

# Risk-taking Behaviour: The Role of Dark Triad Traits, Impulsivity, Sensation Seeking and Adverse Childhood Experience

Zana Babakr<sup>1</sup>, Nabi Fatahi<sup>1,2</sup>

<sup>1</sup>Faculty of Arts, Psychology Department, Soran University, Iraq.

<sup>2</sup>Institute of Health and Care Sciences, University of Gothenburg, Gothenburg, Sweden

Corresponded author: Nabi Fatahi, University of Gothenburg. Institute of Health and Care Sciences, Sweden. E-mail: [nabi.fatahi@gu.se](mailto:nabi.fatahi@gu.se). ORCID ID: <http://www.orcid.org/0000-0000-0000-0000>.

doi: [10.5455/aim.2023.31.292-299](https://doi.org/10.5455/aim.2023.31.292-299)

ACTA INFORM MED. 2023, 31(4): 292-299

Received: JUL 25, 2023

Accepted: SEP 04, 2023

## ABSTRACT

**Objective:** Dark Triad Traits, Adverse Childhood Experiences, impulsivity and sensation seeking significantly influence whether one engages in or avoids various risk behaviours and personality throughout life. **Objective:** The present study aimed to investigate how Dark Triad Traits, Adverse Childhood Experience and impulsivity sensation influence risk taking behaviour personality throughout life. **Methods:** The sample included 222 university students from four universities, 82 males (36.9%) and 140 females (63.1%), and aged between 18 and 51 years. **Results:** The results showed that adverse childhood experiences, psychopathy, narcissism, impulsivity and sensation-seeking predicted risk taking. Machiavellianism, on the other hand, did not significantly predict risk taking. Based on results, adverse childhood experiences predicted risk-taking directly and indirectly through psychopathy, narcissism, impulsivity and sensation seeking. **Conclusion:** The results indicate that early childhood experiences are a significant factor in personality traits and that positive early experiences could lead to minimising risk taking and reducing levels of impulsivity, sensation-seeking and dark triad traits.

**Keywords:** Adverse childhood experience, impulsivity, narcissism, psychopath, risk taking, sensation seeking.

## 1. BACKGROUND

According to (1) risk taking is a “participation in behaviour which involves potential negative consequences (or loss) balanced in some way by perceived positive consequences (or gain)” (p. 393). Researchers have devoted a substantial amount of study attention to understanding risk taking behaviour (2–8). Researchers seek to understand the psychological factors beyond the vulnerability to risk taking (Gullone & Moore, 2000). Personality traits have influenced engaging in or avoiding risk taking (5,9–11). There are various personality conceptualizations, such as the dark triad (12,13) impulsivity and sensation seeking (14,15).

Dark triad traits refer to three different but interrelated socially aversive personality constructs, which include psychopathy, narcissism, and Machiavellianism (12,13). According to (16), psychopathy conceptualizes a four-dimensional construct that represents interpersonal (e.g., conning manipu-

lative), affective (callous and lack empathy), impulsive lifestyle (irresponsible), and antisocial tendencies (poor behaviour controls). Narcissism correlated with a number of personality characteristics such as “extreme self-focus and vanity, a constant need for attention, admiration, and self-determination, an expectation of special favors, and a willingness to exploit others to obtain such favors” (17). The dominant characteristic of Machiavellianism is manipulation (13), in addition to self-interest, deception, display of duplicitous behaviour, and power-seeking (18).

One of the psychopathy characteristics is risk taking (19). Research findings showed that psychopathy correlated with engaging in a diverse range of risk taking actions (20,21), such as social, ethical, financial, and health risk taking (20) and unsafe sex (22). Researchers have demonstrated the correlation between engagement in risk taking and narcissism within risk pro-

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personality questionnaires and behavioural experimental risk tasks (23,24). Research findings have revealed that narcissism is related with various risk taking behaviours, such as aggressive driving (25,26), unprotected sex (27), gambling (28), illegal drug use, and alcohol abuse (29).

