

The Role of Impulsive Behavior in Predicting the Emotional/Behavioral Problems of Adults with Intellectual Disability

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Abstract: The purpose of this research was to investigate the role of impulsive behavior in the prediction of the emotional/behavioral problems of adults with intellectual disability (ID). The statistical population included all adults with ID who were being trained in vocational rehabilitation centers, supported by the State Welfare Organization of Iran and the educational organization for children with special needs, in Shahrekord, Iran, in 2017-2018. The sample consisted of 134 adults with ID, selected through convenience sampling. The Barratt Impulsiveness Scale Version 11 (BIS-11) was used for measuring the impulsive behavior and The Developmental Behavior Checklist for Adults was used for measuring the emotional and behavioral problems. The collected data were analyzed using the Pearson correlation coefficient and simultaneous multiple regression. The results showed that impulsive behavior was a positive and significant predictor for emotional/behavioral problems and its subscales ($P < 0.01$). Impulsive behaviors could predict emotional/behavioral problems such as self-absorbed problems, disruptive problems, antisocial problems, depressive problems, communication and anxiety disturbance and social relating problems. Therefore, designing and implementing preventive and interventional programs to improve the impulsive behavior of adults with ID appears to be necessary to reduce their emotional/behavioral problems.

Keywords: Impulsive behavior, emotional/behavioral problems, adults, intellectual disability.

INTRODUCTION

Intellectual disability (ID) is defined as a significant limitation in mental functions and adaptive behavior that affects many social and practical skills of everyday life and appears before the age of 18 [1]. Emotional/behavioral problems are more common in adults with ID compared to their peers and these problems are more severe and persistent than other psychological problems [2-7]. The prevalence of emotional/behavioral problems in individuals with ID has been reported to be between 20% - 75% [8-13]. Due to their emotional/behavioral problems, people with ID are sometimes abusive, destructive, unpredictable, irresponsible, quarrelsome, irritable, jealous, and defiant [14]. These emotional/behavioral problems in individuals with ID can have some consequences including rejection by the community [15], communication problems, low self-confidence, and lack of self-control [16], failure [17], and self-harm or harm to others [18, 19]. In general, these problems will have an adverse effect on these individuals' social and personal functions and their relationship with their surrounding environment [20].

Impulsivity includes a wide range of actions and behaviors which an individual does to achieve pleasure

and reward without thinking about the implications of those actions [20]. In addition to being highly risky, impulsive behaviors, sometimes referred to as risky behaviors, usually have many unintended consequences and implications [21, 22]. Impulsive behaviors usually have three main features: First, the person chooses a particular behavior among a number of behaviors to gain possible pleasure; second, these behaviors will possibly have undesirable consequences; and third, the possible unpleasant outcome of the behavior is not clear and definite at the time of doing it [23]. Generally, impulsive behaviors include a wide range of behaviors that are done imprudently and rashly, and the person does such behaviors, which have a high-risk aversion, with no prior thinking or planning [20]. People with intellectual and cognitive problems are more prone to impulsive behaviors because cognitive development is associated with behavioral inhibition. Accordingly, there is a relationship between impulsive behavior and intellectual development [24, 25].

It is hypothesized that there is a relationship between impulsive behavior and emotional/behavioral problems in individuals with ID [26]. In an attempt to buttress this hypothesis, Ekhtiari, Rezvanfard, and Mokri showed that impulsive behaviors were at the heart of several emotional/behavioral problems, such as disturbance and social harm [27]. Besides, Jabraili, Moradi, and Habibi indicated that impulsive behavior

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could be used as a predictor of emotional/behavioral problems [28]. Furthermore, the findings of a study done by Richards, Oliver, Nelson, and Moss revealed that there was a relationship between emotional/behavioral problems and impulsive behaviors in individuals with autism spectrum disorder and ID [29]. In their research, Burbidge *et al.* concluded that there was a positive and significant relationship between impulsive behavior and hyperactive behaviors [24]. Hurley's study also showed that depression had a positive and significant relationship with irritability and lack self-control [27].

