

The Role of Impulsivity and Self-Control in Decision Making in Adolescence

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Abstract: Impulsivity, self-control, and decision-making capacity are no longer fully mastered during adolescence due to the influences of bio-psycho-socio-cultural factors. Thus, a low level of self-control and an increased level of impulsivity make adolescents no longer have the ability to make optimal decisions. If the proportions of these traits are reversed then adolescents can choose the optimal decision that brings the greatest benefits. The 110 adolescents were tested using the translated version of the UPPS-P Test, the Self-Control Scale on the CPI Test Card, and the Decision Ability Test in the Battery of Psychological Cognitive Aptitude Tests (BTPAC).

Keywords: impulsivity; self-control; decision-making; adolescence

1. Adolescence about Decision-Making Capacity, Impulsivity, and Self-Control

Adolescence is known as a period marked by intense bio-psycho-socio-cultural changes, intensification of feelings, the development of harmful behaviors, but also the opportunity to explore the environment with specific courage of the period. By associating decision-making capacity with adolescence, certain studies have shown unique perspectives.

Thus, Eveline Crone (2016) in her book presents a study that shows that adolescents are more likely to make risky decisions than adults and that they also estimate risky events only because they have different, more intense emotions. The reason he attributes to this manifestation is given by the hormonal changes that occurred in adolescence through which a part of the brain responsible for pleasure that occurs as

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a result of rewards is more sensitive, which leads to intensified impulses to make risky decisions (Widjojo, 2018, p. 1791).

Decision-making is influenced by preferences and other factors that make one of the genders make risky decisions, but in adolescence, they are much more frequent than in other stages of development. Thus, when considering obtaining a reward, male adolescents need more time to figure out which is the way that brings a safe gain without big losses compared to female adolescents, latter they realize possible negative consequences faster. (S. Sandor & H. Gürvit 2019 pp.84, 87-88). When changing the object of preference for example in driving teenagers are more likely to engage in risky driving actions than adults (Rhodes & Pivik, 2011, p. 924).

Therefore, it can be said that adolescents tend to make riskier decisions more often than adults, and decision-making capacity is influenced by different factors that may incline towards one of the genders or people of different ages.

The reason why adolescence is considered to be marked by increased impulsivity and instability is that the area of the brain called the prefrontal cortex does not reach maturity until late adolescence and thus conflicts with other already developed areas of the limbic system. This leads to the development of certain behaviors influenced by positive or negative factors, leading to the possibility of trying new things or developing harmful behaviors (Weiser & Reynolds, 2011, pp. 189-190).

UPPS-P is a psychological test that looks at the following facets of impulsivity: negative urgency (the tendency to act quickly in an intense negative state), lack of premeditation (tendency to act without thinking), lack of perseverance (tendency to keep your attention to a task that lasts a long time or is boring and difficult), the search for sensations (the tendency to seek exciting and exciting experiences) and the positive urgency (the tendency to act quickly in an intense positive state) scale added later in 2007 (JR Dugré et al., 2019). A study conducted in 2004 using the available version of the test showed that adolescence of both genders was found having all these facets of impulsivity (Van der Linden & d'Acremont 2004, p. 427).

As in the case of impulsivity, self-control is related to the prefrontal cortex that reaches adulthood in late adolescence, which makes young people not master this trait so well (Gibb & Kolb, 2015, p. 820). In addition to reorganizations in the prefrontal cortex in adolescence, dopamine is another element that leads to decreased levels of self-control. Increased release of dopamine in adolescence leads to

increased attraction to immediate and unique experiences. (Romer, et al., 2010, pp. 327-328).

Also, self-control is influenced by the family environment, more precisely the socio-economic status and the level of stability at home (Holmes, et al., 2018, pp. 44-45; 50), but also the influence of friends, of the group they belong to (Franken, et al., 2015, p. 1809). Therefore, due to the biological changes that appeared in adolescence, adding possible negative influences resulting from the family and social environment, the self-control of adolescents is no longer fully controlled. Therefore, adolescence is marked by strong bio-psycho-socio-cultural changes that make the impulsivity, self-control, and ability to make decisions not fully stabilized and thus lead to the development of harmful behaviors.

