suggests that smokers may be more prone to impulsive decision-making and may be more likely to engage in risky behaviors (Oser et al., 2014). Another study conducted by Li et al. (2019) found that non-smokers had a lower prevalence of sensation seeking and a higher prevalence of risk aversion compared to smokers. They also found that non-smokers were more likely to have a high level of self-control, which is associated with better decision-making and risk appraisal abilities (Li et al., 2019).

Theoretically, Non-smokers are more likely to exhibit characteristics like low sensation seeking, good decision-making, and accurate assessments of danger. Decision-making strength is the capacity to make sound decisions after giving due consideration to all relevant factors. A low desire for new sensations indicates a preference for the tried and true over the exciting but potentially dangerous. People who are less likely to smoke may be less prone to taking risks and more likely to use caution when making decisions. In addition, those who avoid smoking are better able to manage their impulses and keep themselves from giving in to temptation.

Hypothesis II

The next hypothesis was decision-making and sensation-seeking are likely to predict risk appraisal among smoking and non-smoking university students. In the current study experience-seeking, thrill and adventure-seeking, and boredom susceptibility turned out to be significant predictors of smoking behavior. If participants show decreased levels of experience Seeking, thrill and adventure seeking, and boredom susceptibility personality traits, then chances are they are more likely to be non-smoking than smoking university students.

There is a growing body of research exploring the relationship between personality traits and non-smoking behavior. Recent studies suggest that experience-seeking, thrill and adventure-seeking, and boredom susceptibility may be inversely related to non-smoking behavior. One study indicated that people with high levels of experience-seeking and thrill-and-adventure-seeking were more likely to smoke than those with lower levels of these traits. High boredom susceptibility scores were also associated with a greater propensity for cigarette smoking (Kong et al., 2020). Another research investigated how different types of personalities affected young persons' propensity to smoke. Those traits that were positively associated with smoking were experience and sensation seeking. People who have high levels of sensation and experience-seeking are more likely to be involved in addictive behaviors.

An individual who is experience-seeking is one who actively seeks out new and different kinds of experiences. Those who rank highly on the experience-seeking dimension are more likely to act on impulse and actively seek out novel experiences, even if it means taking some calculated risks. Increased smoking behavior has been linked to this personality feature (Zuckerman et al., 2007). Those who have a strong need for excitement are kind to actively seek out new and perhaps dangerous hobbies. Increased smoking behavior has been linked to this personality feature. The opposite of boredom resistance is boredom susceptibility, which is the propensity to feel bored quickly and to seek out stimuli in order to combat boredom. Those who are more prone to feeling bored may find that smoking helps them feel relaxed (Netemeyer et al., 2005).

Hypothesis III

It was hypothesized that decision-making, sensation-seeking, and risk appraisal are likely to predict smoking and non-smoking university students. Among all the predictors of decision-

making and sensation-seeking, buck-passing emerged as a significant positive predictor of risk appraisal among smoking and non-smoking university students. This suggests that university students who have buck-passing characteristics usually attribute their responsibilities to others while making decisions and are less likely to have a strong perception of risks.

Ahmetoglu et al. (2011) examined the relationship between buck-passing traits and risk appraisal. The study participants who reported the highest levels of buck-passing were also the most inclined to engage in other high-risk activities including smoking and drug use. In addition, they discovered that buck-passing was negatively connected with harm assessment, which means that those who tended to participate in buck-passing behavior also tended to be less good at appreciating the risks of their actions.

Individuals who engage in buck-passing behavior may be less concerned with the potential consequences of their actions because they are more concerned with avoiding personal blame and accountability. As a result, they may become less cognizant of the potential consequences of their actions and be more likely to take risks. Those who are more likely to shift blame to others may have an external locus of control, the view that events or circumstances outside their control determine the results of their actions. This might make them less likely to take responsibility for their actions, which in turn increases the possibility that they would engage in dangerous or harmful behavior.

Among all the predictors of worry about harm and addiction, decision self-esteem and vigilance turned out to be the significant positive predictors and disinhibition was a significant negative predictor of worry about harm and addiction to smoking behavior. It means that university students who are vigilant and have strong decision self-esteem are more likely to be

worried about harm and addiction to smoking behavior while university students who have disinhibited behavior are less likely to be worried about harm and addiction to smoking behavior.

More recent research has strengthened the results that decision self-esteem, vigilance, worry, and harm beliefs are all interconnected. Students with high levels of vigilance and decision self-esteem are more prone to worry about the health risks and addiction connected with smoking, according to recent research. Korean university students with greater levels of decision-making self-esteem were more likely to see smoking as harmful and addictive Kwon et al. (2021). Anand et al. (2020) observed that more vigilant college students in India were concerned about the negative consequences of smoking and hence less likely to participate in smoking behavior. On the other hand, students who act without inhibition are less prone to worry about the health risks and addiction to tobacco use. University students in Nepal who scored higher on measures of disinhibition were found to be less likely to see smoking as detrimental and more likely to participate in smoking behavior (Jha et al., 2020).

