

EFFECTS OF IMPULSIVE SENSATION-SEEKING ON DECISION-MAKING AMONG ADOLESCENTS AND YOUNG PEOPLE

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Abstract: *This study explores the implications of impulsive sensation-seeking on decision-making ability in two distinct age groups: post-adolescents (18-25 years) and young adults (26-35 years). The impulsive search for sensations is a personality characteristic that manifests itself through a person's tendency to seek and appreciate diverse, novel, complex and intense experiences. This includes a predisposition to try activities that may involve physical, social, legal or financial risks. Decision making capacity refers to the rationality of the decision-maker, more precisely to the sensitivity he has to the most common biases and decision heuristics. Using a sample of 70 participants, the Zuckerman-Kuhlman Personality Questionnaire (ZKPQ) to assess sensation-seeking behaviors and the Cognitive Assessment System (CAS++) to assess decision-making capabilities were applied. Data collection was done online, with participants filling in structured digital forms. Statistical analysis confirmed significant differences in decision-making capacities between the two age groups, with post-adolescents demonstrating lower decision-making scores compared to young adults. The study also found that there was no significant correlation between impulsive sensation-seeking behaviors and decision-making capabilities, suggesting that the direct influence of sensation-seeking on decision-making might be less than previously assumed. In conclusion, decision-making seems to improve with age and the accumulation of life experience, reflecting not only cognitive and psychological maturity, but also the effects of a supportive psychosocial context. The lack of a meaningful direct relationship between sensation-seeking and decision-making underscores the need for further research to understand how these dimensions interact throughout different stages of life.*

Keywords: Impulsive search for sensations; decision-making capacity, Cognitive Assessment System

1. Impulsive sensation seeking

Impulsive sensation seeking is a psychological construct originally developed by Marvin Zuckerman in the 1960s. This refers to the tendency of some individuals to seek new, intense and varied experiences, even if they involve considerable risks. According to Zuckerman, sensation seeking is composed of four main dimensions: seeking adventures and experiences, seeking new experiences, disinhibition, and susceptibility to impulsivity (Zuckerman, 1994; Zuckerman, 1979).

An essential aspect of impulsive sensation seeking is its relationship to biological and genetic factors. Studies suggest that high levels of dopamine in the brain are associated with sensation-seeking behaviors. People with increased dopaminergic activity tend to be more impulsive and seek new and intense experiences more frequently (Depue & Collins, 1999; Roberti, 2004). This link has also been supported by neurobiological research that indicated that genetic variability in dopamine receptors can influence sensation-seeking levels (Zuckerman, 2005).

Additionally, sensation seeking is strongly associated with specific personality traits and engagement in risky behaviors. People with high levels of sensation seeking are frequently involved in high-risk activities like extreme sports, substance use, and unprotected sexual behaviors (Hoyle et al., 2002; Zuckerman & Kuhlman, 2000). In social and cultural contexts, these behaviors may be either esteemed or discouraged, contingent upon the norms and values prevalent within the particular community (Ball & Zuckerman, 1992).

People with high levels of impulsivity are often more likely to engage in sensation-seeking activities. This bond is based on their desire to stimulate and avoid boredom (Zuckerman, 1994).

Studies have also shown that this factor can vary depending on age and gender. For example, teens and young adults tend to score higher on sensation seeking compared to older adults. In addition, men generally tend to score higher than women on sensation seeking, although gender differences may vary depending on cultural context (Cross, Copping & Campbell, 2011).

2. Decision making

Decision making is the cognitive process by which individuals select between different options and actions. This process is complex and involves various cognitive components, including attention, working memory, inhibition control, and executive functions. An influential model in the decision-making field is that of Expected Utility Theory, which suggests that individuals make rational decisions by evaluating probabilities and the value of possible outcomes (von Neumann & Morgenstern, 1944; Savage, 1954).

This classical model, developed by von Neumann and Morgenstern (1944), suggests that rational decisions are made by evaluating the probabilities and value of possible outcomes. Within this theory, individuals are seen as rational agents who seek to maximize the expected utility of their decisions (Savage, 1954).

However, further research has shown that human decisions are often influenced by emotions, cognitive biases, and heuristics. Daniel Kahneman and Amos Tversky introduced Perspective Theory, which demonstrates that people are not always rational and are influenced by the way options are presented and loss aversion (Kahneman & Tversky, 1979; Tversky & Kahneman, 1981).

