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Development and Standardization of an Impulse Control Scale for Adolescents

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ABSTRACT

Adolescent is an age of more changes including mental, behavioural, emotional, physical etc. These changes are so drastic that adolescents or children find it difficult to adjust with many of these situations. Adolescents confront with many psychological disorders and stressors and there is need to timely identify and tackle these problems. Impulsivity is one such problem which is faced by adolescents more frequently as there are lots of hormonal changes happening at this period. A tool that measure impulsivity in adolescents and which can be adopted in Indian culture was not found; hence an Impulse Control Scale for Adolescents (ICSA) was developed. Based on the different reviews and studies, it was identified that five dimensions can be considered for measuring impulse control. These five dimensions are instant decisions and actions, risk taking, irresponsibility, lack of planning, and hyperactivity. The scale was developed using five point Likert scale in which 33 items were prepared. After the construction of items, expert validation was established for the face validity of the scale. The developed scale was administered on the group of 54 adolescents for identifying any difficult words and to find out the understanding of the adolescents. In order to find out the reliability of the scale, it was administered on 428 adolescents selected randomly from four Government High Schools and Senior Secondary Schools of Bathinda district of Punjab, India. The reliability was established using test-retest method in which the coefficient of correlation was found to be 0 .88 and its internal consistency was found to be 0.70. Age norms were also developed for the three age groups i.e. 13 to 14 years, 15 to 16 years and 17 to 19 years. The ICSA was proved to be easy to administer, score and also interpreting the results.

1. Introduction

Impulsivity is an intricate multidimensional trait of personality which can lead an individual towards neuropsychiatric disorders such as substance use disorders, conduct disorder, oppositional defiant disorder, traumatic brain injury, kleptomania, pyromania, intermittent explosive disorder etc. (Mathias, et al., 2007; Tull, 2018). Impulsivity is characterized as the tendency to act quickly without pre-planning; little or no forethought, reflection or considerations of the consequences of particular action (Evenden, 1999; Bakhshani, 2014).

Impulsivity can be defined from a bio-psycho-social perspectives, according to that, a person with impulsivity have decreased sensitivity and understanding of negative consequences of a particular action, immediate and unplanned response to stimuli before processing or observing the information thoroughly and not concerned about the long-term consequences of a particular behavior (Moeller, et al., 2001). The activities resulting from high impulsiveness are unduly risky, inappropriate to the situation and often result in undesirable consequences.

Impulse control or impulsivity is a construct, explained well in various theories of personalities and also in the different tools of personality. It is considered as a significant facet of personality (Haden, & Shiva, 2008). The different dimensions in the different tools of personality are very close to the nature of Impulse control or impulsivity such as the characteristics of 'Psychoticism' factor in the Eysenck Personality Questionnaire (Boyle & Barratt, 1993) are similar with impulsivity. Similarly, 'Constraint' factor in the Multidimensional Personality Questionnaire (Tellegen, 1985) and 'Neuroticism' dimension in the Neuroticism, Extraversion and Openness (NEO) Personality Inventory (McCrae & Costa, 1987) are related to the impulsivity trait.

There are many hereditary and environmental factors that can be responsible for the impulsive behaviour of adolescents. The genetic factors (Krueger, et al., 2002; Martel, et al., 2017) are most common in this context. Along with this, the environmental factors such as family dysfunction or poor parental adjustment; behavioural, social or academic difficulties at school (Cunningham, & Michael, 2002); problematic parent-child relationship (Giannotta, & Rydell, 2016) and poor relationships with peers (Snyder, et al. 2004) are the strong predictors of impulsivity and antisocial behaviour in adolescents. It is also revealed from the studies that different impulsive symptoms are related with different age groups. For instance, the impulsive behaviour pattern such as difficulty in waiting for long time and maintaining patience are more common during early childhood and lacuna of concentration and hyperactivity are more frequent in preschool children and adolescents (Martel, et al., 2017). If these symptoms and risk factors of impulsivity can be identified at earlier stage and treated well at the same time, then the probabilities of adolescent's antisocial and behavioural disorders can be reduced to greater extent (Beauchaine, et al., 2010; Martel, et al., 2017). Along with these, there are many behavioural

therapies, guidance and counseling interventions, group therapies etc. that can help these adolescents to overcome from impulsive behaviour patterns. Apart from these studies revealed that impulsivity can be controlled to greater extent with the use of parent management training and cognitive behavioural approaches; brain training and family, school and community oriented interventions (Berkman, et al., 2012).