Theoretically, Students at universities who have behavior that is disinhibited may have fewer levels of self-control and be less worried about the possible adverse effects of smoking behavior. They may have good attitudes towards smoking because they see it as a means to deal with stress or worry, and they may regard smoking in a positive light. Because they have more negative attitudes towards smoking and perceive greater control over their behavior, university students who have a strong decision self-esteem are more likely to be concerned about the health risks associated with smoking as well as the possibility of becoming addicted to the habit (Smith et al., 2013). On the other hand, college students who exhibit disinhibited behavior are less likely to be concerned about the health risks associated with smoking and the possibility of being

addicted to the habit. This is because these students have more favorable views about smoking and believe they have less control over their behavior (Haskard-Zolnierek & DiMatteo, 2010).

Hypothesis IV

There are likely to be significant differences in decision-making, sensation-seeking, and risk appraisal among smoking and non-smoking university students. The results show that smokers are significantly more experience seekers and more interested in adventure and thrill-seeking than non-smokers. While non-smokers have significantly stronger decision self-esteem, are vigilant, have strong harm perception, and are more worried about harm and addiction to smoking behavior than smoking university students. While differences in smoking status were insignificant in terms of buck-passing, procrastination, hypervigilance, disinhibition, and boredom susceptibility.

Kim et al. (2021) demonstrated that compared to non-smokers, smokers tend to have more impulsivity in decision-making activities. Researchers employed the Iowa Gambling Task (IGT) to measure participants' decision-making skills, and they discovered that smokers had low scores than non-smokers (Kim et al., 2021). Teixeira et al. (2020) found that college students who smoke had a greater propensity to seek out novel experiences than their nonsmoking counterparts. Sensation-seeking may be defined as the desire for and pursuit of fresh, intense experiences and a readiness to accept risks in pursuit of them (Teixeira et al., 2020). Sánchez-Sánchez et al. (2021) discovered that college students who smoked had a more pessimistic risk appraisal than those who did not (Sánchez-Sánchez et al., 2021).

According to the Dual-Process Model, there are two types of thought processes at play while making a call: logical and intuitive. It has been hypothesized that smokers depend more on

their intuitive, or “gut,” system, which is more prone to impulsivity and emotion, than their logical, or “head,” system. This might cause a dissimilarity in the way the two groups evaluate risks and make choices (Evans et al., 2020). According to the Sensation-Seeking Theory, people have varying degrees of interest in and tolerance for novel experiences. Some research suggests that smokers are more likely to participate in dangerous behaviors like smoking because they are more interested in searching out novel experiences than those who do not smoke (Zuckerman, 2014) The Health Belief Model argues that people’s decisions are affected by how seriously they take the risks associated with a certain health issue. The risk and severity of smoking-related health issues may be perceived differently by smokers and non-smokers, potentially leading to distinct patterns of risk appraisal and decision-making (Green et al., 2020).

The results of the current study indicate that there are significant differences in sensation-seeking, decision-making, and risk assessment between smoking and non-smoking university students. When compared to non-smokers, smokers are more likely to exhibit higher levels of impulsivity and sensation-seeking, in addition to a lower risk appraisal. These results have the potential to be beneficial in the development of effective treatments and preventative programs to decrease smoking among students attending universities.

Conclusion

The study was conducted to explore the relationship as well as the predictive association between decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking university students. The findings of the study showed a significant correlation between decision-making, sensation-seeking, and risk appraisal in university students on the basis of smoking status. Of the demographic studies the ones that significantly correlated with outcome variables were controlled and after controlling their effect the main study variable significantly predicted

risk appraisal. Experience Seeking, thrill and adventure seeking, and boredom susceptibility turned out to be significant predictors of smoking behavior. Buck-passing emerged as a significant positive predictor of risk appraisal among smoking and non-smoking university students.

Decision self-esteem and vigilance turned out to be the significant positive predictors and disinhibition was a significant negative predictor of worry about harm and addiction to smoking behavior. While the study also found significant differences in smoking status in terms of decision self-esteem, vigilance, experience-seeking, adventure and thrill-seeking, perceived harm, and worry about harm and addiction. The findings of this research have significant implications to design and implement successful interventions to help university students quit smoking and prevent them from starting in the first place. The current study also emphasizes the need for more research on the relevance of early preventative initiatives in this regard.

Strengths of the Study

- The study has an equal number of smoking and non-smoking university students, with 100 participants in each group. This balanced sample composition allows for a comparison between the two groups, which is essential to understanding the relationship between the independent variables and dependent variables.
- The study has clearly defined independent variables, decision-making, and sensation seeking, and a dependent variable, risk appraisal. This clarity enables the researcher to control for confounding variables and increases the accuracy of the study's findings.
- The study is relevant, as it examines decision-making, sensation seeking, and risk appraisal in smoking and non-smoking university students. This topic has significant implications for public health policy and interventions to reduce smoking rates.

- The findings of the study could help in the development of targeted interventions for reducing smoking rates among university students. Additionally, the study could inform the development of educational programs aimed at enhancing risk appraisal skills and improving decision-making processes among university students.