Decision-making capacity can vary significantly between individuals and can be affected by factors such as age, experience, emotional state, and mental health. For example, adolescents and young adults tend to make more impulsive and less calculated decisions due to incomplete development of the prefrontal cortex, responsible for executive functions and behavioral control (Steinberg, 2008; Luna & Sweeney, 2004). Research has also indicated that emotional factors and stress states can diminish decision-making, leading to suboptimal decisions (Lerner et al., 2015).

The work of Thaler and Sunstein (2008) explores how small adjustments in decision-making structure can have a significant impact on the outcomes of our decisions. The authors introduce the concept of "nudge," which refers to influencing people's behavior through subtle changes in the context of making decisions, without limiting options or significantly changing economic incentives.

A "nudge" is an element of choice architecture that influences people's behavior in a predictable way, without restricting options or significantly altering economic incentives.

Essentially, it's a subtle change that can guide people to make better choices for their health, wealth, and happiness.

For example, countries that use the implied consent system (where citizens are considered organ donors unless they explicitly choose not to be) have much higher donation rates compared to those requiring explicit consent (Thaler & Sunstein, 2008).

The analysis ahead will concentrate on exploring the correlation between impulsive sensation seeking and decision-making capacity within the framework of youth and post-adolescent demographics. The study will investigate whether there are significant differences in decision-making capacity between the analyzed age groups, as well as whether there is a significant correlation between this capacity and impulsive sensation seeking.

3. Research methodology

The main goal of this research is to analyze how impulsive sensation seeking influences decision-making processes among adolescent and youth groups. In order to carry out the investigative approach, the following objectives and hypotheses were considered:

Objective 1: Identify differences in decision-making among people aged 18-25 compared to those aged 26-35.

Objective 2: Evaluate and measure the relationship between impulsive sensation seeking and decision-making capacity in the selected sample.

Objective 3: Explore the impulsive sensation seeking on decision-making capacity in the analyzed age groups.

Hypothesis 1: It is assumed that there are significant differences in the level of decision-making capacity according to age.

Hypothesis 2: It is assumed that there is a significant correlation between impulsive sensation seeking and decision-making exercise.

The **sample** of this research consisted of 70 individuals, with 35 belonging to the age range of 18-25 years and 35 to the range of 26-35 years. The research sample was selected from the city of Constanța using convenience sampling and subsequently, snowball sampling.

Two **tools** were used to test participants: ZKPQ, which assessed impulsive sensation seeking and CAS++ / Cognitive Skills Test, to assess decision-making capacity.

The ZKPQ personality test, also known as the Zuckerman-Kuhlman Personality Questionnaire, is a psychological tool developed by Marvin Zuckerman (2008) to assess five major personality traits. It is designed as an alternative to the Big-Five, measuring the following dimensions: Activity – measures energy levels and the need to be busy; Impulsive search for sensations - measures the need to have complex, novel and intense experiences, as well as the tendency to act quickly, without first thinking; Aggression/Hostility – measures tendencies toward irritability, aggression, and resentment toward others; Sociability - reflects the desired degree of interaction with others and preference for the company of other people; Neuroticism / Anxiety - measures emotional tensions, difficulty making decisions, sensitivity to criticism, etc.

The decision-making ability assessment test is part of the CAS++ platform - Cognitive Assessment System, a platform that uses a series of standardized tests to assess various cognitive skills, such as general learning ability, verbal, numerical, spatial, etc.

The decision-making capacity assessment test measures the rationality of the decision-maker. In other words, the test measures the sensitivity of the individual to common biases and general decision heuristics (Miclea et al, 2009).

The **data collection and testing** of participants were carried out online in March 2024, at the same time, by accessing the links corresponding to the two tools uploaded on the Google Forms platform. To meet the requirements necessary to apply the decision-making capacity test, an extension related to Google Forms was installed, which allowed setting a timer to a maximum of 7 minutes, time available to complete all tasks. Subsequently, the collected data was processed using IBM SPSS version 20.

In conducting this study, fundamental **ethical principles** were rigorously observed. All participants were adequately informed about the objectives of the research and received assurances that their involvement is completely voluntary, with the freedom to withdraw from the study at any time without incurring any negative consequences. To protect the confidentiality of the information collected, all personal data has been anonymized. During the research, special emphasis was placed on maintaining honest conduct, promoting precision, objectivity, honesty and good faith in all phases of the project.

