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# Predicting Multidimensional Delinquency from Active Criminal Schemas and Cognitive Self-Awareness: The Mediating Role of Identity Styles among Juvenile Offenders

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## ABSTRACT

**Objective:** This study examined whether multidimensional delinquency can be predicted from active criminal schemas and cognitive self-awareness and whether identity styles mediate these relationships.

**Methods and Materials:** A descriptive–correlational study using structural equation modeling was conducted with 200 adolescents residing in the Tehran Juvenile Correction and Rehabilitation Center in Tehran, Iran, during the second half of 2024. Participants, selected by convenience sampling, completed standard questionnaires assessing multidimensional delinquency, criminogenic cognitions, cognitive self-awareness, and identity styles. Data were analysed using Pearson correlations, SEM, and bootstrapped indirect effects, with statistical significance set at  $p \leq 0.05$ .

**Findings:** Multidimensional delinquency showed positive correlations with active criminal schemas and a diffuse-avoidant identity style, and negative correlations with cognitive self-awareness and informational, normative, and commitment identity styles. The structural model demonstrated acceptable fit ( $\chi^2/df = 2.54$ , RMSEA = 0.07, CFI = 0.99). Active criminal schemas and diffuse-avoidant identity style had significant positive direct effects on delinquency. In contrast, cognitive self-awareness and informational, normative, and commitment identity styles had significant negative direct effects. Bootstrap analyses confirmed that all identity styles significantly mediated the effects of active criminal schemas and cognitive self-awareness on multidimensional delinquency.

**Conclusion:** Multidimensional delinquency among incarcerated adolescents can be predicted by higher levels of active criminal schemas and lower cognitive self-awareness, with identity styles playing an important mediating role. Interventions that modify criminogenic cognitions, strengthen metacognitive awareness, and foster adaptive identity-processing styles may improve rehabilitation outcomes in juvenile correctional settings.

**Keywords:** active criminal schemas, cognitive self-awareness, identity styles, multidimensional delinquency, juvenile offenders.

## Introduction

Juvenile delinquency is a complex and multidimensional social issue shaped by numerous factors such as family environment, socioeconomic conditions, and psychological influences. Adolescence is a critical period during which individuals may engage in delinquent behaviors such as theft, violence, substance abuse, or running away from home, often as a result of social pressures, family conflicts, or inadequate supervision (Gualco et al., 2025; Lynne et al., 2025). Understanding the roles of active criminal schemas and identity styles in shaping these behaviors provides crucial insights for developing effective crime-prevention policies.

Active criminal schemas, referring to pre-existing patterns of thought and behavioral tendencies shaped by social, familial, and individual factors, are key in understanding delinquent behaviors (Saravag & B, 2024). These schemas help answer critical questions about why some adolescents, under similar environmental and social circumstances, turn to criminal behavior while others adopt positive, prosocial attitudes (Brown et al., 2024). Moreover, these schemas interact with other cognitive and psychological factors, such as cognitive self-awareness, which enhances an individual's ability to understand and regulate their thoughts and behaviors. Cognitive self-awareness empowers adolescents to reflect on their actions, helping them critically assess and control underlying criminal tendencies (Rosa et al., 2025).

In this context, identity styles act as mediators, influencing the interactions between criminal schemas and cognitive self-awareness. For instance, adolescents with an achieved identity style typically demonstrate greater self-awareness and decision-making ability, helping them avoid delinquent behaviors. Conversely, adolescents with a diffuse-avoidant identity style are more vulnerable to peer pressure and social influences, often resulting in risky and delinquent choices. Those in a moratorium identity stage, who exhibit uncertainty and confusion in defining their sense of self, may also be at higher risk of engaging in delinquent behaviors (Guo et al., 2025). In contrast, adolescents with a strong commitment identity style are more resistant to negative social pressures, owing to their clear sense of self and values (Azaditalab et al., 2025; Branch & Berman, 2023).