Limitations of the Study

- The sample size of 200 participants may not be representative of the entire population of university students who smoke or do not smoke. A larger sample size would provide more accurate and generalizable results.
- The study only focuses on university students and does not include other demographic groups. The results may not be applicable to other populations or age groups.
- The study is cross-sectional, meaning that it only provides a snapshot of the participant's attitudes and behaviors at a specific point in time. Longitudinal studies that track participants over time would provide a more comprehensive understanding of the relationship between decision-making, sensation-seeking, risk appraisal, and smoking.
- The study does not control for confounding variables, such as age, family system, and socioeconomic status, which may influence the relationships between sensation-seeking, decision-making, and risk appraisal.

Future Implications

- This information can be used by researchers to develop targeted interventions aimed at reducing smoking behaviors in university students. For example, interventions could focus on improving decision-making skills or providing alternative, healthy ways for students to seek sensation. Additionally, the findings of the study suggest that

interventions aimed at reducing smoking behaviors should address risk appraisal, as this is an important factor in the decision to smoke.

- The study also highlights the need for continued research in this area. The sample size of the study was relatively small (200 students), and future studies could benefit from larger sample sizes and more diverse populations. Additionally, further research is needed to explore the mechanisms through which decision-making and sensation-seeking influence risk appraisal related to smoking behaviors.
- One of the significant implications is that the study highlights the role of sensation-seeking behavior in the development of smoking behavior among university students. This outcome may be used to increase awareness among the student population about the potential risks associated with smoking.
- The study's results may be used to inform future research on the topic. Researchers may use the findings to design studies that investigate the factors that influence decision-making, sensation-seeking, and smoking behavior in more depth.

Recommendations

- The current study only focused on university students. Future studies could include individuals from different population with different cultural backgrounds.
- The current study had a sample size of 200, with 100 smoking and 100 non-smoking university students. Future studies should aim to increase the sample size to enhance the statistical power and generalize the findings to a larger population.
- Future studies could use a longitudinal design to track the changes in decision-making, sensation-seeking, and risk appraisal over time.

- Future studies could explore the role of other factors, such as social influence, personality traits, and environmental factors, in decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking students.

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Appendix A
Permission Letter Forms

KINNAIRD COLLEGE FOR WOMEN



Date: February 25, 2023

PERMISSION LETTER

To,
The University of Punjab, Lahore

Our student, Ayesha Ayyaz of MS (Clinical Psychology) 2 years Program of Kinnaird College for Women, Lahore, is conducting her research on:

Decision-making, sensation-seeking, and risk appraisal in Smoking and Non-Smoking University Students

She is interested to carry out the study in your institution/organization/hospital with the students. She will be administering her research questionnaire to identify the relationship between these variables. I request you to grant her permission to conduct research work at your prestigious institute. Your cooperation/help in providing the necessary facilities for collecting data will be highly appreciated. Your support in this respect will also promote research work in Pakistan.

Thanking in anticipation

Dr. Afsheen Gul
Head of Applied
Psychology
Department Kinnaird
College for Women,
Lahore

KINNAIRD COLLEGE FOR WOMEN



Date: February 25, 2023

PERMISSION LETTER

To,
The University of Central Punjab, Lahore

Our student, Ayesha Ayyaz of MS (Clinical Psychology) 2 years Program of Kinnaird College for Women, Lahore, is conducting her research on:

Decision-making, sensation-seeking, and risk appraisal in Smoking and Non-Smoking University Students.

She is interested to carry out the study in your institution/organization/hospital with the students. She will be administering her research questionnaire to identify the relationship between these variables. I request you to grant her permission to conduct research work at your prestigious institute. Your cooperation/help in providing the necessary facilities for collecting data will be highly appreciated. Your support in this respect will also promote research work in Pakistan.

Thanking in anticipation

Dr. Afsheen Gul
Head of Applied
Psychology
Department Kinnaird
College for Women,
Lahore

Appendix B

Scale Permission Forms

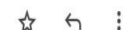
Permission to use Melbourne Decision-making Questionnaire (MQMQ)



Ayesha Ayyaz <ayesha.ayyaz12@gmail.com>

to Leon ▾

Aug 27, 2022, 5:35 PM



Respected Author,

I hope this email finds you in good health. My name is Ayesha Ayyaz, and I am a post-graduate student at the Department of Applied Psychology, Kinnaird College for Women University, Pakistan. I am completing my thesis in Clinical Psychology. I am aiming to conduct an experimental study on "Decision-making, Sensation-seeking, and Risk Appraisal in Smoking and Non-smoking University Students."

I am asking for permission to use the Melbourne Decision-Making Scale in my MS research study. Could you please also provide a copy of (1) the test questionnaire, (2) the standard instructions for administering the test, (3) scoring procedures? This will aid me to assure the correct administration of the test.

I shall be highly grateful if you allow me to use the Scale. Full reference and scale details will be cited in my thesis. Thanking you in anticipation.