In short, the emotional/behavioral problems affect all the personal and social aspects of individuals with ID. As a result, the lack of attention to the emotional/behavioral problems of these individuals will aggravate their problems and turn them into chronic behavioral problems. Given the significance of these issues, any attempt to identify, diagnose, prevent, control, and treat emotional/behavioral problems is worthwhile. In this regard, and as one of the strategies in the identification and diagnosis of emotional/behavioral problems, exploring and determining the predictors of emotional/behavioral problems in individuals with ID play a key role in designing and developing comprehensive health and prevention schemes.

Considering the fact that for any preventive measure to be successful in a given country, it needs to be rooted in the studies and research done in the context of the same country, the present study aimed to examine the role of impulsive behavior in predicting the emotional/behavioral problems of adults with ID in Iran. It was hoped that the results of the study would provide managers, teachers, parents, special education centers for people with ID, and decision-making centers responsible for the mental health activities and programs of these people with relevant and useful local information about the role of impulsive behavior in the emotional/behavioral problems of adults with ID so that these stakeholders can think of serious plans to prevent the intensification, exacerbation, and continuation of such problems in adults with ID.

METHOD

The statistical population consisted of all the adults with ID who were being trained in vocational rehabilitation centers, supported by the State Welfare Organization of Iran and the educational organization for children with special needs, in Shahrekord, Chahar Mahal va Bakhtiyari province, Iran, in 2017-2018. The

convenience sampling method was used to select 134 adults with ID from adults with ID in Shahrekord. For any individual to be selected as a participant, he/she had to meet the following inclusion criteria: a) having been diagnosed with ID, b) aged between 18 and 50, c) having no other additional disability, and d) a parental satisfaction for participation in the research. Adults who met the above criteria were included in and those who did not, such those who had problems such as severe sensory-motor disorders and visual and auditory problems in addition to the ID, were excluded from the research.

Instrument

The Barratt Impulsiveness Scale Version 11 (BIS-11)

The Barratt Impulsiveness Scale Version 11 (BIS-11) has been developed by Patton, Stanford & Barratt [30]. BIS-11 has 30 items and six subscales including 1) attention, "focusing on current tasks"; 2) cognitive instability, "intruding thoughts"; 3) motor impulsiveness, "acting quickly"; 4) perseverance, "stable lifestyle"; 5) cognitive complexity, "enjoys mental challenges"; and 6) self-control, "plans and thinks deliberately". The scoring method of the scale is based on the four-point Likert scale of "1" to "4": 1) rarely/never, 2) occasionally, 3) often, and 4) almost always [31]. The higher the BIS-11 total score, the higher the impulsiveness level is. Li, Phillips, Xu, *et al.* [32] have reported the reliability of this version: the internal consistency of 30 items scale and of the three 10-item subscales was excellent (Cronbach's alphas were 0.77-0.89) and the test-retest reliability was good (intraclass correlation coefficient were 0.68-0.89). Vasconcelos, Malloy-Diniz, and Correa [33] indicated BIS-11 has reliability and criterion-related validity across samples. The reliability and validity of the questionnaire have been confirmed by various researchers (e.g., Someya *et al.* [34]; Fossati *et al.* [35]; Yang *et al.* [36]; Yao *et al.* [37]). Also, Stanford *et al.* [38] demonstrated the internal consistency ($\alpha=0.83$), test-retest at one month ($\rho=0.83$) for IBIS-11. It should be noted that the teachers individually completed the paper and pencil version of BIS-11 at school which took about 15-20 minutes.

The Developmental Behaviour Checklist for Adults (DBC-A)

