



## Parenting and Criminal Thinking: The Role of Dark Tetrad Traits Among Drug Rehabilitation Patients in Pakistan

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### ABSTRACT

Drug addiction poses severe challenges for public health and criminal justice systems, extending beyond physical and psychological harms to include crime, violence, and social breakdown. One psychological pathway often examined is criminal thinking, defined as maladaptive cognitive styles that normalize and justify unlawful behavior. The present study investigated how perceived parenting and Dark Tetrad personality traits (Machiavellianism, narcissism, psychopathy, and sadism) relate to criminal thinking among drug addicts in Pakistan. Data were collected from 123 male participants in rehabilitation centers in Lahore using the Parental Bonding Instrument (PBI), the Short Dark Tetrad (SD4), and the Criminal Thinking Scale(CTS). Correlation analyses revealed that parental care was negatively related to certain aspects of criminal thinking, while parental control showed positive associations with maladaptive cognitions. Regression analyses indicated that Dark Tetrad traits particularly Machiavellianism and psychopathy/sadism were the strongest predictor criminal thinking. However, mediation analysis found no evidence that these traits explained the link between parenting and criminal thinking, as parental variables did not significantly predict dark traits. Family system comparisons showed that individuals from joint families reported higher maternal care, while those from nuclear families scored higher on impulsive “wild” traits, but no differences were observed in overall criminal thinking. The findings says that maladaptive personality traits

play a stronger role parenting styles in sustaining criminal cognition among addicts in Pakistan, with cultural nuances in family structure offering some protective influences.

## INTRODUCTION

Drug addiction is a chronic relapsing disorder characterized by compulsive drug seeking, diminished control over use, and continued consumption despite harmful consequences. According to the United Nations Office on Drugs and Crime (UNODC, 2022), substance use disorders affect millions worldwide, producing significant burdens in terms of physical health, psychological well being, and social functioning. Beyond health related concerns, addiction contributes substantially to criminal activities, including theft, violence, and drug trafficking. Neuropsychological changes associated with long term drug use reduce impulse control and impair judgment, thereby fostering antisocial conduct (Koob & Volkow, 2010).

In Pakistan, the situation is alarming. National surveys estimate that over six million individuals misuse drugs, with heroin and cannabis being the most common substances. Addiction in Pakistan represents not only a public health crisis but also a social and legal concern, as drug users are disproportionately entangled with the criminal justice system. Weak preventive infrastructures, insufficient rehabilitation facilities, and pervasive social stigma further perpetuate this cycle of substance abuse and crime.

Criminal thinking has been recognized as a central psychological mechanism linking substance abuse to unlawful behaviors. Walters (1995) defined criminal thinking as maladaptive cognitive styles such as rationalization, entitlement, and victimization that normalize and justify illegal conduct. Individuals who exhibit high levels of criminal thinking are more likely to relapse into both substance use and criminality, even after rehabilitation. Identifying the psychosocial factors influencing criminal cognition is therefore critical for developing effective prevention and intervention programs.

Parenting practices represent one of the most influential socialization factors in early development. Perceived parenting how individuals recall their parents' care and control plays a central role in shaping emotional regulation, interpersonal relationships, and behavior (Parker et al., 1979). Inadequate parenting, marked by low warmth or excessive control, is associated with hostility, aggression, and externalizing problems (Hoeve et al., 2009). In collectivist societies such as Pakistan, where family structures and parental authority strongly influence identity and social outcomes, parenting styles may be especially consequential in predicting maladaptive outcomes.

Personality traits further account for individual differences in addictive and criminal behaviors. Of particular relevance is the *Dark Tetrad* of personality—Machiavellianism, narcissism, psychopathy, and sadism. Collectively, these traits encompass manipulative, callous, and antisocial tendencies that predispose individuals toward rule breaking, aggression, and exploitation (Paulhus & Williams, 2002; Buckels et al., 2013). Psychopathy and sadism are closely linked with impulsivity and violent behaviors, while Machiavellianism and narcissism foster manipulative and self serving conduct.

There is growing evidence that maladaptive parenting fosters the development of dark personality traits, which in turn promote criminal cognition. However, most studies exploring these dynamics have been conducted in Western societies, with limited research available in South Asian contexts. Given Pakistan's unique cultural and familial structures, examining the

interplay of parenting, dark personality traits, and criminal thinking among addicts is crucial for culturally grounded understanding and intervention.

### **Objectives of the Study**

This study aims to:

1. Examine the relationship between perceived parenting and criminal thinking among drug addicts.
2. Assess the predictive role of dark tetrad traits in criminal thinking.
3. Test whether dark tetrad traits mediate the relationship between perceived parenting and criminal thinking.