2. Rationale for the Development of Impulse Control Scale for Adolescents

According to the 'Adolescent Mental Health' report of WHO (World Health Organization) 2018, out of every six people there is one person who comes under the age group of 10 to 19 years world widely. According to the opinion developed by American College of Obstetricians and Gynecologists, 2017, in every five individuals, one person who falls between the ages of 9 to 17 years has a diagnosable disorder or disability that can harm some of their normal life activities and one person from every ten persons has a disorder that can cause significant impairment in his/her life. 'Adolescent Mental Health' report of WHO, 2018 also revealed that the onset age of the half of the mental health disorders is 14 years but most of the cases remain unidentified and untreated. Anxiety, depression, attention, hyperactivity and behaviour disorders are the most common mental illness among the adolescents. Adolescents with these mental disorders often have co-morbidity with impulse control disorders or vice-versa (Kruedelbach, 2006; Karakus, & Tamam, 2011; Jakuszkowiak, 2015). Impulsivity or lack of impulse control can further lead these adolescents towards substance use disorders, sexually transmitted disease etc. (American College of Obstetricians and Gynecologists, 2017). In India, only 13.7% of teachers are aware of any mental health problem among students studying in primary schools (Tyagi, 2013). As far as the knowledge of the investigator is considered, there is lack of studies on the awareness of teachers and parents about impulse control among adolescents and there is only one Impulsiveness scale (Rai and Sharma, 1988) available to measure the impulsiveness of the person between the ages of 16 to 20 years in India. Studies reveal that if the symptoms and risk factors related to impulsive behaviour are identified at the early stage and if these adolescents are treated well on the early onset of impulsivity with the help of psychotherapies, counselling and medicine then it will be possible to handle these antisocial behavioural problems and substance use disorders to a greater extent (Beauchaine, et al., 2010; Martel, et al., 2017). These circumstances gives clear picture that it is the need of the hour to develop and apply such tools that can help to identify different problematic behavioural constructs among adolescents so that the adolescents having these behavioural patterns /disorders can be assisted for their better lives. Many impulsiveness scales were developed by different researchers world widely, but some of these items are not appropriate with respect to Indian context. Therefore, a scale was developed to measure the impulse control among the adolescents from 13 to 19 years of age.

3. Development of Impulse Control Scale for Adolescents

The ICSA was developed by initially identifying the criteria/dimensions on which the items will be constructed. This was done by reviewing various related literature. The constructions of items were made using the five point Likert scale which had statements from day to day life related activities of adolescents.

a) Identification of the Dimensions of Impulse Control Scale for Adolescents:

For the identification of dimensions for Impulse Control Scale for Adolescents, related literature was reviewed. Researchers such as Twain (1957), Barratt (1965), Eysenck and Eysenck (1977) etc. have taken interest in developing the different tools for the measurement of impulsiveness/impulse control. Twain (1957), proposed four factors of impulsiveness i.e. flexible motor control, positive progressiveness, action orientation and tenacious self control as the dimensions of Impulsivity. Barratt (1965) identified six dimensions of impulsiveness after doing extensive research through gathering information from life experiences, laboratory behavioural measures and physiological measures. These factors include motor control, intra individual impulse interests, risk taking, impulsive interpersonal relationships and cognitive impulsiveness control. Modified version of 'Barratt Impulsiveness Scale' (BIS-11) has three second order and six first order factors. These second order factors are, Attentional (Attention and Cognitive instability), Motor (Motor, Perseverance) and Non-planning (Self control and Cognitive Instability). It is a four point Likert scale for measuring trait impulsiveness and one of the most commonly used scale by different studies.