4. Results and discussions

Hypothesis 1: *It is presumed that there are significant differences in the level of decision-making capacity according to age.*

Our statistical analysis showed that the decision-making capacity variable, the arithmetic mean for the age category 18-25 years is equal to 3.34, having the standard deviation equal to 0.312, and the arithmetic mean for the age category 26-35 years is equal to 5.46, having the standard deviation equal to 0.595.

When calculating Kolmogorov-Smirnov we obtained Sig = 0.060 for the age category 18 – 25 years and Sig = 0.188 for the age category 26 – 35 years. These results lead to a normal distribution of statistical data, which is why the examination of the difference between the mentioned variables will be carried out by parametric method, using T-test.

We also checked the homogeneity of the data for said variable. In the Levene test we obtained Sig= 0.002, less than 0.05, which indicates an inhomogeneous distribution of statistical data. In this case, Sig 2 tailed = 0.003, was considered. The result obtained supports the hypothesis that there is a significant difference in the decision-making capacity variable depending on the age variable.

Table 1: Examination of the difference in decision-making capacity by age variable

		Levene's Test for Equality of Variances		t-test for Equality of Means			
		F	Sig	t	df	Sig. (2-tailed)	Mean Difference
Decision-making capacity	Equal variances assumed	9.883	.002	-3.149	68	.002	-2.114
	Equal variances not assumed			-3.149	51.411	.003	-2.114

The findings corroborate the hypothesized assertion that there exists a notable distinction in decision-making capacity based on age. Specifically, individuals aged 18-25 demonstrate lower levels of decision-making capacity in comparison to those aged 26-35.

Individuals with a low level of decision-making capacity show a high sensitivity to the most common biases and decision heuristics (Miclea et al, 2009). More specifically, instead of investing time to properly analyze each individual decision-making situation, these individuals either avoid making decisions or rely on momentary intuition.

To begin with, we will determine the stage of development corresponding to the analyzed age categories and we will briefly explore the neurocognitive and behavioral characteristics of people in these categories. According to the stages proposed by Șchiopu and Verza (1997), those aged between 18 and 25 years enroll in the post-adolescence stage, and those aged between 26 and 35 years in the youth stage.

Adolescence is a stage of spectacular changes both biologically and psychologically and socially. It ensures the transition from childhood to adulthood, starting around the age of 14/15 and continuing until about 24/25 years. Sălceanu (2015) describes adolescence as the most difficult and disturbed stage of all stages of development, being characterized mainly by the completion of biological maturation, the development of cognitive abilities (especially abstract thinking), the creation of a clearer image of self-identity and sexual identity, the increase of emotional, personal, perhaps also financial independence from parents, development of new social relationships and, last but not least, crystallization of professional choice.

Youth (26-35 years), on the other hand, is characterized by stabilization and full biopsychic maturation. Its dominant aspects involve physical and psychological vigor, stability of ego identity, integration of sexual experience (heterosexual or homosexual), independence in interpersonal relationships, assuming a social role, consistent implantation in work, great mental adaptability – the young person passes very easily and quickly from general, abstract, theoretical aspects to applicative, concrete, etc. (Cretu, 2009).

Regarding decision-making capacity, at the neurocognitive level, the literature (Reyna, Farley, 2006; Marquez-Ramos et al, 2023) show that starting at age 16/17, adolescents use, like youth and adults, the frontal and prefrontal lobes, involved in planning, reasoning and judgment. More specifically, they are able to think logically so as to correctly understand the information presented, make connections between them and extract conclusions effectively (Sălceanu, 2015).

However, there is an imbalance between the rate of development of cortical systems involved in cognitive control and cortical systems responsible for motivation and affectivity, in the sense that the latter develop at a faster pace than the former, being hyperactive and sensitive to stimuli (Somerville, Casey, 2010; Albert et al, 2013). This neurodevelopmental imbalance between affectivity and cognition predisposes (post)adolescents to make intuitive, impulsive decisions and to show a propensity for reward-oriented and/or risky or dangerous behaviors (Luna et al, 2004; Casey et al, 2008). The specific characteristics of each age stage, but also the neurocognitive implications mentioned above, may be a possible explanation for the significant difference in the analyzed hypothesis.

To corroborate the findings, a pertinent study conducted by Steinberg et al. (2009) is referenced. This study, involving a sample of 935 individuals aged 10 to 30 years, unveiled a notable difference in decision-making capacity between adolescents and young adults. Moreover, it has been shown that this difference is not due to the capacity of cognitive abilities, impossible to differentiate especially after the age of 16/17 years, but is due to the degree of psychosocial development of people.