2. The Links between Impulsivity, Self-Control, and Decision-Making Ability

Impulsivity, self-control, and decision-making capacity influence each other, which is why learning to master these traits and abilities is essential for harmonious development.

Impulsivity and self-control have been the subject of discussion since antiquity, namely the conflict between the two in the form of passion versus reason, later reaching due to psychology a perspective of conflict between internal and external forces. The perspective of the dual system is also found in the association between impulsivity and self-control because when one of them takes to control the other goes into the background thus leading to obtaining rewards with greater or lesser benefits. The conflict between impulsivity and self-control is found in all aspects of life from temptations related to food, to shopping to daily decisions (Hofmann, et al., 2009, pp. 163-165).

The association of impulsivity and self-control with harmful substances influences the development of harmful addictions and behaviors. Thus, adolescents with a high level of impulsivity influenced by other negative factors are more susceptible to the development of alcohol dependence, and more serious problems during development. (Hamilton, et al., 2019) Drug use is another substance that manifests itself in the same way as alcohol consumption. But this conflict between impulsivity and self-control has not only negative consequences, the positive ones allow

teenagers to have the courage to try new things, to explore, and to adapt to the changes encountered. (Gullo & Dawe, 2008, pp. 1507, 1512).

The conflict between impulsivity and self-control has been studied since antiquity, especially in terms of influences on the development of the human being and possible negative or positive effects. Self-control is an important factor in decision making. Among the first to study this in detail was Walter Mischel (Mischel, 2014, pp. 53-60) who together with countless colleagues researched how self-control influences decision-making today, but also their effects in the future. He developed the meringue test by which children were observed when they had to choose to receive a meringue immediately or two later. The test is based on the immediate or delayed reward formula. Thus, the children who waited for the test had throughout the development of very good school results, a better mastery of emotions, a higher level of concentration, solving interpersonal difficulties, and many others of this kind.

Also, another study published in 2011 looked at the development of people from birth to the age of 32 by analyzing the link between how self-control influences health, material condition, and criminal behavior. In this way, people with a high level of self-control did not have serious health problems and did not develop addictions, their financial situation was stable, and they did not have problems with the law. Thus, increased self-control can positively influence health, financial condition, and criminal behavior. (Moffit, et al., 2011).

An observation of the importance of the link between self-control and decision-making is their long-term influence, people who in childhood showed a high level of self-control had a harmonious development throughout a life marked by success and very good results. There is a link between impulsivity and decision making which is highlighted at the neurological and mental level.

Thus, at the neurological level, the link between impulsivity and decision making was investigated using tools to test the level of impulsivity and how the prefrontal cortex reacts to decision making. It turned out that people with a high level of impulsivity had difficulty making emotional decisions that required a learning component, meaning they needed more time to figure out which decision brought the greatest benefits. (Ingmar HA et al., 2008, pp. 156, 160). Also among the facets of impulsivity described by the UPPS-P test, the lack of premeditation is often the reason behind impulsive decisions, meaning that people with a high score at this scale need more time to learn to choose the advantageous options. (Zermatten, et al., 2005, p. 649).

In addition to the neurological link between impulsivity and decision making, the perception of time is another aspect that influences impulsive decision making. The time required to obtain a reward is considered a cost, which in impulsive people this cost is not estimated correctly. It is considered that the increased distribution of attentional resources over time and excitatory states would represent the main factor for which in the case of impulsive people the way they allocate time for decision-making changes. That is, based on overestimating a time interval and increased arousal, impulsive people do not understand the benefits of postponing the reward, being satisfied with the immediate one (Wittmann & Paulus, 2008, pp. 7, 9-10).

The connection between impulsivity and decision making is distinguished through the prism of research based on neurology and psychology which shows how the connection between them is manifested. The links between impulsivity, self-control, and decision-making capacity have been studied from several perspectives, all to highlight their influences on the development of the human being.

3. Methodology

3.1. Procedure

The participants were 110 adolescents aged 18-19 from different backgrounds and social statuses. The squad consists of 73 girls and 37 boys. They completed the tests in an online format, the results being analyzed using the IBM SPSS Statistics version 20 program.