Impulsivity is another complicated personality structure (30), associated with risk taking behaviour and lack of plan (31). The characteristics of impulsivity are acting without conscious evaluation, absence of careful deliberation (32–34), insufficient forethought (35), and quick decision making (34). Researchers indicated that impulsive individuals do not care about the negative outcome of their actions (36,37), and it is responsible for diverse aspects of averse behaviour (38,39). Thus, impulsivity is associated with various risk taking behaviours (6,7,40).

Sensation seeking is a multidimensional construct that comprises “thrill and adventure seeking, experience seeking, disinhibition, and boredom susceptibility” (41). Zuckerman (14) defined sensation-seeking trait as a “varied, novel, complex, and intense sensations and experiences, and the willingness to take physical, social, legal, and financial risks for the sake of such experience” (p. 27). Sensation seeking is strongly correlated with risk taking behaviour, and sensation seekers fail to understand risk taking behaviour (14,42). Studies indicated that sensation seeking is correlated to certain risk taking behaviour, such as risk in sports (43), drug abuse (42,44,45), alcohol use (46), gambling (47), and risky driving (48).

Despite the role of personality factors in risk taking behaviour, adverse childhood experience is another psychological construct that influences risk taking. Adverse Childhood Experiences (ACEs) is a controversial public health concern that every year, billion of children are exposed to various types of violence (49). Studies demonstrated that the ACEs significantly influence individual behaviour (Anda et al., 2008), and might become a noteworthy part of an individual's later life for a long period (50). The ACEs refer to a variety of trauma exposure that comprises diverse negative experiences during childhood, such as emotional, physical, and sexual abuse, parental substance abuse, parental mental health problems, mother being treated violently (51), parental committed crime, divorce (52), emotional and physical neglect (53).

A considerable research study showed a significant correlation between childhood abuse experience and diverse long-term negative outcomes that involve mental, physical (54–56) and health problems (54,55,57,58). A number of research studies have demonstrated the association between childhood abuse experience and behavioural problems. Studies identified that the ACE is associated with various risk taking behaviours (55), and the majority of these behaviours influence an individual's life (59). For instance, criminal behaviour, illegal drug use (50,60,61), alcohol abuse (61,62), tobacco use (63) and unsafe sex (60,61,64). However, risk taking behaviour might be influenced by several other factors, such as personality traits that are formed by early childhood experiences. The ACEs have a negative influence on individuals internal and external status (54,55,57,58), and similarly might influence dark triad personality, impulsivity, and sensation seeking. In summary, research studies revealed adverse childhood experiences and dark personality triad traits associated with various risk taking behaviours. In addition, early

childhood experience has a critical role in an individual's personality. However, there is a limited of study that investigated the role of dark triad, impulsivity, and sensation seeking in the relationship between ACEs and risk taking.

## 2. OBJECTIVE

Thus, the main aim of the this examination is to respond unanswered questions about the role of ACEs on personality factors and risk taking taking and researchers proposed the following hypothesis:

Hypothesis 1: Adverse Childhood Experiences have a positive effect on risk taking behaviour.

Hypothesis 2: Dark personality triad traits, impulsivity, and sensation seeking positively affect risk taking behaviour.

Hypothesis 3: Dark personality triad traits, impulsivity, and sensation seeking significantly affect the association between adverse childhood experience and risk taking as a mediation variable.

## 3. MATERIAL AND METHODS

### Sample

College undergraduate students at five universities have been recruited to participate in the current study. The total number of students who responded was 390; however, only 222 completed all questions. The sample comprised both genders; males were 82 (36.9%), and females were 140 (63.1%). The participant's age ranged from 18 to 51 (see Table 1).