Sincerely,

Ayesha Ayyaz

MS in Clinical Psychology

Department of Applied Psychology,

Kinnaird College for Women University,

Lahore, Pakistan.



Leon Mann <leonm@unimelb.edu.au>

to Mark, Paul, me ▾

Aug 28, 2022, 12:56 PM



Dear Ayesha

You have permission to use the Melbourne Decision Making Questionnaire (MDMQ) in your study of Decision-making, sensation seeking, and risk appraisal among smokers and non-smokers University students.

Please keep in touch with your findings.

Good wishes

Leon Mann

Professor Leon Mann AO, PhD (Yale), Hon DSc (Melb), FASSA, Hon Life Governor Hebrew University of Jerusalem

Melbourne School of Psychological Sciences

University of Melbourne

leonm@unimelb.edu.au Cell: 0418 172596

Permission to use Brief Sensation Seeking Scale



Ayesha Ayyaz <ayesha.ayyaz12@gmail.com>

Feb 11, 2023, 12:16 AM



to mstephenson ▾

Respected Author,

I hope this email finds you in good health. My name is Ayesha Ayyaz, and I am a post-graduate student at the Department of Applied Psychology, Kinnaird College for Women University, Pakistan. I am completing my thesis in clinical psychology. I am aiming to conduct a study on "Decision-making, Sensation-seeking, and Risk Appraisal among Smokers and Non-smokers University Students"

I am asking for permission to use the Brief Sensation-seeking Scale in my MS research study.

Could you please also provide a copy of (1) the test questionnaire, (2) the standard instructions for administering the test, and (3) the scoring procedures? This will aid me in ensuring the correct administration of the test.

I shall be highly grateful if you allow me to use the scale. Full reference and scale details will be cited in my thesis.

I am thanking you in anticipation.

Sincerely,

Ayesha Ayyaz

MS in Clinical Psychology

Department of Applied Psychology,

Kinnaird College for Women University,

Lahore, Pakistan.



Stephenson, Michael T

Feb 14, 2023, 2:46 AM



Hello, Thank you for writing. Yes, you may use the scale. I have attached the items as well as the scoring at the bottom. Wishing you all the best in your resea

Permission to use Risk Appraisal Scale



Ayesha Ayyaz <ayesha.ayyaz12@gmail.com>

to isaac.lipkus ▾

Feb 14, 2023, 7:17 PM



Respected Author,

I hope this email finds you in good health. My name is Ayesha Ayyaz, and I am a post-graduate student at the Department of Applied Psychology, Kinnaird College for Women University, Pakistan. I am completing my thesis in clinical psychology. I am aiming to conduct a study on "Decision-making, Sensation-seeking, and Risk Appraisal among Smokers and Non-smokers University Students.

I am asking for permission to use the Risk Appraisal Scale for Smokers and Non-smokers in my MS research study.

Could you please also provide a copy of (1) the test questionnaire, (2) the standard instructions for administering the test, (3) scoring procedures? This will aid me in assure the correct administration of the test.

I shall be highly grateful if you allow me to use the Scale. Full reference and scale details will be cited in my thesis.

Thanking you in anticipation.

Sincerely,

Ayesha Ayyaz

MS in Clinical Psychology

Department of Applied Psychology,

Kinnaird College for Women University,

Lahore, Pakistan



Isaac Lipkus Reiner, Ph.D. <isaac.lipkus@duke.edu>

to me ▾

Feb 14, 2023, 7:39 PM



You have permission to use the items. If you want to use the Risk appraisal scale items, all you do is sum and then average the value of the items. Higher scores represent higher perceptions of being at risk. Hope this helps.

Appendix

Informed Consent Form



Informed Consent Form

I, Ayesha Ayyaz, a student of Clinical Psychology studying at Kinnaird College for Women University request you to participate in a research study that is being conducted under the supervision of Dr. Afsheen Gul. The purpose of my research is to investigate the decision-making, sensation-seeking, and risk appraisal in smoking and non-smoking university student and you will be required to respond to a number of questions present in the questionnaire. Your identity will not be disclosed; all information will be kept confidential and used only for research purposes. Your participation is not compulsory but voluntary, and your unwillingness to participate will be respected. On feeling uncomfortable at any point in the research, you have all the right to withdraw from this research without the fear of being penalized.

The researchers will address all of your queries (if any) regarding the research, or you may email me at ayesha.ayyaz12@gmail.com. All my queries regarding this research have been answered by the researcher therefore I voluntarily choose to participate in this research.

Participant's Signature

Date

Appendix D

Sample Copy of Questionnaire

Demographic Information Sheet

Age

- 18-22 years
- 23-27 years

Socio-economic Status

- Upper class
- Middle class
- Lower class

Education

- Graduation
- Post-graduation

Family System

- Joint Family System
- Nuclear Family System

Residence

- Day Scholar
- Hostelite

Screening Questions

1. Do you smoke Waterpipe Tobacco (Sheesha)? Yes/No
2. If yes, how often do you smoke?
 - i. Monthly (at least once a month but less than weekly)
 - ii. Weekly (at least once a week but less than daily)
 - iii. Daily (at least once a day or on most days of the month)
3. Do you smoke cigarettes? Yes/No
 - i. If yes, how many cigarettes do you smoke per day?

