

Impulsivity: A Meta-Analysis

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Abstract

Impulsivity, a facet of one's personality, refers to the inability to control or resist an impulsive urge, desire, or temptation that can be detrimental to oneself or others. It is a quantifiable characteristic of behavior evident through traits such as impatience (including the unwillingness to wait for rewards), lack of caution, willingness to take risks, desire for new and exciting experiences, the pursuit of pleasure, underestimation of potential harm, and extroversion. This article is an attempt to analyze the recent studies that were undertaken to understand, analyze, and find solutions towards impulsivity.

Keywords: Impulsivity, self-regulation, Factors of impulsivity

1.1 Introduction

Impulsivity refers to the mechanisms that govern the execution of incorrect or maladaptive actions, whereas impulsive behaviour refers to the inability to control undesired behaviours or the failure of inhibition processes. Impulsive behaviour is often associated with inappropriate conduct and is believed to be caused by a defective mechanism, usually involving a lack of desire and/or control. Impulsive behaviour is frequently characterized by contrasting it with intentional, purposeful behaviour (Kopetz, et.al., 2018).

Impulsivity, as a behavioural concept, includes a broad spectrum of actions that are commonly seen as maladaptive. Impulsivity has been evaluated by a range of assessments, encompassing self-report personality questionnaires as well as behavioural activities. Each of these assessments has been further separated into several components that are believed to reflect different underlying processes. Impulsivity is a complex notion that has been defined in different ways, including a lack of patience, a tendency to act while not thinking, a disregard for effects, and an inability to control inappropriate behaviours (Reynolds, et.al., 2006).

A wide range of psychiatric disorders are characterized by impulsivity as a core symptom. These disorders include brain disorders linked to disinhibition of behavior, substance abuse,

impulsive aggressive personality disorders (borderline, antisocial, histrionic, and narcissistic), and disorders of impulse control (pathological gambling, kleptomania, intermittent explosive disorder, trichotillomania, and pyromania). In addition, various psychiatric diseases, including Attention Deficit Hyperactivity Disorder (ADHD) and mania, also have a role in the manifestation of impulsivity. Impulse-control disorders can be classified as part of a set of compulsive-impulsive diseases that fall on one end of the spectrum. These disorders are characterized by either engaging in risky behavior or avoiding it. Impulsive disorders are motivated by pleasure or arousal, whereas compulsive disorders are driven by the desire to reduce fear (Isles, et.al., 2019).

Impulsivity is a common feature in modern theories of human psychology. However, there is significant variation in how this attribute is defined and assessed, making it challenging. The concept of impulsivity has multiple distinct yet interconnected characteristics. Impulsivity can be understood as consisting of two distinct elements, known as sensitivity to rewards (or reward motivation) and rash impulsivity. Reward sensitivity is a measure of how responsive the conceptual behavioral approach system is to rewards. This system consists of brain pathways that are involved in processing rewards and motivating action through incentives. One key

component of this system is the dopaminergic projections that extend from the ventral tegmental region to the nucleus accumbens. Rash impulsiveness refers to the incapacity to modify or restrain reactions, especially when such behavior could result in adverse outcomes. The variation in characteristics is believed to be indicative of the operation of frontal brain regions, such as the orbital frontal cortex and anterior cingulate cortex. (Stautz and Cooper, 2013).

Impulsive behaviors have a strong association with drug consumption and abuse, serving as both factors that contribute to drug use and as outcomes of drug use. Trait impulsivity has a significant role in drug use during the developmental stage. In adults, temporary rises in impulsive behavior can raise the chances of drug use, particularly in persons who are trying to abstain. On the other hand, the immediate and long-term consequences of drug use might heighten impulsive behaviors, potentially leading to a cycle of continued drug use. Nevertheless, the impact of these effects is contingent upon the specific behavioral test employed to evaluate impulsivity (De Wit, 2009).

Humans are essentially gregarious creatures who have an innate desire to be part of a group, and when individuals are unable to fulfill this urge, than experience loneliness. Prolonged loneliness can lead to significant repercussions on both mental and physical well-being, while also eroding community dynamics and social integration. Loneliness is a distinct and singular experience. The models of typical emotional, mental, and behavioral characteristics. To quantify loneliness, individuals must first recognize and acknowledge their feelings of isolation. However, the process of measurement is challenging due to the complex and multifaceted nature of loneliness. Furthermore, different types of social relationship inadequacies can lead to distinct forms of loneliness, further complicating the measurement process (Morrison and Smith, 2017).