Research on multidimensional delinquency emphasizes the need to consider interrelated factors, such as active criminal schemas, cognitive self-awareness, and identity styles, to understand better adolescent behavior (Aygun & Soylu, 2025). Such studies inform crime prevention and rehabilitation programs by providing insights into effective prevention strategies and social policies (Liu et al., 2025). By highlighting the roles of identity styles and cognitive awareness, this research can help policymakers and educators design more effective interventions to address juvenile delinquency.

Given the importance of psychological and behavioral factors in juvenile delinquency, the present study seeks to predict multidimensional delinquency based on active criminal schemas and cognitive self-awareness, with the mediating role of identity styles among adolescents residing in juvenile correction centers. By understanding the interplay of these factors, this research provides practical insights into improving rehabilitation programs and implementing social justice reforms.

## Methods and Materials

The present study was a descriptive-correlational research utilizing structural equation modeling (SEM). The statistical population comprised all adolescents residing in the Tehran Juvenile Correction and Rehabilitation Center during the second half of 2024, totaling 226 individuals. Using convenience sampling, 200 adolescents participated. It should be noted that the use of convenience sampling considerably limits the generalizability of the study findings.

Inclusion criteria were as follows: obtaining informed consent from participants, having served at least one month of their sentence, and the absence of any physical disability that could hinder participation. The exclusion criterion was operationally defined as questionnaires with more than 20% missing responses or with contradictory/incoherent answers (e.g., identical responses entered throughout), which were deemed incomplete or invalid and excluded from the analysis. No incentives were offered to participants for their involvement.

After obtaining formal permission from the Tehran Juvenile Correction and Rehabilitation Center, eligible adolescents were gathered in the assembly hall. The

researcher provided explanations regarding the study's objectives and instructions for completing the questionnaires, emphasizing confidentiality and anonymity. With assistance from the center's staff, questionnaires were distributed and collected upon completion within the designated time. Data were analyzed using SPSS version 26 and AMOS version 24 through structural equation modeling.

#### *Instruments*

*Multidimensional Delinquency Questionnaire (APQ)*: This tool, developed by [Sahami et al. \(2017\)](#), includes 22 items categorized into four subscales: substance use (e.g., "I have used drugs"), moral delinquency (e.g., "I have lied to someone"), minor delinquency (e.g., "I have skipped school without permission"), and law avoidance (e.g., "I have avoided legal responsibilities"). Items employ a 5-point Likert scale from 0 (not at all) to 5 (very much). The test-retest reliability over 2 weeks was 0.85, and construct validity was confirmed by a factor analysis that explained 40.05% of the variance in delinquency. The Cronbach's alpha in this study was 0.88.

*The Criminal Cognition Schemas (CCS)*: Developed by [Tangney et al., \(2012\)](#) and re-evaluated in 2012, CCS includes 25 items across five subscales: entitlement cognitions (e.g., "I deserve special treatment"), failure to accept responsibility (e.g., "I don't take responsibility for my actions"), short-term pleasure (e.g., "I seek immediate gratification even if it is risky"), insensitivity to the impact of crime (e.g., "I don't care about how my crimes affect others"), and negative attitudes toward authority figures (e.g., "I distrust authority figures"). Items are rated on a 4-point Likert scale from 1 (strongly disagree) to 4 (strongly agree). Prior studies have reported acceptable Cronbach's alphas across subscales, ranging from 0.61 to 0.81, and the current research reports 0.91 for the total scale. Validity evidence includes associations with aggression, impulsivity, psychopathy, and empathy ([Sadeghi Shahrakhti & Ahi, 2019](#)). Cronbach's alpha in the present study was 0.91.

*Cognitive Self-Consciousness (MCQ)*: This subscale assesses individuals' awareness of their own thoughts (e.g., "I pay close attention to my thoughts"). Responses are given on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Previous Iranian validations reported Cronbach's alphas ranging from 0.71 to 0.91 and concurrent validity with anxiety measures ([Lak & Bagherian, 2025](#)). The present study found a Cronbach's alpha of 0.88.