Given that the present study did not consider the investigation of several cognitive abilities or the degree of psychosocial and emotional maturity of the participants, this may pave the way for valuable insights for future research. In general, specialists draw attention to the context of decision-making among adolescents. With the process of emotional maturation still ongoing, post-adolescents may be less effective in managing stress compared to young people and adults, and this can lead to a reduced ability to cope with pressures (Sălceanu, 2015).

Thus, in emotionally charged situations, where social influence is strong and emotional reactions are intense, adolescents seem to make less mature decisions than young people or adults. However, under normal conditions, those in which emotional arousal and social influence are minimized, adolescents prove to be just as capable of making a mature decision as older ones (Salter, 2017). We believe that with increasing age, people gain more life experiences, which contributes to a better assessment of the risks and benefits of different decision-making situations. Young people usually have a more stable psychosocial level and take on responsibilities that promote more analytical and less impulsive thinking compared to (post)adolescents. If for adolescents, decisions are often marked by a high degree of exploration and

experimentation, based on the desire for self-discovery and personal affirmation, in contrast, young people have a wider experiential baggage, which allows them to better anticipate the consequences of their actions and evaluate more effectively possible alternatives.

When we discuss the psychosocial context, we are actually referring to the interaction between social and individual factors that influence human behavior. It includes cultural influences, social norms, family and community support, and the roles and responsibilities that come with age (Halpern-Felsher et al, 2016).

We believe that post-adolescents are in a sensitive period of transition to adulthood, seeking to define their identity and find their place in society. Social pressures, marked by increased responsibilities to achieve certain standards, such as completing university studies, gaining financial independence and, possibly, starting a family, can be overwhelming and can significantly influence decision-making. Thus, they may become more vulnerable to the influence of their peer group and social trends compared to the other age group.

In conclusion, decision-making capacity can be seen as a dynamic blend of cognitive and emotional maturity gained through experience. The differences in decision-making ability between post-adolescents and young adults are not merely a function of chronological age but are primarily shaped by the accumulation of personal experiences and their interactions with the social and cultural environments they live in.

Hypothesis 2: *It is assumed that there is a significant negative correlation between impulsive sensation seeking and the way decision-making capacity is exercised.*

Our statistics showed that the arithmetic mean for the impulsive sensation search variable is equal to 8.41, with the standard deviation equal to 0.505, and the arithmetic mean for the decision capacity variable is equal to 4.40, with the standard deviation equal to 0.357. In order to decide on the appropriate type of statistical coefficient, we proceeded further to the calculation of the normality of the distribution. To the calculation of Kolmogorov-Smirnov we obtained Sig = 0.073 for the impulsive sensation search variable and Sig = 0.000 for the decision capacity variable.

These results lead to an asymmetric distribution of statistical data, which is why the examination of the relationship between the mentioned variables will be carried out by the nonparametric method, using the Spearman index.

Table 2: Impulsive correlation between sensation seeking and decision-making capacity

			Impulsive sensation seeking	Decision-making capacity
Spearman's rho	Impulsive sensation seeking	Correlation Coefficient	1.000	.028
		Sig. (2-tailed)	.	.815
		N	70	70
	decision-making capacity	Correlation Coefficient	.028	1.000
		Sig. (2-tailed)	.815	.
		N	70	70

Following the correlation achieved, the Spearman coefficient equal to 0.028 is identified at a Sig 2-tailed materiality threshold of 0.815, greater than 0.05. These values indicate that the obtained results do not support the investigated hypothesis and thus the null hypothesis is accepted.

Therefore, within the analyzed sample, there is no significant negative relationship between impulsive sensation seeking variables and decision-making capacity.

The obtained results refute the analyzed hypothesis, according to which there is a significant negative correlation between impulsive sensation seeking and the way decision-making capacity is exercised.

Although it might seem intuitive to expect a negative correlation between impulsive sensation seeking and decision-making, recent research suggests that this relationship is more complex than initially assumed.

One of these studies, conducted by Derryberry and Reed (2002), investigated how anxiety and attention control influence how individuals direct their attention and make decisions. Their results showed that anxiety and attention control can significantly affect decision-making, independent of

impulsive sensation seeking. This suggests that anxiety and other behavioral factors may play a bigger role in how we make decisions than previously thought.