Establishing a direct causal relationship between loneliness and health problems is challenging. The connection between mental and mortality and cardiovascular well-being. Loneliness and social isolation have been proposed to affect health through biological pathways. These pathways involve decreased levels of protective hormones, which can lead to adverse impacts on blood pressure, heart rate, and the repair of the walls of blood vessels. Additionally, the immune system may be suppressed and there may be dysregulation of the neuroendocrine system due to insufficient or poor-quality sleep. Individuals who experience loneliness are more prone to engaging in detrimental health habits such as smoking, excessive alcohol use, overeating, or engaging in casual relationships as a means of psychological relief. If individuals have

limited exposure to healthy standards of conduct or have fewer social contacts and may continue to engage in harmful activities without receiving adequate health advice (Leigh-Hunt, et.al., 2017).

1.2 Factors Affecting Impulsivity

Various factors affecting Impulsivity are:

- **Neurological Factors**

Impulsivity is influenced by neurological variables that include specific brain regions, including the frontal cortex or frontostriatal circuitry. Additionally, neurotransmitters such as dopamine and serotonin play a role in this process. Malfunctions in these structures can result in impulsive actions, affecting the ability to make decisions, control impulses, and process rewards, hence influencing variations in impulsivity among individuals. Impulsivity has been associated with variations in both the anatomy and function of the brain. The deviations in the prefrontal cortex (PFC), a brain region responsible for decision-making and restraining impulsive behavior, could potentially contribute to impulsivity (Moeller, et. al., 2001).

- **Genetic Influences**

Genetic factors play a role in impulsivity by causing impulsive behavior through hereditary components. Genetic variations that impact neurotransmitter systems, specifically serotonin and dopamine, can make individuals more prone to impulsivity. Comprehending these hereditary elements assists in clarifying the biological foundation of impulsivity and how it appears in various individuals and populations. Impulsivity can exhibit a heritable aspect, where specific genetic variants make individuals more prone to impulsive conduct (Bevilacqua and Goldman, 2013).

- **Psychological Factors**

Psychological factors that affect impulsivity include personality traits, mental procedures, and emotional regulation. Impulsivity is linked to traits such as lack of consciousness and high sensation-seeking. Furthermore, variables including stress, trauma, and types of attachment have an impact on impulsivity by influencing the systems involved in decision-making and self-control. Impulsivity has been linked to personality traits characterized by poor conscientiousness and excessive sensation-seeking (Whiteside and Lynam, 2001).

- **Environmental Influences**

Childhood, peer relationships, and cultural environment all have a role in shaping an individual's propensity for impulsivity. Experiencing violence, neglect, or trauma as a child can make one more impulsive. Socioeconomic

position, cultural standards, and peer pressure all play a role in shaping impulsive actions. Therapy and supportive settings are examples of environmental interventions that can help reduce impulsive behavior. Adverse childhood experiences, such as traumatic events or lack of proper care, can contribute to the emergence of impulsive behavior in adulthood.

1.3 Impulsive Behavior among Adolescents

Adolescence can be accurately described as a period characterized by distinct behaviors commonly exhibited by adolescents, such as engaging in risky activities, exploring new experiences, seeking novelty and excitement, interacting socially, being highly active, and engaging in play. These behaviors likely contribute to the development of essential skills needed for maturity and independence. Adolescent behaviors are observed in various species. For instance, human adolescents exhibit heightened social interactions, such as greater interaction with peers and conflicts with parents. Similarly, adolescents display increased levels of play behavior and engage in affiliated behaviors like huddling and grooming. These actions have been proposed as means to facilitate the acquisition of social skills in teenagers, which are crucial for their eventual independence from their immediate families or for assuming leadership roles in their social circles as adults. Rodents exhibit a correlation between heightened social interaction and the regulation of their dietary preferences, as well as the development of adult habits such as violent behaviors (Crews, et.al., 2007). Impulsivity is a key psychological concept that plays a crucial role in comprehending many types of dysfunctional conduct. It is a frequently used diagnostic criterion in the Diagnostic and Statistical Manual of Mental Disorders. It is used in the diagnosis criteria for antisocial personality disorder, attention-deficit/hyperactivity disorder, bulimia nervosa, borderline personality disorder, and other disorders. There is a dedicated section specifically focused on impulse-control issues (Smith, et.al., 2007).