Eysenck and Eysenck (1977) identified four factors of impulsiveness from the factor analytic investigation of self-descriptive items. These factors are narrow impulsiveness, risk taking, non-planning and liveliness. In the same direction Rai & Sharma (1988), developed impulsiveness scale using five dimensions i.e. narrow meaning of impulsiveness, risk taking and sensation seeking, lack of planning, liveliness and care freeness and hyper activity. Dickman Impulsivity Inventory (DII), (Dickman, 1990) also measures trait impulsivity. It has 23 items on two subscales i.e. dysfunctional and functional impulsivity. The Urgency, Premeditation (lack of), Perseverance (lack of), Sensation Seeking, Positive Urgency **(**UPPS) Impulsive Behavior Scale (Whiteside & Lynam, 2001), is another useful scale with 59 item on five dimensions that are urgency, premeditation, perseverance, sensation seeking, and positive urgency of impulsive behavior. Some items of these tools were found to be cultural specific which could not be used for adolescents of India.

After reviewing the related literature, five dimensions were identified to develop Impulse Control Scale for Adolescents. These dimensions were instant decisions and actions, risk taking, irresponsibility, lack of planning, and hyperactivity. These dimensions are defined as follow;

I) **Instant Decisions and Actions:** Individual with lack of impulse control comprises the characteristics such as quick to give comments or opinion to others, instant decision making, no or less consideration of future consequences, short reaction time, lack of reflectiveness and lack of self-control.

II) **Risk taking:** It includes the behaviour patterns like excitement seeking, breaking the laws, getting into trouble and carelessness.

III) **Irresponsibility:** It reflects the irresponsible behaviour of an individual towards own life and towards family members, society and others. It also includes the behaviour patterns like taking life easily; focus on enjoying the present moment only etc.

IV) **Lack of Planning:** It comprises the behaviour characteristics such as lack of fore thought, lack of prior planning, purposeless actions and lack of time management.

V) **Hyperactivity:** It is related to the short attention span, intense motor activity, restlessness, difficulty in focusing, distraction, easily boredom and low frustration tolerance of an individual.

b) Construction of Items:

Items on Impulse Control Scale for Adolescents were prepared by taking into account the age group (13-19 years) of adolescents. Initially, 45 items were prepared on five point Likert scale (Always, Very Often, Sometimes, Seldom and Never). Eight items were prepared on instant decision and actions, ten on risk taking, seven on irresponsibility, nine on lack of planning and eleven on hyperactivity.

c) Item Format:

All the items of ICSA were developed in the form of statements. Content of the items was related to the day to day experiences of adolescents at home and in the society; behaviour with parents and friends, personal habits, like and dislikes etc. The respondents were supposed to choose any one alternative from the five (Always, Very Often, Sometimes, Seldom and Never) which suits best to their behaviour.

d) Scoring of the Items:

The ICSA comprised of twenty positive and twenty five negative items. Scoring of the positive items was decided by arranging a score of 5 for 'Always', 4 for 'Very Often', 3 for 'Sometimes', 2 for 'Seldom' and 1 for 'Never'. These scores were reversed for negative items as 5 for 'Never', 4 for 'Seldom', 3 for 'Sometimes', 2 for 'Vey Often' and 1 for 'Always'. The minimum scores for ICSA are 33 and maximum scores are 165.

4. Standardization of Impulse Control Scale for Adolescents

In order to standardize the ICSA, the validity and reliability were established. This was followed by establishing norms for age. The interpretation of data is also derived using appropriate statistical technique.

i) Validity of the Scale:

After the construction of items, it was decided to establish face validity of the scale. Face validity is concerned with the effective appearance of the tool in terms of its stated aims or what it is designed to measure. It is not related with what a tool actually measure but instead refers to what it appears to measure (Reynolds, et. al., 2011; Anastasi, & Urbina, 2014). For establishing face validity, four experts were invited to give their views on the items of the scale. The dimensions and items of ICSA were discussed with the experts. All the experts agreed with each other over the modification and rejection of some items. By accepting the suggestions and opinions given by the experts, 11 items were rejected out of 45 and another 11 items were modified. The no. of items which were initially prepared and no. of items that were eliminated after the validation process are given in table 1

Table 1: Details of the Initial Items and Final Items during the Validation of the Scale