*Identity Style Inventory (ISI)*: [Berzonsky \(1992\)](#) assesses three identity styles via 40 items: informational (11 items; e.g., "I actively seek out information to form my identity"), normative (9 items; e.g., "I conform to others' expectations"), diffuse-avoidant (10 items; e.g., "I tend to avoid dealing with my identity issues"), plus a commitment scale (10 items; e.g., "I am confident about my goals and values"). The commitment scale is considered separately because it reflects a resolution or commitment status in identity development rather than a cognitive style of processing identity-related information ([Berzonsky, 1992](#)). Items are rated on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Previous research has reported Cronbach's alphas ranging from 0.72 to 0.85 across subscales ([Ward et al., 2021](#); [Zareh & Ghazanfari, 2014](#)). In this study, reliability coefficients ranged from 0.73 (commitment) to 0.89 (diffuse-avoidant). Factor analysis supports the inventory's validity ([Elmi et al., 2024](#)). In the present research, Cronbach's alphas were 0.73 (commitment), 0.84 (normative), 0.89 (diffuse-avoidant), and 0.76 (informational).

#### *Findings and Results*

The study sample consisted of 200 participants, including 183 boys and 17 girls. It is noteworthy that the mean age of the participants was 15.4 years with a standard deviation of 1.29 ( $15.4 \pm 1.29$ ). Additionally, the reported mean and standard deviation for the duration of sentences served were  $3.20 \pm 1.76$ . Table 1 presents the Pearson correlation coefficients and descriptive statistics of the study variables.

**Table 1***Results of Descriptive Statistics and Pearson Correlation Test for Examining the Relationship Between Variables*

| 1                                  | 2                          | 3                           | 4                               | 5                           | 6                            | 7.                                 |                                 |
|------------------------------------|----------------------------|-----------------------------|---------------------------------|-----------------------------|------------------------------|------------------------------------|---------------------------------|
| 1. Active Criminal Schemas         | 1                          |                             |                                 |                             |                              |                                    |                                 |
| 2. Cognitive Self-Awareness        | -0.204                     | 1                           |                                 |                             |                              |                                    |                                 |
| 3. Informational Identity Style    | -0.245                     | 0.097                       | 1                               |                             |                              |                                    |                                 |
| 4. Normative Identity Style        | -0.241                     | 0.193                       | 0.102                           | 1                           |                              |                                    |                                 |
| 5. Commitment Identity Style       | -0.280                     | 0.196                       | 0.193                           | 0.357                       | 1                            |                                    |                                 |
| 6. Diffuse-Avoidant Identity Style | 0.082                      | -0.137                      | -0.096                          | -0.320                      | -0.320                       | 1                                  |                                 |
| 7. Multidimensional Delinquency    | 0.436                      | -0.228                      | -0.302                          | -0.482                      | -0.419                       | 0.342                              | 1                               |
| Statistic                          | 1. Active Criminal Schemas | 2. Cognitive Self-Awareness | 3. Informational Identity Style | 4. Normative Identity Style | 5. Commitment Identity Style | 6. Diffuse-Avoidant Identity Style | 7. Multidimensional Delinquency |
| Mean                               | 3.77                       | 5.27                        | 1.38                            | 4.31                        | 4.36                         | 3.28                               | 2.58                            |
| Standard Deviation                 | 12.5                       | 4.83                        | 4.04                            | 5.17                        | 6.63                         | 5.22                               | 8.23                            |
| Skewness                           | -0.434                     | -0.156                      | 1.13                            | 0.832                       | 0.654                        | -0.733                             | 0.455                           |

*Note: Correlation is significant at  $p < 0.01$ .*

The results obtained from the Pearson correlation test in Table 1 indicate that there is a significant negative relationship between pro-criminal cognitions ( $p < 0.01$ ;  $r = -0.436$ ), cognitive self-consciousness ( $p < 0.01$ ;  $r = -0.228$ ), informational identity style ( $p < 0.01$ ;  $r = -0.302$ ), normative identity style ( $p < 0.01$ ;  $r = -0.482$ ), and committed identity style ( $p < 0.01$ ;  $r = -0.419$ ) with multidimensional delinquency in adolescents.