The Developmental Behaviour Checklist for Adults (DBC-A) has been developed by Mohr, Tonge, and Einfeld [39]. The DBC-A is an instrument for the

assessment of emotional and behavioral problems of adults (18 years and older) with developmental and intellectual disabilities. The DBC-A is a 107-item checklist that is completed by family members and/or paid carers who know the person with an ID well, reporting problems over a six month period. Each descriptive item of emotional and behavioral disturbance is scored on a 0, 1, 2 ratings where 0 = 'not true as far as you know', 1 = „somewhat or sometimes true' and 2 = 'very true or often true'. This questionnaire has six subscales including “Self-Absorbed” (e.g., “eats non-food items, e.g., dirt, grass, soap”), "Disruptive" (e.g., "Irritable"), "Antisocial" (e.g., "lights fires."), “Depressive” (e.g., “has become more withdrawn”), “Communication and Anxiety Disturbance” (e.g., “Talks too much or too fast.”), and “Social Relating” (e.g., “Prefers to do things on his/her own. Tends to be a loner.”). Mohr, Tonge, and Einfeld [40] have reported the Cronbach's alpha coefficient for a total scale of 0.95 and for subscales range from 0.77 to 0.91 and test-retest reliability was 0.85. The concurrent validity of the DBC-A with the Aberrant Behavior Checklist (ABC) and the Psychiatric Assessment Schedule for Adults with Developmental Disability Checklist (PAS-ADD) have been confirmed [39, 40]. Specificity and Sensitivity of DBC-A have been reported 0.69 and 0.79 respectively and the area under the curve is 0.77 [39-41]. It should be noted that the teachers individually completed the paper and pencil version of DBC-A at school which took about 40 minutes.

Statistical Analysis

To determine the correlation between research variables, the Pearson correlation coefficient was used and for predicting emotional/behavioral problems based on impulsive behavior, multiple regression was used simultaneously. It is worth noting that the significance rate was $P < 0.05$.

RESULTS

Sample characteristics for adults with ID presented in Table 1.

As shown in Table 2, there is a positive and significant correlation between impulsiveness and emotional/behavioral problems and its subscales (self-absorbed problems, disruptive problems, antisocial problems, depressive problems, communication and anxiety disturbance, and social relating problems) ($P < 0.05$).

After examining the correlation matrix for predicting emotional/behavioral problems based on impulsiveness, multiple regression was used simultaneously, the results of which are presented in Table 3.

As shown in Table 3, the results of regression analysis showed that impulsiveness ($\beta = 0.55$, $T = 7.57$, $P = 0.000$) positively and significantly predict emotional/behavioral problems ($R^2 = 0.30$, $F = 57.40$, $P < 0.01$). This variable explains 30% of the variance in emotional/behavioral problem scores.

Besides, the results showed that the impulsiveness ($\beta = 0.47$, $T = 6.22$, $P = 0.000$) predicts self-absorbed problems positively and significantly ($R^2 = 0.22$, $F = 38.74$, $P < 0.01$). This variable explains 22% of the variance in self-absorbed problem scores. Moreover, the results showed that impulsiveness ($\beta = 0.56$, $T = 7.69$, $P = 0.000$) positively and significantly predict disruptive problems ($R^2 = 0.31$, $F = 59.27$, $P < 0.01$). This variable explains 31% of the variance in disruptive problem scores. Also, the results showed that impulsiveness ($\beta = 0.41$, $T = 5.23$, $P = 0.000$) positively and significantly predict antisocial problems ($R^2 = 0.17$, $F = 27.34$, $P < 0.01$). This variable explains 17% of the variance in

Table 1: Sample Characteristics for Adults with Intellectual Disability

	Adults with ID (N = 134)
Mean age (years) (SD)	25.09 (6.81)
Range (years)	18-50
Male (female)	93 (41)
Birth order (SD)	2.93 (2.07)
Family size (SD)	6.15 (2.03)
Maternal educational level (%): < 12 years (> 12 years)	78.4 (21.6)
Family income (%): (≤10,000,000 IRR, 10,000,001–30,000,000 IRR, ≥30,000,001 IRR)	(66.4, 32.8, 0.7)

US\$1 = 135490 IRR.