Part I

Melbourne Decision-making Questionnaire

Instructions

People differ in how comfortable they feel about making decisions. Please indicate how you feel about making decisions by ticking the response which is most applicable to you.

	True for me	Sometimes true for me	Not True for me
1. I feel confident about my ability to make decisions.			
2. I feel inferior to most people in making decisions.			
3. I think that I am a good decision-maker.			
4. I feel so discouraged that I give up trying to make decisions.			
5. The decisions I make turn out well.			
6. It is easy for other people to convince me that their decision rather than mine is the correct one			

Part II

Instructions

People differ in the way they go about making decisions. Please indicate how you make decisions by ticking the response that best fits your usual style for each question.

	True for me	Sometimes True for me	Not True for me
When making Decisions.			
1. I feel as if I'm under tremendous time pressure when making decisions.			
2. I like to consider all of the alternatives.			

3. I prefer to leave decisions to others.			
4. I try to find out the disadvantages of all alternatives.			
5. I waste a lot of time on trivial matters before getting to the final decision.			
6. I consider how best to carry out the decision			
7. Even after I have made a decision I delay acting upon it.			
8. When making decisions I like to collect lots of information.			
9. I avoid making decisions.			
10. When I have to make a decision I wait a long time before starting to think about it.			
11. I do not like to take responsibility for making decisions.			
12. I try to be clear about my objectives before choosing			
13. The possibility that small things might go wrong causes me to swing abruptly in my preferences.			
14. If a decision can be made by me or another person I let the other person make it.			
15. Whenever I face a difficult decision I feel pessimistic about finding a good solution.			
16. I take a lot of care before choosing.			
17. I do not make decisions unless I really have to.			
18. I delay making decisions until it is too late			
19. I prefer that people who are better-informed decision for me.			
20. After a decision is made I spend a lot of time convincing myself it was correct.			

21. I put off making decisions.			
22. I cannot think straight if I have to make decisions in a hurry.			

Brief Sensation-Seeking Scale

Instructions

Choose the option that best suits your temperament.

	Strongly Agree	Agree	Neither Agree nor Disagree	Disagree	Strongly Disagree
1. I would like to explore strange places.					
2. I would like to take a trip with no pre-planned routes or schedules.					
3. I like to do frightening things.					
4. I would like to try bungee jumping.					
5. I like wild parties.					
6. I like new and exciting experiences, even if I have to break the rules					
7. I get restless when I spend too much time at home.					
8. I prefer friends who are exciting and unpredictable.					

Risk Appraisal Scale

Instructions

People differ in how comfortable they feel about risks. Please indicate how you feel about risks by selecting the response which is most applicable to you.

Note (If you are a non-smoker, you have to consider the hypothetical smoking while answering these questions).

	No Chance	Rare with less than a 10% chance to happen	Occasionally in about 30% of the chance I could have	Someti mes, in about 50% of the chances when I could have	Frequently , in about 70% of the chances when I could have	Usually, in about 90% of the chances I could have	Certain to happen
What do you think is your chance of getting a serious smoking-related disease in your lifetime, such as cancer, lung disease or heart disease if you did not quit waterpipe tobacco smoking?							
What do you think is your chance of becoming							

addicted to nicotine in tobacco from waterpipe if you did not quit?							
	Not at all worried	Rarely worried	Sometimes but infrequently worried	Neutral	Sometimes worried	Usually worried	Always Worried
How worried are you about getting a serious smoking-related disease, such as cancer, lung disease, or heart disease, if you did not quit waterpipe tobacco smoking?							
How worried would you be about becoming addicted to nicotine in waterpipe tobacco if you continue to smoke it?'							

Appendix E

SPSS Output

Reliability of Melbourne Decision-making Questionnaire (MDMQ)

Scale: Decision Self-esteem

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.722	.713	6

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
5.7100	8.177	2.85951	6

Scale: Vigilance Scale

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.797	.791	6

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
6.0200	10.472	3.23604	6

Scale: Buck-passing Scale

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.747	.745	6

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
5.5400	9.385	3.06355	6

Scale: Procrastination Scale

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.753	.762	5

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
4.8550	5.763	2.40058	5

Scale: Hypervigilance Scale

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.741	.742	5

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
4.7650	5.256	2.29261	5

Reliability of Brief Sensation Seeking Scale

Scale: Experience Seeking

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.719	.720	2

Mean	Variance	Std. Deviation	N of Items
5.2150	6.330	2.51603	2

Scale: Thrill and Adventure Seeking

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.699	.700	2

Mean	Variance	Std. Deviation	N of Items
6.3300	5.639	2.37472	2

Scale: Disinhibition

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.741	.741	2

Mean	Variance	Std. Deviation	N of Items
6.1850	7.076	2.66010	2

Scale: Boredom Susceptibility

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.792	.793	2

Mean	Variance	Std. Deviation	N of Items
6.0800	6.697	2.58787	2

Reliability of Risk Appraisal Scale

Scale: Perceived Harm

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.747	.748	2

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
7.0550	11.690	3.41913	2

Scale: Worry about Harm and Addiction

Case Processing Summary

		N	%
Cases	Valid	200	100.0
	Excluded ^a	0	.0
	Total	200	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.714	.714	2