Additionally, there is a significant positive relationship between diffuse-avoidant identity style ( $p < 0.01$ ;  $r = 0.342$ ) and multidimensional delinquency in adolescents. To test the proposed model, specifically regarding the mediating role of identity styles, path analysis was employed. The parameters measuring direct relationships are presented in Table 2.

**Table 2***Results of Direct Effects Coefficients in the Studied Structural Model*

| Path                                                                      | B     | Beta  | SE    | t     | P     |
|---------------------------------------------------------------------------|-------|-------|-------|-------|-------|
| Multidimensional Delinquency $\Downarrow$ Pro-criminal Cognitions         | 0.34  | 0.33  | 0.172 | 5.39  | 0.001 |
| Multidimensional Delinquency $\Downarrow$ Metacognitive Awareness         | -0.31 | -0.40 | 0.127 | -6.79 | 0.01  |
| Multidimensional Delinquency $\Downarrow$ Informational Identity Style    | -0.44 | -0.31 | 0.142 | -5.30 | 0.001 |
| Multidimensional Delinquency $\Downarrow$ Normative Identity Style        | -0.29 | -0.28 | 0.120 | 7.14  | 0.001 |
| Multidimensional Delinquency $\Downarrow$ Committed Identity Style        | -0.36 | -0.26 | 0.110 | -6.34 | 0.001 |
| Multidimensional Delinquency $\Downarrow$ Diffuse-Avoidant Identity Style | 0.46  | 0.35  | 0.139 | 5.52  | 0.001 |
| Informational Identity Style $\Downarrow$ Pro-criminal Cognitions         | -0.27 | -0.49 | 0.122 | -5.85 | 0.001 |
| Normative Identity Style $\Downarrow$ Pro-criminal Cognitions             | -0.42 | -0.37 | 0.136 | -5.19 | 0.001 |
| Committed Identity Style $\Downarrow$ Pro-criminal Cognitions             | -0.20 | -0.53 | 0.169 | -7.96 | 0.001 |
| Diffuse-Avoidant Identity Style $\Downarrow$ Pro-criminal Cognitions      | 0.35  | 0.57  | 0.181 | 8.23  | 0.001 |
| Informational Identity Style $\Downarrow$ Metacognitive Awareness         | 0.38  | 0.35  | 0.136 | 5.92  | 0.001 |
| Normative Identity Style $\Downarrow$ Metacognitive Awareness             | 0.26  | 0.24  | 0.111 | 4.27  | 0.001 |
| Committed Identity Style $\Downarrow$ Metacognitive Awareness             | 0.41  | 0.32  | 0.126 | 5.16  | 0.001 |
| Diffuse-Avoidant Identity Style $\Downarrow$ Metacognitive Awareness      | -0.47 | -0.44 | 0.135 | 6.87  | 0.001 |

The results in Table 2 indicate that the direct effect of pro-criminal cognitions on multidimensional delinquency is positive and significant. The impact of metacognitive awareness, informational identity style, normative identity style, committed identity style, and

diffuse-avoidant identity style on multidimensional delinquency is negative and significant. The effect of pro-criminal cognitions on informational, normative, and committed identity styles is negative and significant, whereas its impact on diffuse-avoidant identity style is

positive and significant. Additionally, metacognitive awareness positively and significantly affects informational, normative, committed, and diffuse-

avoidant identity styles. Results of Mediation Analysis Using the Bootstrap Method are presented in Table 3.