Sr. No.	Name of Dimension	No. of Initial Items	No. of Final Items
1	Instant Decisions and Actions	8	5
2	Risk Taking	10	8
3	Irresponsibility	7	4
4	Lack of Planning	9	8
5	Hyperactivity	11	9
Total		**45**	**34**

Table 1 shows that there were total 45 items in the scale before establishing the validity of the scale. After establishing the face validity of the scale 3, 2, 3, 1 and 2 items were eliminated from the instant decisions and actions, risk taking, irresponsibility, lack of planning and hyperactivity respectively.

ii) Pre-try out

After establishing the face validity of the ICSA, it was administered on the group of 54 students of two schools of Bathinda city in order to sought feedback from the students about the clarity of the items, time duration, double meaning or problem in understanding the meaning of words. It was found that students faced problems in understanding some words and one item was also not clear to most of the students. Students took an average time of 15 minutes to complete the scale. After taking feedback from the students, some words were modified and one item was eliminated from the scale. Finally, 33 items were included in the Impulse Control Scale for Adolescents.

The dimension wise positive and negative items in the final scale after conducting pre-try out were 33, the details of which is given in table 2

Table 2: Details of the Items in Final Scale

Sr. No.	Name of Dimension	No. of Initial Items	No. of Final Items	Positive Item No.	Negative Item No.
1.	Instant Decisions and Actions	8	5	1	5, 7, 11, 17
2.	Risk Taking	10	8	8, 14, 26, 28	2,16,18, 21
3.	Irresponsibility	7	3	3	12, 27
4.	Lack of Planning	9	8	4, 9, 10, 23, 31	4, 20, 25, 33
5.	Hyperactivity	11	9	29	6, 13, 15, 19, 22, 24, 30, 32
Total		**45**	**33**	**11**	**22**

iii) Reliability of the Scale

The most commonly used method for the estimation of reliability of the educational and psychological tools is the test-retest method. In very simple meaning reliability is concerned with ensuring the stability of the scores obtained from the same group of people on two different occasions (Reynolds, et al., 2011; Anastasi, & Urbina, 2014). It is important to measure the test-retest reliability of such characteristics, behaviour patterns or constructs that remains stable overtime.

Impulse Control Scale for Adolescents was developed to measure impulse control which is rated by adolescents from their different behavioural patterns. These behavioural patterns may or may not vary from situation to situation. Because of this, it was essential to estimate test-retest reliability of this scale so that the stability of the behaviour patterns can be verified.

In order to estimate test-retest reliability of the scale, it was administered on 452 students (246 female and 206 male) who were randomly selected from four Govt. schools of Bathinda city. For the collection of data permission letter was received from the Director of State Council of Educational Research and Training, Mohali, Punjab, India. The students were selected from 8^{th} to 12^{th} grades whose age group was between 13 to 19 years. The students were instructed about the guidelines and asked to carefully fill the required information in the given scale of impulse control. It was made clear to all the students that the collected data will be used for research purpose solely and it was also assured to them that the data gathered from them will be kept confidential. It was assured that the respondents filled all the required information and also respond to all the items. To find out test-retest reliability, the same scale was administered on the same sample with the gap of seventeen days. The scores of the students who were not present in test or retest and those who could not complete the whole scale were eliminated from the total data. Finally, data was collected from 428 students which include 235 (54. 90 %) female and 193 (45.09 %) male students.

Pearson's Product Moment correlation was used to calculate the correlation coefficient of scores obtained from test and retest. The correlation coefficient of test-retest of ICSA was found to be 0.88. To measure internal consistency the Cronbach's α (alpha) was also used to calculate the reliability coefficient. Internal consistency deals with how closely the items of the tool are related to each other and contributing in a consistent measure of a concept as a whole (Reynolds, et al., 2011; Anastasi, & Urbina, 2014). Therefore, it becomes essential to check the internal consistency of any tool. Internal consistency reliability coefficient of ICSA was found to be 0.70. These results depicts that the scale has satisfactory psychometric properties to measure the level of Impulse control among adolescents.