To measure the decision-making capacity of the participants, the Decision-making Ability Test, which is part of the Battery of Psychological Cognitive Aptitude Tests (BTPAC), was used. The test measures a person's decision-making ability but also the person's degree of indecision. This test contains 14 items structured based on framing formulations, the representativeness of alternatives, and Elisberg's paradox. The items have as variants of answer between two concrete solutions three or four solutions. (Benga, et al., 2003, pp. 291-300).

The UPPS-P test was developed by Whiteside, SP, & Lynam, DR in 2001 (Whiteside & Lynam, 2001, p. 669) and then completed by Cyders, MA (Cyders). at 2007, p. 107). This test measures impulsivity based on the following facets: the negative urgency where there is a tendency to act impulsively based on extreme negative emotions; lack of forethought, ie the tendency to act without processing information

correctly; lack of perseverance refers to the inability to pay attention to a single task; the search for sensations means the tendency to look for exciting, exciting and intense experiences; positive urgency is the opposite of negative urgency, ie it is acted on by impulse when there are intense positive emotions. The answer variants are presented in the form of a Likert scale in four items starting from 1 (strong agreement) to 4 (strong disagreement) and containing in the short version 20 items, four items for each scale. (Cyders, 2013, p. 89).

And to check the level of self-control was used the Self-Control Scale from the California Psychological Inventory test card is a tool that tests the personality of non-clinical adults. This test was first developed by Professor Harrison Gough in the 1950s. The number of items has changed over time the current version with 260 items, 20 scales, 3 vectors, and 6 special scales, and the answer options are in the form of true or false (Jones & Peskin, 2017).

4. Results

The Cronbach Alpha coefficient for the Decision Ability Test was .70, for the Self-Control Scale within the CPI the coefficient was .81. The UPPS-P test had a correlation coefficient of over .80 for each scale. This allowed the research of the relationships between impulsivity, self-control, and decision-making capacity in adolescents. Thus, the first hypothesis claims that adolescents who have a high level of impulsivity have a low level of self-control.

Table 1. Pearson Correlations between Impulsivity and Self-Control

Variables	Mean	Standard Deviation	Self-control
Impulsiveness	46,23	12,953	-,552**
Negative urgency	9,24	3,053	-,629**
Positive urgency	9,26	3,213	-,683**
Sensation seeking	10,61	2,669	-,537**
Lack of premeditation	8,52	2,821	-,227*
Lack of perseverance	8,60	3,294	-,293**

** The correlation coefficient is significant at $p < 0.01$

* The correlation coefficient is significant at $p < 0.05$

The correlation resulting from the investigation of the link between impulsivity and self-control is a reasonable negative at a significant level of correlation of $r = -.552$ at a significance threshold of $p < 0.01$. This shows that adolescents who have a high level of impulsivity have a low level of self-control as opposed to it.

In addition to this correlation, it can be seen from Table 1 that the impulsivity scales follow the same direction. That is when one of the facets registers a high level, self-control decreases.

Regarding the facets of impulsivity by correlation with self-control, the following data emerged: negative urgency ($r = -.629$, $p < 0.01$); positive urgency ($r = -.683$, $p < 0.01$); the search for sensations ($r = -.537$, $p < 0.01$); lack of premeditation ($r = -.227$, $p < 0.05$); lack of perseverance ($r = -.293$, $p < 0.01$).

Therefore, all facets of impulsivity follow the same path about self-control, meaning that adolescents who have a high level of negative urgency, positive urgency, seeking sensation, lack of forethought, and lack of perseverance will have a low level of self-control.

Hypothesis 2 argues that adolescents with a high level of impulsivity would have a low level of decision-making ability.

Table 2. Pearson Correlation between Impulsivity and Decision-Making Ability

Variables	Mean	Standard Deviation	Decision-making
Impulsiveness	46,23	12,953	-,401**
Negative urgency	9,24	3,053	-,481**
Positive urgency	9,26	3,213	-,383**
Sensation seeking	10,61	2,669	-,357**
Lack of premeditation	8,52	2,821	-,298**
Lack of perseverance	8,60	3,294	-,212*

** The correlation coefficient is significant at $p < 0.01$

* The correlation coefficient is significant at $p < 0.05$

Based on Table 2, it results that there is a reasonable negative correlation between impulsivity and decision-making capacity because it is a correlation coefficient of $r = -.401$ at a significance threshold of $p < 0.01$. It is therefore argued that adolescents with a high level of impulsivity have a lower level of decision-making ability.