### **Data and Methodology**

#### **Research Design**

This study employed a cross sectional correlational design to investigate the relationships among perceived parenting, dark tetrad personality traits, and criminal thinking in drug addicts.

### **Participants**

A purposive sample of 123 male drug addicts was recruited from rehabilitation centers in Lahore, Pakistan. Participants' ages ranged from 18 to 45 years ( $M = 29.6$ ,  $SD = 6.8$ ). Most were unmarried (62%) and unemployed (71%). Substance use history indicated that heroin was the most common drug of choice (56%), followed by poly substance use (29%).

**Inclusion criteria** were: (a) clinical diagnosis of substance use disorder, (b) enrollment in a rehabilitation program, and (c) ability to understand the questionnaires.

**Exclusion criteria** were: (a) severe psychiatric comorbidities such as schizophrenia, and (b) inability to provide informed consent.

### **Instruments**

- *Parental Bonding Instrument (PBI; Parker et al., 1979)*: 50 items measuring parental care and control. Reliability in the current sample was acceptable (Parental Care  $\alpha = .73$ ; Parental Control  $\alpha = .69$ ).
- *Short Dark Tetrad (SD4; Paulhus et al., 2013)*: 28 items assessing Machiavellianism, narcissism, psychopathy, and sadism. Internal consistency ranged from  $\alpha = .70$  to  $.82$  across subscales.
- *Criminal Thinking Scale (CTS; Walters, 1995)*: 36 items assessing maladaptive criminal cognitions (e.g., entitlement, justification). Internal consistency in this sample was  $\alpha = .72$ .
- *Drug Abuse Screening Test (DAST 10)*: 10 items screening for drug abuse severity ( $\alpha = .63$ ).

### **Procedure**

Institutional ethical approval was obtained prior to data collection. Permissions were secured from rehabilitation centers, and informed consent was obtained from all participants. Questionnaires were administered individually in Urdu with researcher assistance provided where needed to ensure comprehension. Confidentiality and voluntary participation were emphasized.

### **Data**

### **Analysis**

Data were analyzed using SPSS (v.25). Descriptive statistics summarized demographic and psychometric properties. Pearson correlation coefficients examined bivariate associations among study variables. Hierarchical regression analyses tested predictors of criminal thinking. Mediation analyses were conducted using Hayes' PROCESS macro.

### **Results**

#### **Demographic Characteristics:**

The demographic distribution of participants is presented in *Table 1*. The average age was approximately 29 years ( $SD = 7.36$ ), with most participants in early and middle adulthood (84%). The sample was overwhelmingly male (96%), with the majority unmarried (56%) and

unemployed (35%). About one third (32%) reported involvement in criminal activity, most commonly theft or small crimes.

*Table*

*I*

*Demographic Characteristics of the Study Participants (N = 123)*

Variable	n	%	M (SD)
Age (years)			29.04 (7.36)
18–25 (Early adult)	49	40	
26–35 (Middle adult)	54	44	
36–45 (Late adult)	16	13	
46–55 (Older adult)	2	1	
Gender (Male)	118	96	
Gender (Female)	5	4	
Marital Status (Single)	68	56	
Marital Status (Married)	52	42	
Family System (Joint)	62	50	
Family System (Nuclear)	40	33	
Criminal Activity (Yes)	39	32	

### **Psychometric Properties:**

All instruments demonstrated acceptable reliability ( $\alpha = .63\text{--}.82$ ). Mean scores indicated moderate levels of perceived parental care and control, moderate endorsement of dark tetrad traits, and elevated levels of criminal thinking and drug use severity.

*Table*

*2*

*Psychometric Properties of Study Scales (N = 123)*

Scale/Subscale	k	M	SD	Range (Actual)	A
CTS (Criminal Thinking)	36	72.06	14.25	17–98	0.72
PBI – Parental Care	24	44.8	10.67	18–70	0.73
PBI – Parental Control	26	36.94	9.58	6–65	0.69
SD4 – Machiavellianism	7	15.11	5.18	0–28	0.76
SD4 – Narcissism	7	15.09	5.15	0–28	0.7
SD4 – Psychopathy	7	14.73	5.49	0–26	0.79
SD4 – Sadism	7	13.08	5.77	0–26	0.82
DAST 10 (Drug Use)	10	6.97	2.11	0–10	0.63

### **Correlation Analysis**

Pearson correlation analysis (*Table 3*) indicated that dark tetrad traits were positively correlated with criminal thinking. Parental care showed negative associations with some aspects of criminal cognition, whereas parental control correlated positively with response disinhibition and justification.