In order to find out dimension wise reliability coefficient, the test and retest scores of each dimension was subjected to Pearson's Product Moment correlation. The reliability coefficient of the five dimensions i.e. instant decisions and actions, risk taking, irresponsibility, lack of planning and hyperactivity, was found to be 0.56, 0.72, 0.63, 0.71 and 0.72 respectively. The dimension wise reliability coefficient was also found to be satisfactory. The details of dimensions wise reliability coefficient are given in table 3.

Table 3: Dimension Wise Reliability Coefficient

Sr. No.	Name of the Dimension	No. of Items	Correlation Coefficient
1.	Instant Decisions and Actions	5	0.56
2.	Risk Taking	8	0.72
3.	Irresponsibility	3	0.63
4.	Lack of Planning	8	0.71
5.	Hyperactivity	9	0.72

iv) Norms of the Impulse Control Scale for Adolescents:

After completing the process of validation and estimation of reliability, the age norms were developed for the ICSA. For this purpose, all the students were divided into three groups according to their age. The three age groups were, 13 to 14 years, 15 to 16 years and 17 to 19 years. For the interpretation of scores, the first quartile (Q_1) and third quartile (Q_3) were calculated separately for these three groups. Three levels of impulse control i.e. low, average and high were set for the three age groups i.e. 13 to 14 years, 15 to 16 years and 17 to 19 years based on Q1 and Q_3. For the age group of 13 to 14 years, Q_1 is found to be 107 and Q_3 is 121, for the age group of 15 to 16 years Q_1 is found to be 109 and Q_3 is 129 and for the third age group i.e. 17 to 19 years Q1 is found to be 111 and Q_3 is 130. The categories of quartiles, range of raw scores and qualitative interpretation of the scores for the age groups of 13 to 14 years, 15 to 16 years and 17 to 19 years are given in table 4, 5 and 6 respectively.

Table 4: Age norms for the students falling in the age group of 13 to 14 years

Sr. No.	Range	Range of raw scores	No. of students	Qualitative interpretation
1.	Less than Q_1	Less than 107	33	Low Impulse Control
2.	Between Q_1 and Q_3	108 to 120	60	Average Impulse Control
3.	Greater than Q_3	Greater than121	32	High Impulse Control
Total			**125**	

Graph No. 1 Age Norms for the students falling in the age group of 13 to 14 years

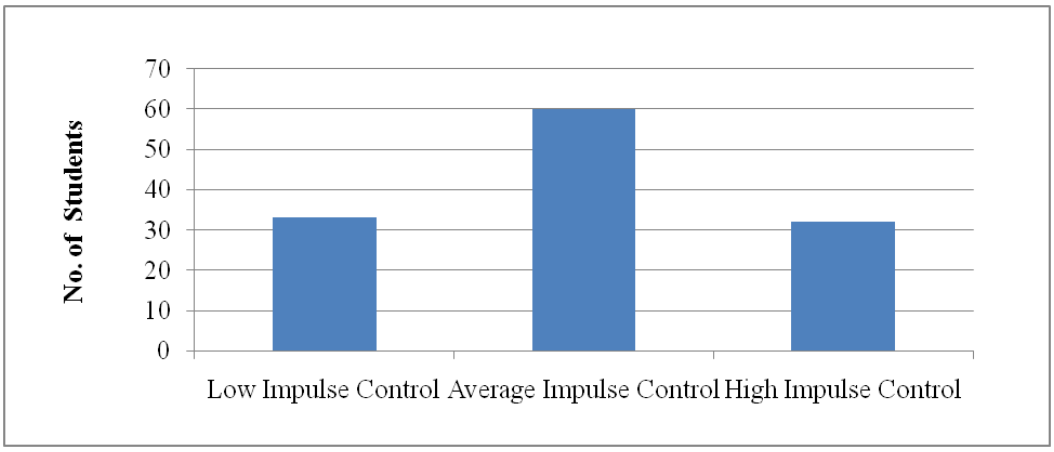


Table 5: Age norms for the students falling in the age group of 15 to 16 years

Sr. No.	Categories	Range of raw scores	No. of students	Qualitative interpretation
1.	Less than Q_1	Less than 109	48	Low Impulse Control
2.	Between Q_1 and Q_3	110 to 128	85	Average Impulse Control
3.	Greater than Q_3	Greater than 129	48	High Impulse Control
Total			**181**	