The teenage or adolescent age group is commonly referred to as the health paradox due to the simultaneous and significant growth in both physical and mental skills. However, the rates of mortality and illness see a substantial increase from infancy to adolescence. Furthermore, the leading factors contributing to mortality and impairment in teenagers are not disease-related, but rather preventable types of injuries (such as unintentional accidents, suicide, and homicide), which are associated with engagement in health-risk behaviors including substance abuse and delinquency. The relationship between social context (such as peer and

family impact) and individual personality traits (such as sensation-seeking and impulsivity) to adolescent risk-taking behaviors. However, more recently, the focus has shifted to how adolescent brain development may be involved in these types of actions (Willoughby, et.al., 2014). Adolescence is sometimes described as a period when there is a greater inclination to actively seek new experiences and participate in risky or reckless actions. Impulsiveness is a behavioral characteristic that has been found in several illnesses and behaviors, such as alcohol and substance dependency, overeating disorders, and gambling. Additionally, individuals who have suffered injury to the frontal cortex frequently exhibit heightened impulsiveness, highlighting the significance of this area in regulating impulsive behavior. Hence, the fast maturation of the prefrontal cortex, which is characterized by enhanced interconnections across different brain regions, can be considered a neurobiological process that contributes to impulsive behavior in adolescence (Silveri, et.al., 2006).

1.4 Impulsive Behavior in Adolescents and Alcohol Addiction

Adolescence is a pivotal stage of development marked by specific mental health challenges. Deficits in executive function might result in difficulties in social interactions and an increased likelihood of engaging in dangerous activities. Impulsivity, as a measurable indicator of mental well-being, plays a significant role in the development of infants. However, it can also be seen as the root cause of disruptive behaviors during childhood and adolescence. It is important to note that impulsivity has two dimensions: firstly, it manifests as a behavioral factor linked to lack of inhibition and excessive physical activity, and secondly, it functions as a cognitive factor characterized by a lack of foresight and difficulty in planning behavior. Impulsive behaviors are significant in the scientific field for understanding the distinctions between normal and disordered actions, as well as their association with different mental diseases (Reynaga, et.al., 2020).

An inclination towards hasty and impulsive responses to both internal and external triggers, without considering the potential negative outcomes of these responses. Impulsivity in humans is a reliable indicator of the initiation of alcohol consumption during adolescence and the development of alcohol use disorders (AUDs) in maturity. Alternatively, excessive alcohol use may potentially enhance impulsive behavior by impacting the growth of brain regions responsible for regulating behavior or through other related mechanisms. Adolescence is a stage of growth

marked by an increase in impulsive behavior. Adolescence is the time when most adolescents start drinking, and a significant number of them engage in heavy drinking during this period. Adolescents who engage in high alcohol use may have changes in their brain structure that diminish their ability to manage their behavior and increase the likelihood of continued heavy drinking (White, et.al., 2011).

Adolescence is a crucial period for the development of the brain, and the changes that happen during this time may make adolescents more susceptible to the neuroadaptations that contribute to the development of dependency on alcohol. Developmental brain alterations that impact reward processing and impulse control play a crucial role in the long-term growth of self-control and adaptive decision-making abilities (Fernie, et.al., 2013). Adolescent alcohol consumption can significantly and enduringly affect future health. Alcohol use problems are most common during the latter stages of the adolescence-to-young adulthood phase, which typically occurs between the ages of 18 and 29. In developed nations, alcohol is the cause of 25% of mortality among adolescents. Impulsivity is a strong indicator of problematic alcohol consumption and may have a significant impact on teenage drinking, as this trait tends to increase during adolescence. However, understanding of the relationship between impulsivity and alcohol consumption remains limited. Significantly, there is a lack of information regarding the causal effects of drinking and how these effects may be influenced by social circumstances and the specific character of the drive that prompts drinking. The prevalence of excessive alcohol consumption, binge drinking, and the negative outcomes linked with alcohol intake is significant among individuals in the emerging adulthood stage (Tran, et.al., 2018).

1.5 Factors contributing to Impulsive Behavior

Several factors that contribute to impulsive behavior include:

- **Neurotransmitter Imbalance**

Impulsivity may arise from an imbalance in neurotransmitter systems, specifically dopamine, serotonin, and norepinephrine. Neurotransmitter imbalance pertains to abnormalities in the amounts or operation of neurotransmitters, including serotonin, dopamine, serotonin, and norepinephrine, within the brain. These disparities can interfere with the transmission of information between neurons, potentially resulting in a range of mental health disorders and behaviors, such as impulsiveness.

- **Genetics factors**

An inherent inclination towards impulsivity is due to hereditary factors, where specific gene variations are linked to heightened levels of impulsivity. Genetic variables have a substantial influence on an individual's inclination towards impulsive behavior. Specific genetic variations are linked to disparities in the functioning of neurotransmitters, the structure of the brain, and personality traits, which collectively contribute to impulsivity. Furthermore, heritability indicates that impulsivity is influenced by hereditary factors, with genetic differences playing a role in determining an individual's sensitivity to impulsive inclinations.