Table 2: Mean, Standard Deviation and Correlation Coefficients between impulsiveness and emotional/behavioral problems and its subscales

Parameters Variables		M	SD	1	2	3	4	5	6	7	8	
Impulsiveness	1	Impulsiveness	70.57	11.81	1							
	emotional/behavioral problems	2	Total Score of emotional/behavioral problems	62.75	33.30	0.55**	1					
		3	Self-Absorbed problems	12.05	9.70	0.48**	0.88**	1				
		4	Disruptive problems	12.76	6.96	0.56**	0.91**	0.74**	1			
		5	Antisocial problems	5.18	3.79	0.41**	0.82**	0.72**	0.70**	1		
		6	Depressive problems	9.94	5.33	0.49**	0.88**	0.73**	0.79**	0.71**	1	
		7	Communication and Anxiety Disturbance	13.58	6.76	0.52**	0.88**	0.71**	0.81**	0.68**	0.70**	1
		8	Social Relating problems	8.14	4.02	0.39**	0.79**	0.59**	0.30**	0.70**	0.58**	0.74**

** $P < 0.01$.**Table 3: Results of Simultaneous Regression for Prediction of Emotional/Behavioral Problems Based on Impulsiveness**

Criterion variables	Predictor variables	F	R^2	B	B	T	P
Total score of emotional/behavioral problems	Impulsiveness	57.40	0.30	1.51	0.55	7.57	0.000
Self-Absorbed problems	impulsiveness	38.74	0.22	0.39	0.47	6.22	0.000
Disruptive problems	Impulsiveness	59.27	0.31	0.33	0.56	7.69	0.000
Antisocial problems	Impulsiveness	27.34	0.17	0.13	0.41	5.23	0.000
Depressive problems	Impulsiveness	41.59	0.24	0.22	0.49	6.45	0.000
Communication and Anxiety Disturbance	Impulsiveness	49.44	0.27	0.29	0.52	7.03	0.000
Social Relating problems	Impulsiveness	24.94	0.15	0.14	0.39	4.99	0.000

antisocial problem scores. Besides, the results showed that the impulsiveness ($\beta=0.49$, $T=6.45$, $P=0.000$) positively and significantly predict depressive problems ($R^2 = 0.24$, $F=41.59$, $P<0.01$). This variable explains 24% of the variance in depressive problem scores. Moreover, the results showed that the impulsiveness ($\beta=.52$, $T=7.03$, $P=0.000$) positively and significantly predict communication and anxiety disturbance ($R^2 = 0.27$, $F=49.44$, $P<0.01$). This variable explains 27% of the variance in communication and anxiety disturbance scores. Also, the results showed that the impulsiveness ($\beta=0.39$, $T=4.99$, $P=0.000$) positively and significantly predict social relating problems ($R^2 = 0.15$, $F=24.94$, $P<0.01$). This variable explains 23% of the variance in social relating problem scores.

DISCUSSION

The findings of the present study indicated that there was a positive and significant correlation between

impulsivity and emotional/behavioral problems. This is consistent with the results reported by Loney *et al.* [42], Rojohan *et al.* [43], and Burbidge *et al.* [24]. In explaining the above correlation, it can be argued that impulsive adults, compared to their normal peers, have a different emotional processing style. To flesh out, impulsive individuals are more disposed to show intensely excited reactions to emotional stimuli. One of these reactions is a negative reaction by them to their peers that happens when they are during doing homework and getting involved in social communication. These reactions can result in social harms, which themselves can lead to more emotional/behavioral problems [42]. On the same issue, Ahmadi and Moeini [44] contended that impulsive behaviors that were accompanied by excitement, urgency, lack of reflection and perseverance could contribute to emotional/behavioral problems.

Germane to the subscales of emotional/behavioral problems, the findings of this study showed that there

was a positive and significant relationship between impulsivity and self-absorbed problems; impulsivity could predict self-absorbed problems. This finding is in line with those of Bradley and Isaacs [45]. This finding can be explained by arguing that some symptoms, such as being impulsive, neglectful, and hyperactive, can disrupt individuals' adaptive functioning, leading to the complication and intensification of symptoms of self-absorbed problems [45].

Furthermore, the findings of this research revealed that there was a positive and significant relationship between impulsivity and disruptive problems; to be more clear, impulsivity could predict disruptive problems. This finding is in agreement with what was reported by Stavnes [46]. Disruptive behaviors include behaviors such as violating rules, failing to discharge one's responsibilities and tasks, talking incessantly to others and oneself, neglecting the present assignments, and harassing others. To support this finding, it can be stated that disruptive people are distracted by environmental stimuli and act impulsively [46]. Since impulsive individuals do things rashly, without reflecting on the implications of their actions and decisions [47], they have low self-control and disinhibition [48] and are inclined to react rashly and quickly to stimuli [49], hence doing more disruptive behaviors and disturbing others more [45].