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
8.1450	8.326	2.88541	2

Descriptive Statistics of the Variables

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Decision Self-esteem	200	.00	6.00	2.8550	1.42975
Vigilance Scale	200	.00	2.00	1.0033	.53934
Buck-passing Scale	200	.00	1.83	.9233	.51059
Procrastination Scale	200	.00	2.00	.9710	.48012
Hypervigilance Scale	200	.00	1.80	.9530	.45852
Experience Seeking	200	1.00	5.00	2.6075	1.25802
Thrill and Adventure Seeking	200	1.00	5.00	3.1650	1.18736
Disinhibition	200	1.00	5.00	3.0925	1.33005
Boredom Susceptibility	200	1.00	5.00	3.0400	1.29394
Perceived Harm	200	1.00	6.50	3.5275	1.70956
Worry About Harm and Addiction	200	1.00	7.00	4.0725	1.44271
Valid N (listwise)	200				

Correlation Table of Main Study Variables for Smoking University Students

Smoking Status			Decision Self-esteem	Vigilance Scale	Buck-p
Smoker	Decision Self-esteem	Pearson Correlation	1	-.076	
		Sig. (2-tailed)		.455	
		N	100	100	
	Vigilance -Scale	Pearson Correlation	-.074	1	
		Sig. (2-tailed)	.455		
		N	100	100	
	Buck-passing Scale	Pearson Correlation	.108	.046	
		Sig. (2-tailed)	.285	.647	
		N	100	100	
	Procrastination Scale	Pearson Correlation	.073	.087	
		Sig. (2-tailed)	.473	.390	
		N	100	100	
	Hypervigilance Scale	Pearson Correlation	.065	.174	
		Sig. (2-tailed)	.523	.084	
		N	100	100	
	Experience Seeking	Pearson Correlation	-.260**	-.058	
		Sig. (2-tailed)	.009	.566	
		N	100	100	
	Thrill and Adventure Seeking	Pearson Correlation	-.074	.005	
		Sig. (2-tailed)	.454	.958	
		N	100	100	
	Disinhibition	Pearson Correlation	-.115	.010	
		Sig. (2-tailed)	.256	.921	
		N	100	100	
	Boredom Susceptibility	Pearson Correlation	-.006	-.098	
		Sig. (2-tailed)	.952	.330	
		N	100	100	
	Perceived Harm	Pearson Correlation	.063	.013	
		Sig. (2-tailed)	.535	.899	
		N	100	100	
Worry About Harm and Addiction	Pearson Correlation	.102	.027		
	Sig. (2-tailed)	.311	.787		
	N	100	100		

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Correlation Table of Main Study Variables for Smoking University Students

Smoking Status		Decision Self-esteem	Vigilance Scale	Buck-p	
Non-Smoker	Decision Self-esteem	Pearson Correlation	1	.183	
		Sig. (2-tailed)		.068	
		N	100	100	
	Vigilance Scale	Pearson Correlation	.183	1	
		Sig. (2-tailed)	.068		
		N	100	100	
	Buck-passing Scale	Pearson Correlation	-.110	.139	
		Sig. (2-tailed)	.274	.167	
		N	100	100	
	Procrastination Scale	Pearson Correlation	-.197*	-.021	
		Sig. (2-tailed)	.050	.838	
		N	100	100	
	Hypervigilance Scale	Pearson Correlation	-.068	.066	
		Sig. (2-tailed)	.501	.516	
		N	100	100	
	Experience Seeking	Pearson Correlation	-.105	-.126	
		Sig. (2-tailed)	.299	.212	
		N	100	100	
	Thrill and Adventure Seeking	Pearson Correlation	.018	-.163	
		Sig. (2-tailed)	.861	.105	
		N	100	100	
	Disinhibition	Pearson Correlation	.007	-.171	
		Sig. (2-tailed)	.945	.088	
		N	100	100	
Boredom Susceptibility	Pearson Correlation	-.039	-.178		
	Sig. (2-tailed)	.698	.076		
	N	100	100		
Perceived Harm	Pearson Correlation	-.007	.219*		
	Sig. (2-tailed)	.946	.029		
	N	100	100		
Worry About Harm and Addiction	Pearson Correlation	.050**	.074		
	Sig. (2-tailed)	.004	.462		
	N	100	100		