- **Psychological Factors**

Individual characteristics, regulation of emotions, and cognitive biases are all examples of psychological elements that might lead to impulsive conduct. On the other hand, impulsivity is associated with characteristics such as lack of consciousness and excessive sensation-seeking. Difficulties in controlling emotion can lead to impulsive behaviors, and cognitive biases, such as focusing on immediate benefits, can get in the way of rational decision-making, which in turn can fuel impulsive acts.

- **Emotional Regulation**

Emotional dysregulation can result in impulsive behavior, since individuals may engage in impulsive acts as a means of relieving bad emotions. Emotional regulation pertains to the capacity to efficiently control and adjust one's emotional reactions. Challenges in managing emotions can lead to impulsive actions, since individuals may behave impulsively while experiencing intense feelings such as frustration, rage, or anxiety. Inadequate emotional regulation abilities can lead to impulsive behaviors aimed at relieving or evading unwanted emotions without taking into account the potential outcomes.

- **Environmental Factors**

Impulsive behavior can be greatly affected by environmental circumstances. High-stress surroundings, pressure from peers, and parenting methods each have distinct influences. Stress has the potential to hinder cognitive regulation, leading to an increase in impulsivity. Peer influence, particularly in the adolescent stage, might facilitate impulsive decision-making. Parenting methods, such as inconsistency or neglect, might hinder the development of sufficient impulsive control in children.

- **Stress**

Stress is a prominent environmental component that contributes to impulsive conduct. Elevated levels of stress can hinder cognitive functioning and heighten emotional sensitivity, resulting in impulsive

decision-making and behaviors. Prolonged stress can undermine self-regulation processes, rendering individuals more vulnerable to committing impulsive activities as a means of coping. Elevated levels of stress might hinder cognitive control and heighten impulsive behavior.

- **Peer Influence**

Influence from peers and social norms have a significant impact on impulsive decision-making, particularly among teenagers and young adults. Peer influence, particularly in the stages of adolescence and early adulthood, can significantly contribute to impulsive conduct. Peer influence can override an individual's inhibitions and decision-making processes, leading them to participate in unsafe or impulsive acts. This influence may result in activities such as substance misuse, reckless driving, or crime, as individuals strive for approval or recognition from their peers.

- **Cognitive Factors**

Impulsive conduct is greatly influenced by cognitive aspects, specifically executive function and decision-making processes. Impulsivity can be promoted by deficiencies in control over inhibitions, attentional predispositions towards immediate benefits, and difficulties in judging long-term implications. Moreover, deficiencies in the capacity to strategize and resolve problems may result in persons behaving impulsively without adequately contemplating the complete consequences of their actions.

- **Decision-Making Processes**

Impulsive behavior can arise from decision-making processes that are influenced by biases, such as prioritizing immediate rewards and disregarding potential long-term outcomes. Impulsive behavior is significantly influenced by decision-making processes. Impulsivity frequently occurs when individuals prioritize instant gratification above long-term outcomes, disregarding thoughtful evaluation of potential dangers and advantages. Biases like present prejudice and underestimating future rewards might result in hasty and impulsive behavior. Impaired cognitive capacities, particularly in situations that involve high levels of stress or intense emotions, might worsen impulsive conduct.

- **Personality Traits**

Impulsivity is linked to specific personality qualities, namely a lack of conscience and high neuroticism. Personality qualities have a substantial impact on impulsive conduct. Characteristics such as a lack of conscientiousness, a high level of extraversion, and a tendency to seek out new and exciting experiences are linked to increased impulsiveness. People with

low conscientiousness may demonstrate a deficiency in self-discipline and organization, resulting in impulsive behavior. Individuals with high levels of extraversion and sensation-seeking tendencies are inclined to actively pursue new and exciting experiences, often without giving much thought to the potential outcomes or repercussions (Whiteside and Lynam, 2001).

1.6 Strategies for Managing Impulsive Behavior

Some strategies for managing impulsive behavior are:

- **Awareness**

Awareness entails the ability to identify stimuli and initial indications of impulsiveness. By recognizing these signs, individuals can intervene before impulsive acts, enabling more intentional decision-making and the utilization of coping mechanisms to effectively manage impulsivity.

- **Goal Setting**

Establish unambiguous and precise objectives, encompassing both immediate and long-lasting timeframes, to offer guidance and drive. To maintain concentration and prevent any impulsive actions that could hinder progress, it is important to regularly remind oneself of these objectives. Goal setting entails the process of defining precise and explicit objectives to strive for. Through the establishment of attainable objectives, individuals equip themselves with guidance, drive, and a feeling of significance. Establishing objectives aids in prioritizing efforts, tracking advancement, and sustaining concentration, ultimately resulting in heightened productivity and individual development.