### Measurements

#### *The Short Dark Triad*

The Short Dark Triad (SD3; Jones & Paulhus, 2014) is a 27-item self-report assessment that was employed to measure psychopathy, narcissism, and Machiavellianism. In the DS3 each dark personality construct comprised 9 items on a 5-point Likert scale that ranged from disagree strongly (1) to agree strongly (5). Examples of items psychopathy: “People who mess with me always regret it”, narcissism “I feel embarrassed if someone compliments me” and Machiavellianism “Avoid direct conflict with others because they may be useful in the future.” The SD3 has concurrent and predictive validity and a good Cronbach's alpha reliability (65). The Cronbach's alpha for the Kurdish version was acceptable, psychopathy was 0.82, narcissism was 0.78, and Machiavellianism was 81.

#### *Impulsive Sensation Seeking*

Impulsive Sensation Seeking (ImpSS; Zuckerman et al., 1993) self-report questionnaire that comprises 19 items in two response options (Yes =1, No = 0) used to measure impulsivity (7 items) and sensation seeking (12 items). Example of items, impulsivity “I tend to begin a new job without much planning on how I will do it” and sensation seeking “I would like the kind of life where one is on the move and traveling a lot, with lots of change and excitement”. Studies found predictive and convergent validity and demonstrated high Cronbach's alpha reliability for the ImpSS (67). The Cronbach's alpha for the Kurdish sample of the ImpSS was acceptable, impulsivity was 0.77, and sensation seeking was 0.79.

#### *Adverse Childhood Experiences*

Adverse Childhood Experiences (ACE; Felitti et al., 1998) is a self-report assessment that measures the childhood experience in the first 18 years of life. In wave I, the ACE comprised 7- categories; however, 3 additional categories were in-

Demographic variable	
Gender	
Male	(82) 36.9%
Female	(140) 63.1%
Age	
Range	18-51
Mean (SD)	21.63 (4.37)
Socioeconomic status	
Very low	(7) 3.2%
Low	(4) 1.8%
Moderate	(126) 56.8%
High	(78) 35.1%
Very high	(7) 3.2%
Universities	
Soran	(125) 56.3 %
Salahaddin	(31) 14. 0 %
Sulaimani	(27) 12.2 %
Koya	(22) 9.9 %
Raparen	(17) 7.7 %

Table 1. Demographic characteristics of the sample

Category of childhood exposure	N	%	M	SD	Mean 95% CI
Emotional abuse	101	45.5	0.455	0.499	0.389, 0.521
Physical abuse	84	37.8	0.378	0.486	0.314, 0.433
Sexual abuse	53	23.9	0.239	0.427	0.182, 0.295
Emotional neglect	92	41.4	0.414	0.494	0.349, 0.480
Physical neglect	27	12.2	0.122	0.328	0.078, 0.165
Domestic violence	28	12.6	0.126	0.333	0.082, 0.170
Household substance abuse	17	7.7	0.077	0.267	0.041,0.112
Mental illness in household	36	16.2	0.162	0.369	0.113, 0.211
Parental separation	34	15.3	0.153	0.361	0.105, 0.201
Criminal household member	33	14.9	0.149	0.357	0.101, 0.196

Table 2: Prevalence of Adverse Childhood experiences and descriptive statistics.

cluded in wave II (53,68). The ACE measures ten categories of adverse childhood experiences, including “emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect, domestic violence, household substance abuse, mental illness in the household, parental separation or divorce, criminal household member”. Concerning psychometric properties, the ACE showed high internal Cronbach’s alpha  $\alpha = 0.87$ , and for the Kurdish version, internal reliability was  $\alpha = 0.80$ .

*Risk taking behaviour*

The General Risk Propensity Scale (GRiPS, Zhang et al., 2019) is a brief self-report questionnaire that was employed to assess general risk taking behaviour. The GRiPS comprise 8 items with a 5-point Likert scale that ranges from strongly disagree (1) to strongly agree (5). Concerning psychometrics, the GRiPS has a high Internal reliability  $\alpha = 0.92$ . Furthermore, the GRiPS has conversant, incremental,

and predictive validity. An example of the GRiPS “Taking risks makes life more fun.” The internal Cronbach’s alpha reliability of the GRiPS for the Kurdish version was 0.86.