**Table 3**

*Results of Mediation Analysis Using the Bootstrap Method*

| Path                                                                                      | Indirect Effect | Lower Bound | Upper Bound | t value | p     |
|-------------------------------------------------------------------------------------------|-----------------|-------------|-------------|---------|-------|
| Pro-criminal Cognitions $\diamond$ Informational Identity Style $\diamond$ Delinquency    | 0.135           | 0.094       | 0.226       | 6.15    | 0.001 |
| Pro-criminal Cognitions $\diamond$ Normative Identity Style $\diamond$ Delinquency        | 0.115           | 0.080       | 0.177       | 4.55    | 0.001 |
| Pro-criminal Cognitions $\diamond$ Committed Identity Style $\diamond$ Delinquency        | 0.127           | 0.085       | 0.151       | 5.64    | 0.001 |
| Pro-criminal Cognitions $\diamond$ Diffuse-Avoidant Identity Style $\diamond$ Delinquency | 0.120           | 0.091       | 0.164       | 5.19    | 0.001 |
| Metacognitive Awareness $\diamond$ Informational Identity Style $\diamond$ Delinquency    | -0.112          | -0.072      | -0.184      | -4.68   | 0.001 |
| Metacognitive Awareness $\diamond$ Normative Identity Style $\diamond$ Delinquency        | -0.070          | -0.034      | -0.116      | -2.07   | 0.020 |
| Metacognitive Awareness $\diamond$ Committed Identity Style $\diamond$ Delinquency        | -0.102          | -0.060      | -0.179      | -3.71   | 0.008 |
| Metacognitive Awareness $\diamond$ Diffuse-Avoidant Identity Style $\diamond$ Delinquency | 0.144           | 0.025       | 0.194       | 6.97    | 0.001 |

**Table 4**

*Model Fit Indices of the Research*

| Fit Index     | Chi-square/df | RMSEA  | NFI    | PCFI   | CFI    | IFI    | GFI    |
|---------------|---------------|--------|--------|--------|--------|--------|--------|
| Fit Criterion | < 5           | < 0.10 | > 0.90 | > 0.50 | > 0.90 | > 0.90 | > 0.90 |
| Statistic     | 2.54          | 0.07   | 0.99   | 0.52   | 0.99   | 0.92   | 0.91   |

Based on Table 4, the Chi-square-to-degrees-of-freedom ratio (Chi-square/df) was 2.54, suggesting an acceptable fit. Generally, the closer the indices CFI, GFI, NFI, and IFI are to 1, the better the model fit. Since the obtained values for these indices are close to 0.90, the research model demonstrates a good fit. Additionally, an

### Discussion and Conclusion

This study aimed to predict multidimensional delinquency based on pro-criminal cognitive structures and metacognitive awareness, with the mediating role of identity styles, among delinquent adolescents residing in juvenile correction centers. The first finding showed that pro-criminal cognitive structures have a direct and positive effect on multidimensional delinquency. This result is consistent with the findings of researchers such as Aygun & Soylu (2025), Brown et al. (2024), Saravag & B (2024), and Taiwo et al. (2024). In explaining this result, it can be said that pro-criminal cognitive structures legitimize or facilitate criminal behaviors. These structures may stem from family experiences, social pressures, or even the media, all of which contribute to a certain leniency towards crime and delinquent behaviors. The findings also indicate that

RMSEA value below 0.10 indicates good fit. In this study, the RMSEA was 0.07 (Typically, an RMSEA value less than 0.05 indicates a perfect fit, values between 0.05 and 0.08 indicate an acceptable fit, and values less than 0.10 are considered an acceptable threshold for more complex models or smaller sample sizes).