- **Delay Gratification**

Engage in the habit of postponing immediate benefits or gratification to attain more substantial long-term advantages. This entails enduring temporary discomfort and uncertainty to attain bigger rewards in the long run. Delaying gratification is exercising self-control to reject the allure of instant pleasures to attain more substantial long-term advantages. This skill necessitates individuals to exhibit the ability to endure temporary suffering or postpone gratification to achieve more substantial benefits or objectives in the future. Engaging in the act of delaying gratification improves one's ability to exercise self-control, maintain discipline, and achieve goals.

- **Problem-Solving**

Cultivate problem-solving abilities to effectively tackle the root causes that contribute to impulsive behavior. Analyze possible solutions, evaluate their advantages and disadvantages, and execute efficient

tactics to tackle obstacles and minimize impulsive behavior. Problem-solving is the process of accurately detecting, thoroughly assessing, and efficiently addressing challenges or barriers. The process entails dissecting intricate problems into manageable elements, creating possible solutions, assessing their viability, and executing the most suitable course of action. Problem-solving skills empower individuals to methodically tackle difficulties and efficiently accomplish desired solutions.

• **Seek Support**

Seek assistance and counsel from friends, family members, or a professional therapist to effectively handle impulsive conduct. Social support can offer motivation, responsibility, and pragmatic techniques for managing impulsiveness. Seeking support is actively seeking support, motivation, and guidance from friends, family, or peer groups to cope with emotional difficulties and navigate through trying periods. Engaging in open and honest communication with trustworthy individuals cultivates a feeling of connection, confirmation, and comprehension, which can ease suffering and enhance resilience.

• **Practice Self-Care**

To strengthen self-regulation abilities and promote general well-being, it is important to prioritize self-care behaviors such as engaging in regular exercise, getting sufficient sleep, and maintaining a good diet. Adopting a healthy way of life can effectively lower stress levels and enhance cognitive performance. Participating in activities that enhance one's emotional, physical, and mental well-being is an essential part of practicing self-care. This means giving priority to sufficient sleep, a nourishing diet, consistent physical activity, and relaxing methods such as meditating or engaging in hobbies. Engaging in self-care practices promotes the development of resilience, decreases stress levels, and improves general well-being and contentment.

• **Develop Coping Skills**

Acquire effective strategies for dealing with stress and negative feelings in a healthy manner, without succumbing to impulsive actions. Techniques such as keeping a journal, pursuing hobbies, or exploring creative activities might assist individuals in managing their emotions and mitigating impulsive responses. Developing coping abilities entails acquiring proficient techniques to effectively handle stress, obstacles, and intense emotions. These abilities may encompass problem-solving, relaxing methods, meditation, finding social assistance, or engaging in pleasurable hobbies. Enhancing coping

skills improves resilience and encourages adaptive reactions to the challenges and fluctuations of life.

• **Emotional Regulation**

Emotional regulation pertains to the capacity to proficiently manage and govern one's emotions. Emotional intelligence encompasses the ability to identify, comprehend, and effectively react to emotions positively and flexibly. Emotional regulation strategies encompass meditation, relaxation exercises, and cognitive reappraisal. These techniques are designed to diminish the strength and length of emotional reactions. Acquire strategies to efficiently regulate emotions, such as employing deep breathing, practicing mindfulness, or engaging in progressive muscle relaxation. These tactics aid individuals in managing emotional responses and mitigating impulsive reactions. The field of control of emotions is experiencing rapid growth within the realm of psychology (Gross, 2015).

• **Seek Professional Help**

If impulsive behaviour substantially hinders everyday functioning or relationships, it is advisable to seek professional assistance from a therapist or counsellor. Therapies that are based on evidence, which include dialectical behaviour therapy (DBT) or cognitive-behavioural therapy (CBT) may provide customized interventions and assistance in regulating impulsivity. Engaging in professional assistance entails seeking guidance from certified mental health practitioners, such as counsellors, therapists, or psychiatrists, to effectively treat and handle mental health issues or difficulties. Professional assistance provides customized interventions, support, and advice to facilitate recovery, personal development, and overall wellness. This is a proactive measure to promote mental well-being and improve the general standard of life.

1.7 Conclusion

The above article, which conducts a review of literature, it becomes clear that impulsivity is caused by both genetic and environmental factors. It further proves that impulsivity can be regulated and managed, for this various strategies and therapy have to be applied.

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