**4. RESULTS**

The prevalence of adverse childhood experiences among participants varied according to trauma exposure category (see Table 2). The most common trauma exposure was emotional abuse 45.5% (M= 0.455, SD= 0.499), and the lowest proportion of childhood trauma exposure was household substance abuse 7.7% (M= 0.077, SD=0.267).

The results also demonstrated in Table 3 have shown descriptive statistics and association between study variables. According to the results, psychopathy  $r = 0.364$ ,  $p < 0.01$ , 95 % CI (0.473, 0.244), and narcissism  $r = 0.329$ ,  $p < 0.01$ , 95 % CI (0.442, 0.206) as dark personality traits were associated positively with risk taking. However, a significant correlation between Machiavellianism and risk taking was not found,  $p = 0.059$ , 95 % CI (0.254, -0.005). Furthermore, impulsivity  $r = 0.276$ ,  $p < 0.01$ , 95 % CI = (0.394, 0.150) and sensation seeking  $r = 0.430$ ,  $p < 0.01$ , 95 % CI (0.531, 0.316) positively associated with risk taking. The results also indicated that the ACEs positively associated with risk taking behaviour  $r = 0.276$ ,  $p < 0.01$ , 95 % CI (0.394, 0.150). As well as the association

between ACEs and personality factors has been found. This means that ACEs have a significant effect in personality formation. Moreover, statistical analysis for the relationship between adverse childhood experience categories and personality factors has been demonstrated, as shown in Table 4, indicating that each personality trait is under certain categories of Adverse Childhood experience.

After identifying the correlation between variables, the mediation analysis (see Figure 1) was carried out to determine the total, direct, and indirect association between independent, mediator, and outcome

variables. Results from the mediation analysis showed that

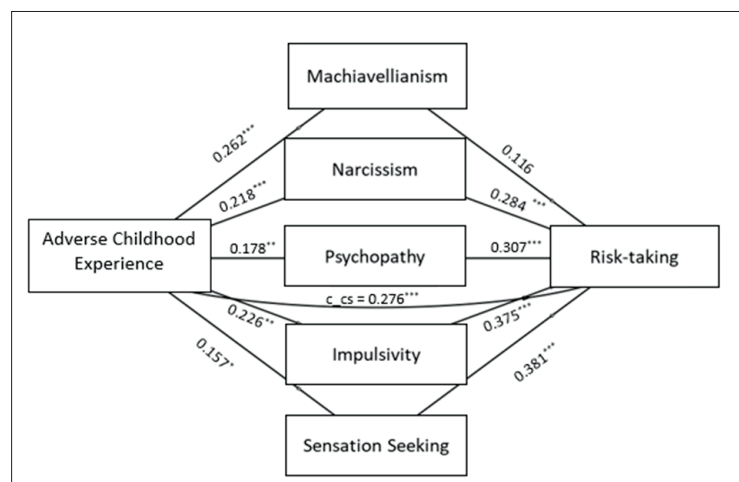


Figure 1: The SEM analysis used to test the pathways between adverse childhood experience and personality traits (N = 222). \* $p < 0.05$ , \*\* $p < 0.01$ , and \*\*\* $p < 0.001$ .

	1	2	3	4	5	6	7	M	SD	Skew.	Kurt.
Machiavellianism	—							25.320	5.003	-0.286	0.868
Narcissism	0.155*	—						26.455	4.954	-0.413	1.037
Psychopathy	0.216**	0.261**	—					23.117	5.305	0.511	0.759
Impulsivity	0.132*	0.280**	0.246**	—				4.045	1.283	0.058	-0.679
Sensation Seeking	0.253**	0.238**	0.474**	0.332**	—			6.023	2.693	-0.044	-0.741
Risk taking	0.127	0.329**	0.364**	0.276**	0.430**	—		25.180	7.419	-0.327	-0.566
ACEs	0.185**	0.205**	0.294**	0.225**	0.312**	0.276**	—	2.288	2.198	0.905	0.413

Note. \*  $p < 0.05$ , \*\*  $p < 0.01$ .