Graph: 2 Age norms for the students falling in the age group of 15 to 16 years

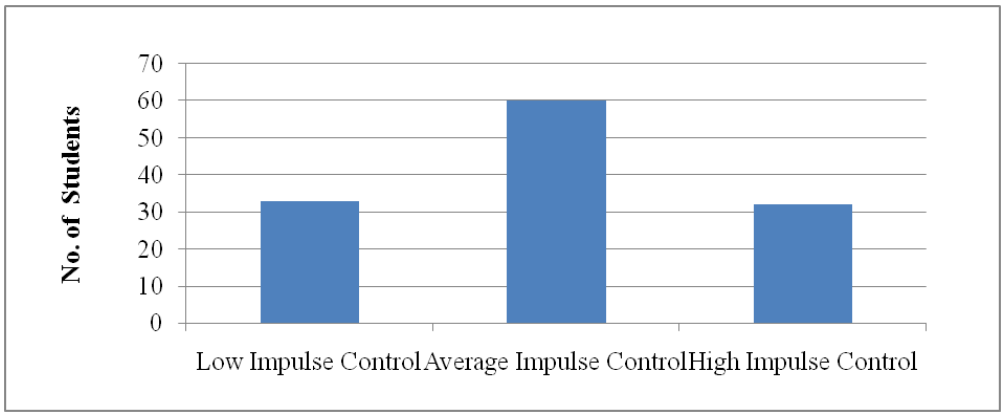
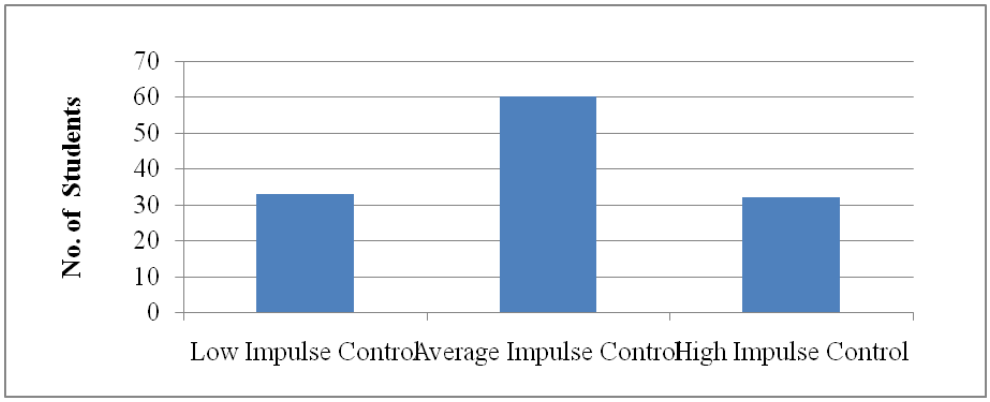


Table 6: Age norms for the students falling in the age group of 17 to 19 years

Sr. No.	Categories	Range of raw scores	No. of students	Qualitative interpretation
1.	Less than Q_1	Less than 111	31	Low Impulse Control
2.	Between Q_1 and Q_3	112 to 129	60	Average Impulse Control
3.	Greater than Q_3	Greater than 130	31	High Impulse Control
Total			**122**	