Moreover, the results of the data analysis lend support to a positive and significant relationship between impulsivity and anti-social behavior and impulsivity predict anti-social behaviors. These findings are consistent with those reported by Moeller *et al.* [50], Wang and Diamond [51], Komarovskaya, Loper, and Warren [52], and Maneiro *et al.* [48]. To clarify this finding, it must be pointed out that perseverance and sensation-seeking, which are two manifestations of impulsiveness, can lead to anti-social behaviors. Perseverance is the ability to focus on a tedious or difficult task. Sensation-seeking involves two aspects: 1) The desire to pursue, enjoy, and indulge in exciting activities and 2) being open to new experiences, which together may be perilous and encourage anti-social behaviors [48].

Additionally, the findings of the present research indicated that there was a positive and significant relationship between impulsivity and depression. In fact, impulsivity could predict depression, and this finding is in line with what Takahashi *et al.* [53], and Moustafa, Tindle, Frydecka, and Misiak [49] reported in their studies. This finding can be explained by taking

into consideration that cognitive impulsivity, which involves hasty cognitive decision-making and low tolerance thresholds in the face of cognitive challenges, as well as lack of any thought-out plan for future, is usually intertwined with depression, which itself is a factor involved in an impulsive and rash decision to commit suicide [49]. What can also provide a satisfactory explanation for this finding is that incompatible and impulsive coping strategies increase the level of depression, culminating in suicidal behaviors [54].

Additionally, the data showed that there was a significant correlation between impulsivity and communication and anxiety disturbance. Impulsivity could predict communication and anxiety disturbance and this finding is consistent with the findings of Tan, Jarnecke, and South's study [55]. This finding could be better understood if it is taken into account that impulsive people make rash and imprudent decisions without much thinking, have a myopic view of future, are impatient, and like to get things done in a hasty manner. They react without any thinking when they lose their equanimity and regret their reaction later. Thus, these hasty and impulsive reactions disrupt their communication with others, leaving their partners usually confused [56].

Finally, data analysis revealed that there was a positive and significant relationship between impulsivity and social relating problems. In other words, impulsivity could predict social relating problems. This finding is in agreement with that of Tan, Jarnecke, and South's study [57]. To cite evidence in support of this finding, it can be stated that, on the one hand, effective social relating requires cognitive skills, self-monitoring, familiarity with social norms and conventions, and emotional self-regulation [56], and, on the other hand, impulsive individuals have difficulty in emotional self-regulation and have low self-control [47]. As a result, they encounter some difficulties in social relating.

It is worth noting that this study was conducted on adults with ID in Shahrekord, Iran. Accordingly, caution must be practiced in generalizing its results to all adults with ID. Future studies need to focus on the role of impulsive behavior in predicting emotional/behavioral problems of all adults with disabilities. This research aimed to investigate the role of impulsive behavior in the prediction of the emotional/behavioral problems of adults with ID. According to the findings of this research, impulsive behavior positively and significantly predicts the emotional/behavioral problems of adults

with ID. Therefore, designing, developing, and implementing preventive and interventional programs are necessary for control of the impulsive behavior of adults with ID. This is the first stage for reducing their emotional/behavioral problems.

CONCLUSION

The findings of the present study indicated that there was a positive and significant correlation between impulsivity and emotional/behavioral problems. Therefore, designing and implementing preventive and interventional programs to improve the impulsive behavior of adults with ID appears to be necessary to reduce their emotional/behavioral problems.

ETHICAL CONSIDERATIONS

Parents gave consent for the participation of their children in this study. The parents were aware of the purpose of the study and they were assured that all their information would remain confidential. The ethical review board of the regional Special Education Organization and State Welfare Organization of Shahrekord, Chahar Maḥal va Bakhtiyari province of Iran approved the study.

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