Table 3. Descriptive statistics and correlation analysis between personality traits and risk taking behaviour

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Emotional abuse	1													
2. Physical abuse	0.537**	1												
3. Sexual abuse	0.189**	0.282**	1											
4. Emotional neglect	0.443**	0.305**	0.323**	1										
5. Physical neglect	0.269**	0.250**	0.212**	0.358**	1									
6. Parental separation	0.089	0.132*	0.231**	0.252**	0.148*	1								
7. violence	0.252**	0.403**	0.265**	0.176**	0.315**	0.328**	1							
8. Substance abuse	0.179**	0.194**	0.196**	0.033	0.048	0.066	0.146*	1						
9. Mental illness	0.261**	0.262**	0.126	0.176**	0.098	0.288**	0.164*	0.149*	1					
10. Crime	0.127	0.170*	-0.056	0.085	0.232**	0.104	0.223**	0.118	0.160*	1				
11. Machiavellianism	0.139*	0.112	0.201**	0.089	0.062	0.106	0.180**	0.097	0.138*	0.032	1			
12. Narcissism	0.020	0.009	0.211**	0.158*	0.169*	0.130	0.146*	0.011	-0.008	0.015	0.155*	1		
13. Psychopath	0.277**	0.136*	0.058	0.133*	0.093	0.171*	0.048	0.068	0.218**	0.110	0.216**	0.261**	1	
14. Impulsivity	0.130	0.110	0.129	0.185**	0.084	0.141*	0.008	0.202**	0.156*	0.055	0.132*	0.280**	0.246**	1
15. Sensation Seeking	0.218**	0.146*	0.176**	0.221**	0.274**	0.090	0.103	0.098	0.124	0.086	0.253**	0.238**	0.474**	0.332**

Note. \*  $p < 0.05$ , \*\*  $p < 0.01$

Table 4: The association between adverse childhood experience categories and personality factors.

the ACEs predicted risk taking directly  $b = 0.599$ , 95 % CI (0.165, 1.034), and indirectly through psychopathy  $b = 0.333$ , 95 % CI (0.150, 0.565), psychopathy and the ACEs together accounted for 0.161 of the variances in risk taking behaviour. The results indicated that individuals with ACEs and psychopathic personalities tend to involve risk taking in the proportion of 16.1%. The results also demonstrated that the ACEs through narcissism predicted positively risk taking behaviour  $b = 0.197$ , 95 % CI (0.054, 0.353), the narcissism and the ACEs accounted for 0.153 of the variances of risk taking. the results suggests that together, ACEs and narcissism tend to involve risk taking in the proportion of 15.3%. In contrast, Machiavellianism was not a significant mediator between the ACEs and risk taking behaviour 95 % CI (-0.048, 0.177), but the ACEs predicted Machiavellianism  $b = 0.883$ ,  $p < 0.001$  (see Table 5). Further findings demonstrated that the ACEs predicted risk taking directly  $b = 0.761$ ,  $p < 0.001$ , 95% CI (0.330, 1.193) and indirectly through impulsivity  $b = 0.171$ , 95% CI (0.052, 0.319). Impulsivity and the ACEs accounted for 12.4 % of the risk taking variance. Regarding sensation seeking, results showed that the ACEs predicted sensation seeking di-

rectly  $b = 0.531$ ,  $p < 0.001$ , 95% CI (0.110, 0.953) and indirectly  $b = 0.401$ , 95% CI (0.226, 0.618). Sensation seeking and the ACEs accounted for 20.7 % of the risk taking variance (see table 6).