Graph No. 3 Age norms for the students falling in the age group of 17to 19 years

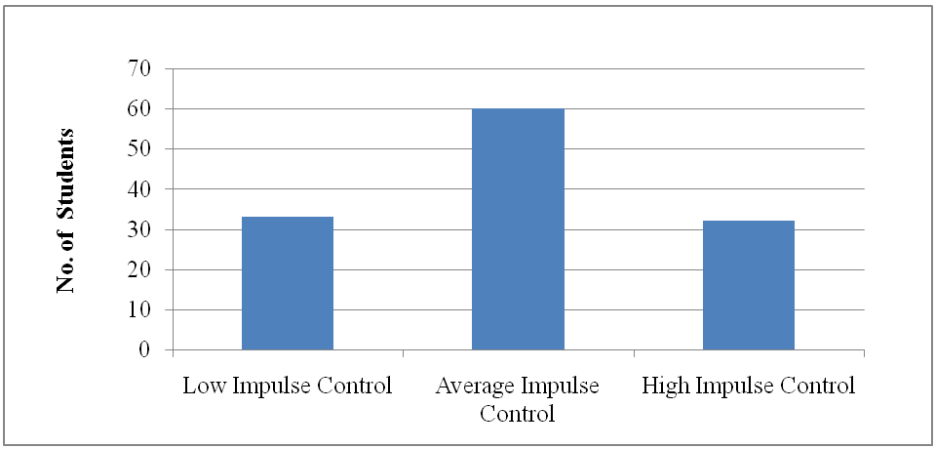


After calculating the Quartile range and establishing the levels for the interpretation of raw scores of three age groups separately, the overall data was also analyzed and interpreted on the basis of Quartiles as Low, Average and High levels. For overall data Q_1 was found to be 109 and Q_3 was found to be 128. The details of the interpretation of the raw scores according to the Quartiles (Q_1 and Q_3) for overall data are given in table 7.

Table 7: Details of quartiles range, raw score range and no. of students falling at low, average and high levels

Sr. No.	Range	Range of Raw Scores	No. of Students	Qualitative Interpretation
1.	Less than Q_1	Less than 109	114	Low Impulse Control
2.	Between Q_1 and Q_3	110 to 127	202	Average Impulse Control
3.	Greater than Q_3	Greater than 128	112	High Impulse Control
Total			**428**	

Graph: 4 Norms for the interpretation of scores on Impulse Control Scale



After establishing the validity and reliability and developing norms of ICSA, the final scale comprised of 33 (11 positive and 22 negative) items on five dimensions. The approximate time for the completion of ICSA for the adolescents falling under the age group of 13 to 15 years is 25 minutes and for the age group of 16 to 19 years is 15 minutes. The scale was found out easy to administer and took few minutes for scoring and interpretation. Some dimension wise examples of the items of the scale are given in table 8.

Table 8: Examples of the Items of ICSA

Item No.	Dimensions	Statements	Ratings				
			Always	Very Often	Sometimes	Seldom	Never
Item 5	Instant Decisions and actions	I give comments immediately on the appearance of others					
Item 28	Risk Taking	I take precaution for such activities that may harm me physically					
Item 3	Irresponsibility	I take care of the things borrowed from others					
Item 33	Lack of Planning	I forget to carry important things while going out of home					
Item 6	Hyperactivity	I feel restless while waiting for someone even when I am not in haste					

5. Conclusion

Impulsivity is one of that behvioural trait that can be the root cause of many personality and behavioural problems or disorders. Adolescent period is very much prone to develop different kinds of behavioural problems. Therefore it is very essential to identify the features of impulsive behaviour among adolescents so that they can be helped before developing any serious problematic behaviour. This scale is an effort to measure the impulse control of the adolescents. On the basis of review of related literature, five dimensions of the scale were identified i.e. instant decisions and actions, risk taking, irresponsibility, lack of planning and hyperactivity. Initially 45 items were prepared related to the behaviour of adolescents in context to their family and social life. By taking the views of different experts, the face validity was established and also 11 items were eliminated and 11 were modified after incorporating the suggestions given by the experts. For estimating reliability, data was collected from 428 adolescents (235 girls and 193 boys) from four school of Bathinda District of Punjab, India. The reliability of the scale was found to be high as the test-retest reliability coefficient was found to be 0.88 and internal consistency using Cronbach's alpha was found to be 0.70. Followed by this the age norms were also developed by dividing all the students into three age groups i.e. 13 to 14 years, 15 to 16 years and 17 to 19 years. Quartiles (Q_1 and Q_3) were calculated for interpreting the raw scores into three qualitative levels i.e. low, average and high. Along with this, overall data were also analyzed and interpreted in accordance with the Quartiles. The final scale comprises of 33 items. The findings indicated that, it is a valid and reliable tool to measure impulse control of adolescents. By using this tool teachers or researchers can identify the different characteristics of impulsive behaviour among adolescents and provide them with the necessary interventions to overcome these problems and help them to be better individuals of the society.

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