*Table 3*

*3*

*Correlations Between Study Variables (N = 123)*

Variable	1	2	3	4	5
1. Parental Care					
2. Parental Control		.58*			

3. Dark Tetrad Total	0.04	0.05		
4. Criminal Thinking	0.15	0.15	.46**	
5. Drug Abuse (DAST 10)	.19*	.20*	.22*	.29**

Note.  $p < .05$ ,  $p < .01$ .

### Regression Analysis

Hierarchical regression results (*Table 4*) revealed that dark tetrad traits significantly predicted criminal thinking, explaining an additional 29% of variance beyond demographic and parenting variables. Among the traits, Machiavellianism (Crafty) and Psychopathy/Sadism (Mean) were the strongest predictors.

**Table 4: Hierarchical Regression Predicting Criminal Thinking (N = 123)**

Predictor	$\beta$	SE	95% CI (LL, UL)	$R^2$	$\Delta R^2$
Step 1: Demographics				0.06	0.01
Parents' Relation	.19*	2.83	[.04, 11.27]		
Step 2: Parenting				0.09	0.01
Father Care	0.02	0.32	[.59, .70]		
Mother Care	0.16	0.3	[.96, .22]		
Step 3: Dark Traits				0.37	.29***
Crafty (Machiavellianism)	.26*	0.27	[.14, 1.23]		
Mean (Psychopathy/Sadism)	.28**	0.25	[.19, 1.17]		

Note.  $p < .05$ ,  $*p < .01$ ,  $**p < .001$ .

### Mediation Analysis

Mediation tests indicated that while dark tetrad traits strongly predicted criminal thinking, perceived parental care and control did not significantly predict dark traits. Therefore, no significant mediation was observed.

**Table 5: Mediation Analysis of Dark Tetrad Traits Between Parenting and Criminal Thinking (N = 123)**

Path	B	SE	p
Parental Care → Dark Tetrad	0	0.14	0.973
Parental Control → Dark Tetrad	0.08	0.15	0.595
Dark Tetrad → Criminal Thinking	0.46	0.07	.000***
Direct Effect (Parenting → Criminal Thinking)	Ns		

### Group Comparisons: Joint vs. Nuclear Family Systems:

Independent  $t$  tests (*Table 6*) showed significant differences between family systems. Participants from joint families reported higher maternal care, while those from nuclear families scored higher on the “Wild” trait of the dark tetrad. No significant differences were found in overall criminal thinking.

*Table*

6

**Mean Differences in Parenting, Dark Tetrad Traits, and Criminal Thinking Between Family Systems (N = 123)**

Variable	Joint Family M (SD)	Nuclear Family M (SD)	T	D
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Mother Care	24.25 (6.72)	21.90 (4.80)	1.91*	0.39
Wild Trait	13.92 (5.39)	16.23 (5.91)	2.03*	0.41
CTS Total	72.23 (15.11)	73.60 (14.58)	0.45	0.09

*Note.*  $p < .05$ .

## Discussion

The present study examined the relationship between perceived parenting, dark tetrad personality traits, and criminal thinking among drug addicts in Pakistan. Using a sample of 123 male participants from rehabilitation centers, several important findings emerged. First, parental care was inversely related to criminal thinking, whereas parental control showed positive associations with maladaptive cognitions. Second, dark tetrad traits – particularly Machiavellianism, psychopathy, and sadism were strongly associated with criminal thinking. Third, regression analyses confirmed that dark personality features significantly predicted criminal cognition beyond demographic and parenting variables. Finally, while mediation analysis did not establish a significant pathway from parenting through dark traits to criminal thinking, group comparisons revealed that individuals from joint family systems reported higher parental care, whereas those from nuclear families endorsed higher levels of dark traits.

### Parenting and Criminal Thinking

Consistent with prior research (Hoeve et al., 2009; Parker et al., 1979), the findings suggest that inadequate parenting – particularly low levels of warmth and care – contributes to cognitive patterns that justify or normalize criminal behavior. In the Pakistani context, where family bonds and parental authority remain strong socializing forces, the role of parenting is particularly salient. Children who perceive their parents as caring may internalize prosocial values and emotional regulation, reducing their likelihood of developing antisocial cognitions. In contrast, excessive control without warmth may foster resentment, defiance, and justification of maladaptive conduct.

These results extend previous studies by showing that the quality of perceived parenting continues to exert influence into adulthood, particularly among drug addicted populations. Given that many participants were in their late twenties or thirties, the persistence of early family experiences underscores the long term consequences of parental behaviors.