### 5. DISCUSSION

Although many previous studies investigated risk taking behaviour, the current study examined the role of adverse childhood experience in risk taking and studied the mediating effect of certain personality factors on this association. Two essential results were attained from this exploration. The current study demonstrated that adverse childhood experiences predicted risk taking propensity. Second, Psychopathy, Narcissism, impulsivity, and Sensation seeking partially mediated the association between adverse childhood experiences and risk taking. More specifically, the results demonstrated that adverse childhood experiences was positively predicted risk taking. This means that people who experienced more trauma exposure during childhood were more tend to involve in risk taking later in life. This interpretation is with line previous studies which indicated that adverse childhood



	Coeff.	St. Coeff.	SE	t	p-value	95% CI		c_cs	c'_cs
						Lower	Upper		
ACEs ⇒ Machiavellianism ⇒ Risk taking	0.049	-	0.056	-	-	-0.048	0.177	-	-
ACEs ⇒ Machiavellianism	0.442	0.185	0.151	2.798	< 0.001	0.125	0.710	-	-
Machiavellianism ⇒ Risk taking	0.116	0.078	0.098	1.190	0.235	-0.0762	0.309	-	-
ACEs ⇒ Risk taking	0.883	-	0.222	3.972	< 0.001	0.445	1.321	-	0.262
ACEs ⇒ Risk taking	0.933	-	0.219	4.263	< 0.001	0.501	1.364	0.276	-
ACEs ⇒ Narcissism ⇒ Risk taking	0.197	-	0.077	-	-	0.054	0.353	-	-
ACEs ⇒ Narcissism	0.736	0.218	0.214	3.433	< 0.001	0.313	1.158	-	-
Narcissism ⇒ Risk taking	0.426	0.284	0.095	4.477	< 0.001	0.238	0.613	-	-
ACEs ⇒ Risk taking	0.736	-	0.214	3.433	< 0.001	0.313	1.158	-	0.218
ACEs ⇒ Risk taking	0.933	-	0.219	4.264	< 0.001	0.501	1.364	0.276	-
ACEs ⇒ Psychopathy ⇒ Risk taking	0.333	-	0.099	-	-	0.150	0.565	-	-
ACEs ⇒ Psychopathy	0.599	0.178	0.221	2.716	< 0.01	0.165	1.034	-	-
Psychopathy ⇒ Risk taking	0.454	0.307	0.097	4.701	< 0.001	0.264	0.645	-	-
ACEs ⇒ Risk taking	0.599	-	0.221	2.716	< 0.01	0.165	1.034	-	0.178
ACEs ⇒ Risk taking	0.933	-	0.219	4.264	< 0.001	0.501	1.364	0.276	-

Table 5. The role of Dark Triad Traits in the association between Adverse Childhood Experiences (ACEs) and risk taking.

	Coeff.	St. Coeff.	SE	t	p-value	95% CI		c_cs	c'_cs
						Lower	Upper		
ACEs ⇒ Sensation Seeking ⇒ Risk taking	0.401	-	0.100	-	-	0.221	0.618	-	-
ACEs ⇒ Sensation Seeking	0.531	0.157	0.214	2.485	< 0.05	0.110	0.953	-	-
Sensation Seeking ⇒ Risk taking	1.048	0.381	0.175	6.007	< 0.001	0.704	1.392	-	-
ACEs ⇒ Risk taking	0.531	-	0.214	2.485	< 0.05	0.110	0.953	-	0.157
ACEs ⇒ Risk taking	0.933	-	0.219	4.264	< 0.001	0.501	1.364	0.276	-
ACEs ⇒ Impulsivity ⇒ Risk taking	0.171	-	0.069	-	-	0.052	0.319	-	-
ACEs ⇒ Impulsivity	0.131	0.226	0.036	3.423	< 0.001	0.052	1.206	-	-
Impulsivity ⇒ Risk taking	1.305	0.226	0.375	3.478	< 0.001	0.566	2.045	-	-
ACEs ⇒ Risk taking	0.761	-	0.219	3.476	< 0.001	0.330	1.193	-	0.226
ACEs ⇒ Risk taking	0.933	-	0.219	4.264	< 0.001	0.501	1.364	0.276	-

Table 6 The role of impulsivity and sensation seeking in the association between Adverse childhood experiences (ACEs) and risk taking.

experiences would increase an individual’s likelihood to involve in diverse risk taking behaviour (70–74). The ACEs are suggested to develop neurological functioning in adulthood (57). The ACEs modify the frontolimbic function, alter cognition abilities, and decrease stress reactivity and emotional dysregulation. These consequences might lead to impulsivity and engaging in risk taking behaviour (75,76). In another study, researchers revealed that the ACEs, through decreasing mindfulness, predicted risk taking (75).