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Binary Logistics

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	401.060 ^a	.750	.7143

a. Estimation terminated at iteration number 20 because
parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 ^a	Decision Self-esteem	1.665	.569	1.463	1	.998	1.164	.893	1.253
	Vigilance Scale	.892	1.074	.271	1	.999	.801	1.623	2.776
	Buck-passing Scale	.413	.856	.790	1	.996	.904	.884	3.745
	Procrastination Scale	-.132	.812	1.192	1	1.000	.874	.764	1.652
	Hypervigilance Scale	.584	1.188	.278	1	.996	.324	1.867	4.869
	Experience Seeking	1.489	2.422	2.761	1	.041	.442	.778	1.243
	Thrill and Adventure Seeking	.433	.631	2.487	1	.003	.759	1.970	4.980
	Disinhibition	-3.89	.549	1.32	1	.999	.020	1.012	2.539
	Boredom Susceptibility	-.977	.287	3.842	1	.024	.012	.593	1.670
	Perceived Harm	-.231	.217	.978	1	.999	1.883	1.567	2.781
	Worry About Harm and Addiction	-1.754	.237	1.198	1	.997	.891	.978	1.918
	Constant	-1.305	2.167	2.798	1	.995	.116		

a. Variable(s) entered on step 1: Decision Self-esteem, Vigilance Scale, Buck-passing Scale, Procrastination Scale, Hypervigilance Scale, Experience Seeking, Thrill and Adventure Seeking, Disinhibition, Boredom Susceptibility, Perceived Harm, Worry About Harm and Addiction.

Regression I

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.324 ^a	.105	.082	1.63822	.105	4.542	5	194	.001	
2	.351 ^b	.123	.082	1.63825	1.014	.998	4	190	.410	2.079

a. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck passing Scale, Vigilance Scale, Procrastination Scale

b. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale, Experience Seeking, Boredom Susceptibility, Disinhibition, Thrill and Adventure Seeking

c. Dependent Variable: Perceived Harm

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	60.950	5	12.190	4.542	.001 ^b
	Residual	520.649	194	2.684		
	Total	581.599	199			
2	Regression	71.665	9	7.963	2.967	.003 ^c
	Residual	509.934	190	2.684		
	Total	581.599	199			

a. Dependent Variable: Perceived Harm

b. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale

c. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale, Experience Seeking, Boredom Susceptibility, Disinhibition, Thrill and Adventure Seeking

Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance
1	(Constant)	2.365	.296		7.997	.000	1.781	2.948	
	Decision Self-esteem	.153	.112	.128	1.365	.174	-.068	.374	.524
	Vigilance Scale	-.442	.345	-.139	-1.282	.201	-1.122	.238	.390
	Buck-passing Scale	.671	.364	-.200	1.845	.057	-.046	1.389	.391
	Procrastination Scale	.295	.396	.083	.747	.456	-.485	1.075	.374
	Hypervigilance Scale	.276	.436	.074	.631	.529	-.585	1.136	.337
2	(Constant)	1.296	.805		1.610	.109	-.292	2.885	
	Decision Self-esteem	.159	.115	.133	1.382	.169	-.068	.386	.498
	Vigilance Scale	-.314	.354	-.099	-.887	.376	-1.013	.384	.370
	Buck-passing Scale	.779	.370	-.233	2.105	.037	.049	1.509	.378
	Procrastination Scale	.319	.398	.089	.800	.425	-.467	1.104	.369
	Hypervigilance Scale	.405	.447	.109	.906	.366	-.477	1.288	.320
	Experience Seeking	-.079	.128	-.058	-.616	.539	-.332	.174	.517
	Thrill and Adventure Seeking	.206	.170	.143	1.213	.227	-.129	.541	.332
	Disinhibition	-.092	.149	-.071	-.615	.539	-.386	.202	.343
	Boredom Susceptibility	.169	.145	.128	1.170	.243	-.116	.455	.384

a. Dependent Variable: Perceived Harm

Regression II

Model Summary^c

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	.325 ^a	.105	.082	1.38203	.105	4.572	5	194	.001	
2	.348 ^b	.121	.079	1.38439	.015	.835	4	190	.505	2.162

a. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale

b. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale, Experience Seeking, Boredom Susceptibility, Disinhibition, Thrill and Adventure Seeking

c. Dependent Variable: Worry About Harm and Addiction

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	43.659	5	8.732	4.572	.001 ^b
	Residual	370.540	194	1.910		
	Total	414.199	199			
2	Regression	50.056	9	5.562	2.902	.003 ^c
	Residual	364.143	190	1.917		
	Total	414.199	199			

a. Dependent Variable: Worry About Harm and Addiction

b. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale

c. Predictors: (Constant), Hypervigilance Scale, Decision Self-esteem, Buck-passing Scale, Vigilance Scale, Procrastination Scale, Experience Seeking, Boredom Susceptibility, Disinhibition, Thrill and Adventure Seeking