identity styles have a direct effect on multidimensional delinquency. This result aligns with the findings of Kõiv (2024), Guo et al. (2025), Branch & Berman (2023), Shtiwi (2023), and Ibad et al. (2023). In explaining this, it can be argued that the informational identity style may influence decision-making; conversely, individuals with a strong normative identity style are usually part of groups that respect social norms. Those with a committed identity style generally have defined goals and values that guide their choices. Individuals with a diffuse-avoidant identity style often struggle to make sound choices, which can lead to delinquent behavior because they lack the self-confidence needed to make positive decisions (Guo et al., 2025). Another finding showed that pro-criminal cognitive structures can predict multidimensional delinquency in adolescents through identity styles. This result is consistent with the findings of Kõiv (2024), Branch & Berman (2023), and Guo et al. (2025). To explain the mediating role of



identity styles in the relationship between pro-criminal cognitive structures and multidimensional delinquency, one can examine the key elements and their interaction. An individual within a particular informational context may develop a specific understanding and cognition of criminal behaviors and delinquency; if one's normative identity is negatively impacted by pro-criminal cognitions, the likelihood of delinquency increases. Pro-criminal cognitive structures may easily influence individuals with weakly committed identities. This lack of commitment to principles and values could increase the acceptance of delinquent behaviors. Those with a confused identity are also more likely to respond to pro-criminal cognitions because of their lack of commitment to values and social norms, thus making them more susceptible to delinquent behaviors (Ibad et al., 2023). According to Article 3 of this law, in situations where a minor's criminal behavior is due to adverse family circumstances or weak metacognitive awareness, the judicial authorities should prioritize supportive and educational interventions. This illustrates that the research findings can serve as a basis for revising support policies regarding juvenile offenders. Another finding of the study was that metacognitive awareness, via identity styles, can predict multidimensional delinquency in adolescents. This result corroborates the findings of Shtiwi (2023) and Ibad et al. (2023). To explain the mediating role of informational identity in the relationship between metacognitive awareness and multidimensional delinquency, it can be argued that pro-criminal cognitive structures may more easily influence adolescents with a weak informational identity style. This poor self-understanding and lack of identity can increase the likelihood of accepting erroneous beliefs and engaging in delinquent behavior. Individuals with high metacognitive awareness can understand the consequences of their actions and analyze their choices; as a result, they are more likely to make positive decisions and avoid delinquency. Regarding the mediating role of committed identity, when individuals adopt a committed identity style, they feel greater responsibility for their decisions, which can deter them from engaging in delinquent behavior. In terms of the mediating role of diffuse-avoidant identity, this mediation can act as a risk factor such that individuals with a confused identity are particularly more exposed to delinquency. In line with the supportive approach of the Child and Adolescent Protection Act, the findings of this research can serve as a basis for designing effective correctional and educational interventions to reform pro-criminal cognitions and promote healthy identity

styles among delinquent adolescents. Also, the law's emphasis on non-punitive and rehabilitative measures aligns with the study's findings on strengthening metacognitive awareness and decision-making skills. Moreover, the focus on the variable "metacognitive awareness" and its relation to risky behaviors in this research can inform the assessment of juvenile criminal responsibility. According to Article 140 of the Islamic Penal Code, the establishment of "mental maturity" is a fundamental component of criminal responsibility; thus, assessing adolescents' metacognitive awareness can serve as a supplementary psychometric indicator of this maturity. In sum, the findings of this research can serve as a scientific foundation for implementing rehabilitative and individualized policies toward juvenile offenders. Furthermore, these findings can inform the design of integrated (legal-psychological) intervention packages for juvenile correction centers nationwide. Among the limitations of this research are the use of convenience sampling and the small sample size. Therefore, future studies are recommended to use random sampling methods and larger samples to increase the generalizability of the results. Also, given the significant relationships among the variables, it is suggested that the Child and Adolescent Protection Act and its related regulations require more numerous and precise behavioral counseling and psychological programs as legal requirements for the rehabilitation of juvenile offenders. Additionally, under the Islamic Penal Code, which obliges judges to assess the personalities of juvenile defendants, the findings of this research can be used in determining alternative sentences, such as rehabilitative counseling, life skills training, and psychological supervision.

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### Declaration of Interest

The authors of this article declared no conflict of interest.

### Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

Ethical considerations in this study included the fact that participation was entirely optional.

### Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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### Authors' Contributions

All authors equally contribute to this study.

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