The study findings revealed that psychopathy and narcissism partially mediate the correlation between the ACEs and risk taking. This means that individuals with high dark triad might engage in more risk taking behaviour. This finding is in line with study (20), which revealed that psychopathy is related positively with various risk taking behaviours, such as social, ethical, financial, and health/safety. Psychopathic individuals are impulsive (77), and characterized by a lack

of self-regulation (78). Psychopathy neglects the disadvantages of risks and engages in risky decision-making (20). Concerning narcissism, the result is consistent with (79) study, which revealed that highly narcissistic individuals engage in diverse risk taking behaviour, such as social, health, financial, and ethical. Furthermore, narcissistic individuals are impulsive (77,80), and making risky decisions on a behavioural task (24).

In addition, the present study found that ACEs positively correlated to dark triad, impulsivity, and sensation seeking. The results mean that individuals who experience more trauma exposure during childhood are more likely to develop dark triad, impulsivity and sensation seeking. These results are in line with other study (81), which demonstrated that children’s maltreatment experience influences their personality development; and adulthood personality influences early childhood experience (82) indicated that adverse child-

hood experiences could alter individuals' thinking, feeling, and behaviour (83). Moreover, a substantial body of research has indicated that social factors such as physical and sexual abuse are a predictor of externalizing behaviour like aggression and impulsivity (84–88). In another study it was demonstrated that children who experienced maltreatment might develop psychopathic characteristics such as antisocial traits even without a genetic predisposition toward such traits (89).

Findings from this study revealed that impulsivity and Sensation seeking positively predicted risk taking propensity. This means individuals with high impulsivity and Sensation seeking scores are highly likely to take risks. Previous studies indicated that impulsive individuals do not perceive the dangers of what they want to do (90); impulsivity reflects on an individual's thoughts and decision making (30). Impulsivity is characterized by a spontaneous reaction toward stimuli without considering the possible disadvantages of the actions (33). Study findings reported various risk taking behaviour associated with impulsivity, such as suicide attempts (91), alcohol use (92), crime (7), drug use (6,40), and gambling (47). The results are consistent with earlier studies, which indicated that sensation seekers are more engaged in risk taking behaviour (93). It is indicated that sensation seeking is correlated with diverse risk taking forms, such as smoking, drinking, drugs, sex, driving, and gambling (14,48). Research findings revealed that Sensation seeking is correlated with social, financial, physical, political, and ethical risk behaviour (94). Zuckerman believed that individuals with high levels of Sensation seeking underestimate the concept of risks. This is true for all people, from children to young adults (14,48).

## 6. CONCLUSION

The present study had several aims. First, to investigate the relationship between adverse childhood experiences, dark triad, sensation seeking, and impulsivity with risk taking propensity. Second, examining to what extent personality factors mediate the association between adverse childhood experience and risk taking propensity. Findings have shown that adverse childhood experiences and personality traits are important factors in understanding risk taking behaviour. More importantly, the findings demonstrated that the ACEs directly and indirectly, through personality traits, predict risk taking behaviour, and the ACEs significantly affect the developing and shaping individual's personality traits. Furthermore, parents who want to be aware of their children need to consider how to deal with and treat their children and avoid maltreatment with them. Further study should examine the role of emotional invalidation in developing dark personality traits and risk taking among the general population.

- **Patient Consent Form:** All participants were informed about subject of the study.
- **Conflicts of interest:** There are no conflicts of interest.
- **Financial support and sponsorship:** Financial support was obtained from JSS Academy of Higher Education and Research

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