The association between the facets of impulsivity and decision-making capacity follows the same trajectory as in the case of impulsivity and self-control. That is, when the level of one of the facets increases, the level of decision-making capacity decreases.

Regarding the facets of impulsivity by correlation with the decisional capacity, the following data resulted: negative urgency ($r = -.481$, $p < 0.01$); positive urgency ($r =$

-. 383, $p < 0.01$); the search for sensations ($r = -. 357$, $p < 0.01$.); lack of premeditation ($r = -, 298$, $p < 0.01$); lack of perseverance ($r = -, 212$, $p < 0.05$).

Therefore, when the facets of impulsivity register high scores, the level of decision-making capacity decreases. That is, adolescents who have high levels of negative urgency, the search for sensations, lack of perseverance, positive urgency, and lack of premeditation will have a low level of decision-making ability.

And hypothesis 3 argues that adolescents with an increased level of self-control also have an increased level of decision-making ability.

Variables	Mean	Standard Deviation	Self-control	Decision-making
Decision-making	6,72	3,226	,420**	1
Slef-control	7,57	2,593	1	,420**

** Significant correlation coefficient at $p < 0.01$

Achieving the association between decision-making capacity and self-control, a reasonable positive correlation took place, presenting a correlation coefficient of $r = .420$ at a significance threshold of $p < 0.01$. This translates into the fact that adolescents who have a high level of self-control also have a high level of decision-making ability.

5. Conclusions, Future Research Directions

In conclusion, adolescents who have a high level of impulsivity have a low level of self-control and thus no longer have the ability to make the optimal decision. At the opposite pole are those teenagers who have a low level of impulsivity, a high level of self-control and can make the optimal decision.

Impulsivity, self-control, and decision-making ability are related to the development of the part of the brain called the prefrontal cortex. This region reaches maturity around the age of 20, which means that until then teenagers can not stabilize these abilities so well. Thus, to be able to make a correct and optimal decision that will bring with it favorable consequences, high self-control and a low level of impulsivity are necessary.

Also during adolescence, young people have many changes due to biological, psychological, and social factors. Biological factors refer to changes in the prefrontal cortex, the conflict between it and the limbic system, hormonal changes along with

increased levels of dopamine and serotonin. Psychological factors refer to the development of personality, cognitive functions, intensification of emotional feelings, and character formation. And the social ones can be described by the influences that come from the external environment, which meets in society, the influences brought by the group of friends. In addition to all this, the conflict between what he has accumulated from the family environment, with norms and values, and what he discovers on his own through the stronger contact with the social environment is also highlighted.

Finally, the results showed that among the scales of the impulsivity test the highest correlations resulted in those related to extreme positive or negative emotions. Thus, both the level of self-control and the stability of decision-making capacity are influenced in adolescence to a large extent by strong positive or negative emotions.

This study aims to show the importance of the links between impulsivity, self-control, and decision-making ability in adolescents to develop and implement preventive measures from earlier stages of development such as those proposed by Walter Mischel in the book *Testul Bezel* (2014). The test consisted of an experiment in which children were left alone and were asked to choose between a meringue immediately or two if they waited. The test aimed at their level of self-control put in front of something they wanted and the restraint of the impulse not to give up immediately and to choose with less reward. The observations showed that the participants used different methods to distract attention, including telling stories, distancing themselves from the place where the meringues were, and even avoiding direct contact with sweets. This prompted Walter Mischel to develop new distraction strategies, including transforming the desired object into an abstract form so that it loses its appeal.

Due to the development of self-control from an early age, the participants were able to not give up the first impulse in adolescence and thus could make optimal decisions. That is, if intervened in time to strengthen self-control and temper impulsivity, adolescents will not so often make impulsive decisions that have potentially negative consequences.

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