Model		Coefficients ^a					99	
		Unstandardized Coefficients		Standardized Coefficients	t	Sig.		Lo
		B	Std. Error	Beta				
1	(Constant)	3.025	.249		12.127	.000		
	Decision Self-esteem	.175	.095	.173	1.845	.057		
	Vigilance Scale	.028	.291	.011	.097	.004		
	Buck-passing Scale	.367	.307	.130	1.197	.233		
	Procrastination Scale	.165	.334	.055	.496	.621		
	Hypervigilance Scale	.022	.368	.007	.059	.953		
2	(Constant)	2.120	.680		3.116	.002		
	Decision Self-esteem	.201	.097	.199	2.063	.041		
	Vigilance Scale	.139	.299	.052	.464	.003		
	Buck-passing Scale	.431	.313	.153	1.378	.170		
	Procrastination Scale	.228	.336	.076	.679	.498		
	Hypervigilance Scale	.084	.378	.027	.223	.824		
	Experience Seeking	.044	.109	.039	.407	.684		
	Thrill and Adventure Seeking	-.063	.144	-.052	-.437	.662		
	Disinhibition	.022	.126	.020	.173	.034		
	Boredom Susceptibility	.183	.122	.164	1.497	.136		

a. Dependent Variable: Worry About Harm and Addiction

Independent T-test for the Variables of the Study

Group Statistics

	Smoking Status	N	Mean	Std. Deviation	Std. Error Mean
Decision Self-esteem	Smoker	100	1.7950	.86776	.08678
	Non-Smoker	100	3.9150	1.04218	.10422
Vigilance Scale	Smoker	100	.5700	.29223	.02922
	Non-Smoker	100	1.4367	.34636	.03464
Buck-passing Scale	Smoker	100	1.3300	.30976	.03098
	Non-Smoker	100	.5167	.30659	.03066
Procrastination Scale	Smoker	100	1.3480	.32239	.03224
	Non-Smoker	100	.5940	.26886	.02689
Hypervigilance Scale	Smoker	100	.57001	.23421	.02342
	Non-Smoker	100	.3360	.26723	.02672
Experience Seeking	Smoker	100	3.2000	1.22886	.12289
	Non-Smoker	100	2.0150	.98076	.09808
Thrill and Adventure Seeking	Smoker	100	3.9350	.78062	.07806
	Non-Smoker	100	2.3950	1.01328	.10133
Disinhibition	Smoker	100	3.9750	.88869	.08887
	Non-Smoker	100	2.2100	1.09217	.10922
Boredom Susceptibility	Smoker	100	3.9300	.82272	.08227
	Non-Smoker	100	2.1500	1.04326	.10433
Perceived Harm	Smoker	100	2.9800	1.26914	.12691
	Non-Smoker	100	4.0750	1.91271	.19127
Worry About Harm and Addiction	Smoker	100	3.5950	1.16058	.11606
	Non-Smoker	100	4.5500	1.54151	.15415

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Lower Interval
Decision Self-esteem	Equal variances assumed	1.928	.166	-15.632	198	.012	-2.12000	.13561	-2.387
	Equal variances not assumed			-15.632	191.710	.043	-2.12000	.13561	-2.143
Vigilance Scale	Equal variances assumed	5.210	.024	-19.124	198	.041	-.86667	.04532	-.956
	Equal variances not assumed			-19.124	192.545	.000	-.76667	.04322	-.946
Buck-passing Scale	Equal variances assumed	.299	.585	-18.662	198	.18	-.81333	.04358	-.899
	Equal variances not assumed			-18.662	197.979	.005	-.71433	.03568	-.899
Procrastination Scale	Equal variances assumed	5.692	.018	-17.961	198	.212	-.75400	.04198	-.836
	Equal variances not assumed			-17.961	191.813	.103	-.69440	.03293	-.826
Hypervigilance Scale	Equal variances assumed	.129	.719	-21.557	198	.009	-.76600	.03553	-.836
	Equal variances not assumed			-21.557	194.651	.001	-.75400	.02432	-.825
Experience Seeking	Equal variances assumed	15.391	.001	7.537	198	.04	1.18500	.15723	.874
	Equal variances not assumed			7.537	188.719	.009	1.18500	.15723	.874
Thrill and Adventure Seeking	Equal variances assumed	7.003	.009	12.040	198	.053	1.54000	.13541	1.287
	Equal variances not assumed			12.040	185.902	.342	1.54000	.12791	1.287
Disinhibition	Equal variances assumed	8.387	.004	12.535	198	.137	1.64780	.14080	1.475
	Equal variances not assumed			12.535	190.142	.756	1.76500	.14080	1.487
Boredom Susceptibility	Equal variances assumed	4.971	.027	13.397	198	.059	1.69867	.143266	1.417
	Equal variances not assumed			13.397	187.794	.004	1.78000	.13286	1.517
Perceived Harm	Equal variances assumed	47.983	.047	-4.770	198	.076	-1.08456	.22955	-1.554
	Equal variances not assumed			-4.770	172.019	.010	-1.09500	.22955	-1.548
Worry About Harm and Addiction	Equal variances assumed	19.696	.021	-4.949	198	.023	-.95500	.19296	-1.335
	Equal variances not assumed			-4.949	183.941	.003	-.95500	.19296	-1.335

Appendix F
Plagiarism Report



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