In fact, the study of Steinberg et al. (2008) investigated how impulsive sensation seeking and impulsivity are related to adolescent development and how these traits influence adolescent behavior and decisions. Their results indicated that personality factors, such as impulsive sensation seeking, are not the only determinants of decision-making, and that other aspects, such as cognitive development, may play an important role in this process. The presented finding supports the idea that these aspects of personality are not closely related when it comes to decision-making, thus providing a new point of view on this interaction.

Conversely, Joseph and his colleagues conducted a meta-analysis of existing literature in "Sensation seeking and decision making: A meta-analysis," finding that there is a positive relationship between sensation-seeking and risk-taking decisions. However, this relationship is mediated by factors such as the decision-making context and the type of risk involved. So, it is indicated that it is not only sensation-seeking that determines risky decisions, but also the specific circumstances under which those decisions are made (Joseph et al., 2009).

Another representative study in this regard is that conducted by Romer and Hennessy, in "A biosocial-affect model of adolescent sensation seeking: The role of affect evaluation and peer-group influence in adolescent drug use," where they explored how sensation seeking in adolescence is influenced by affective evaluation and group influence. The results showed that adolescents with high levels of sensation-seeking are more susceptible to group influences and risk-taking, highlighting the importance of social and emotional factors in decision-making (Romer & Hennessy, 2007).

The human personality is a complex web of traits, each distinctly influencing how individuals navigate through their inner and outer world. In this context, the impulsive search for sensations and the decision-making process represents two essential aspects, which, although different in manifestation, can be interconnected in human psychology.

One of the findings specific to the outcome would be that individuals with a high impulsive sensation-seeking may be more open to exploring unconventional options and taking risks, suggesting that their approach to decision-making may be more flexible than initially thought. This flexibility can lead to a more open assessment of different alternatives and more effective adaptation to environmental or context changes.

We need to consider that decisional process is not always rational and deliberate, but it can be influenced by emotional factors, that sometimes act unconsciously. So, even people with strong decision-making capacity can be susceptible to emotional influences and impulses, which can alter how they make decisions and interpret available information.

Also, context and type of decisions can influence how impulsive sensation-seeking affects decision-making. Decisions made in stressful environments or emergencies can be influenced in a different way than those made in controlled and predictable environments. This underscores how the influence of impulsive sensation seeking can vary depending on the circumstances.

To sum up, the link between impulsive sensation seeking and decision-making is more intricate than previously assumed, influenced by factors like anxiety, attention control, impulsivity, and social and emotional influences, among others.

5. Research limits

The current study is subject to various limitations that could impact the ensuing outcomes. Firstly, the online administration of the questionnaire raises concerns regarding whether participants fully comprehended the questions or encountered distractions during completion, especially concerning the decision-making capacity test.

Additionally, the online administration of questionnaires can be affected by factors such as internet connection, the devices used, or the participants' technical experience, which could influence the quality and validity of the collected data.

Another limitation is the lack of information about various factors that could have influenced the responses, such as educational level, social status, financial status, or religious beliefs.

These limitations can serve as directions for future research regarding the expansion of knowledge about cognitive profiles and social maturation, by further investigating a broader range of cognitive abilities.

6. Conclusions

In summary, studies have demonstrated significant disparities in decision-making capacity between post-adolescents and young adults, often indicating lower levels among post-adolescents. This variation can be ascribed to a multifaceted combination of factors encompassing neurocognitive and emotional maturity, accumulated life experiences, and social influences.

Despite initial assumptions, the research did not confirm the hypothesis that there is a significant negative correlation between impulsive sensation-seeking and decision-making ability. Factors such as anxiety and social influence and experiences can play a representative role in decision-making. More specifically, the environment in which decisions are made and the specific context can influence how personality traits, such as impulsive sensation seeking, affect decision-making. For example, in emergency situations or stress, even those who are not impulsive can make quick and risky decisions.

Considering the limitations of research, using an online platform to manage questionnaires may present certain uncertainties or distractions for participants during completion. Furthermore, the reliability of the collected data might be compromised by variables like internet connectivity, the types of devices employed, or participants' technical proficiency.

Additionally, it is imperative to acknowledge the absence of data concerning key variables that could sway the decision-making process, such as educational attainment, socioeconomic status, financial standing, or religious convictions. This dearth of information poses constraints on the generalizability of the findings. These variables wield considerable influence over individuals' decision-making approaches and should thus be factored into the result analysis.

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