### Dark Tetrad Traits and Criminal Thinking

The study confirmed that dark personality traits are robust predictors of criminal thinking, aligning with international literature linking Machiavellianism, psychopathy, and sadism to antisocial cognition (Jones & Paulhus, 2014; Miller et al., 2011). Individuals high on these traits tend to rationalize rule breaking, minimize guilt, and adopt manipulative interpersonal styles that make them more prone to criminal cognition.

Interestingly, narcissism was not as strongly predictive as psychopathy or Machiavellianism, which echoes findings suggesting that narcissism may have both adaptive and maladaptive elements depending on context (Muris et al., 2013). The strong contribution of psychopathy and sadism in this study resonates with Walters' (1995) assertion that cognitive distortions in criminals often emerge from callous and impulsive dispositions.

### Family System Differences

A novel contribution of this research is the examination of differences across family systems. Participants from joint families reported higher maternal care, consistent with cultural norms

emphasizing maternal responsibility and collective caregiving. Conversely, those from nuclear families exhibited higher endorsement of “wild” traits, which reflect impulsivity and sensation seeking. This suggests that joint family structures may provide a protective buffer by offering emotional support, while nuclear systems, though promoting independence, may leave individuals more vulnerable to risky behaviors.

These findings have cultural implications. In Pakistan, where both joint and nuclear families coexist, interventions may need to be tailored. For addicts from joint families, involving extended family members in rehabilitation may reinforce positive outcomes. For those from nuclear families, individual focused interventions addressing impulsivity and sensation seeking may be more effective.

### **Theoretical Implications**

The results lend support to both **social learning theory** (Akers, 2017) and **cognitive behavioral models of criminality** (Walters, 1995). Parenting behaviors, as socializing agents, provide early models of conduct. Lack of warmth or excessive control may teach maladaptive coping and reinforce antisocial schemas. The association between dark traits and criminal thinking highlights the interaction between dispositional factors and learned cognitions.

The absence of significant mediation effects suggests that while dark traits are important in predicting criminal thinking, they may not fully explain the influence of parenting. Instead, parenting and personality may exert independent effects on cognition. Future theoretical models may need to consider parallel rather than strictly sequential pathways from environment and personality to criminality.

### **Practical Implications**

The findings have several practical applications for clinical and correctional settings in Pakistan:

1. **Parent focused prevention** – Programs aimed at enhancing parental warmth and reducing harsh control could mitigate long term risks of criminal cognition. Parenting interventions in schools and community centers may have preventive benefits.
2. **Personality assessment in rehabilitation** – Screening for dark tetrad traits can help clinicians identify individuals at high risk of relapse into criminal thinking. Tailored interventions targeting impulsivity, manipulation, and sadism could be integrated into therapy.
3. **Family based rehabilitation** – Given the protective role of joint families, rehabilitation centers should involve family members in counseling and recovery processes. This aligns with collectivist cultural values and may increase social support for abstinence.
4. **Criminal justice policy** – Recognizing that criminal thinking is influenced by personality and family systems may encourage courts and policymakers to adopt rehabilitative rather than purely punitive approaches.

### **Limitations**

Several limitations must be acknowledged. First, the sample was limited to male participants in rehabilitation centers, restricting generalizability to females and non clinical populations. Second, reliance on self report measures may have introduced bias due to social desirability or memory errors, particularly in retrospective assessment of parenting. Third, the cross sectional design prevents causal inferences. Longitudinal studies would better capture developmental pathways from parenting to criminal cognition. Finally, the relatively small sample size may have limited the detection of mediation effects.

### **Future Directions**

Future research should address these limitations by:

- Including female participants and diverse populations across Pakistan to explore gender and regional differences.
- Employing multi method assessments, including observational or clinical ratings, to complement self report data.
- Conducting longitudinal studies that trace parenting, personality, and cognition across developmental stages.
- Examining intervention programs that target both family systems and personality traits, to test their effectiveness in reducing criminal cognition among addicts.

## Conclusion

This study provides evidence that perceived parenting and dark tetrad personality traits are significant predictors of criminal thinking among drug addicts in Pakistan. While early family experiences continue to influence cognition, maladaptive personality traits exert powerful effects on antisocial thinking. Differences between joint and nuclear families highlight the cultural dimension of these relationships. These findings underscore the importance of integrating family based approaches, personality assessment, and cognitive restructuring in rehabilitation programs. By situating addiction and criminality within cultural and familial contexts, the study contributes to both local understanding and global literature on the psychosocial roots of criminal cognition.

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