**Review** Psikiyatride Güncel Yaklaşımlar-Current Approaches in Psychiatry 2024; 16(1):72-87
doi: 10.18863/pgy.1331287

# Conduct Disorder: An Update

## *Davranım Bozukluğu: Güncel Bir Bakış*

Ahmet Özbay[1], Osman Özçelik[2], Süleyman Kahraman[3]

[1]Ministry of National Education, Istanbul
[2]Istanbul Aydın University, Istanbul
[3]Istanbul Beykent Üniversitesi, Istanbul

**ABSTRACT**

Conduct disorder is a serious mental disorder with a heterogeneous etiology that is frequently encountered in child and adolescent psychiatric clinics, although there are social and international differences. Conduct disorder can be defined as violating the basic rights of others, age-appropriate social norms and values, or existing rules with consistently aggressive behavioral patterns. It has been defined under various headings since DSM-II and most recently in DSM-5 under the heading "Disruptive Disorders, Impulse Control and Conduct Disorders". Genetic, individual, and psychosocial factors play a role in the etiology and constitute a broad etiology. Although its onset dates to childhood, if assistance is not sought, it can lead to more serious mental disorders. Conduct disorders are associated with several mental disorders. Therefore, a differential diagnosis should be made and an effective treatment option should be established. No specific medications were available for treatment. Different disciplines can collaborate for a long time to achieve successful results. In this article, the definition of conduct disorder, DSM-5 diagnostic criteria, epidemiology, etiology, comorbidity, differential diagnosis, prognosis, and treatment approaches are reviewed.
**Keywords:** Conduct disorder, review, mental health

**ÖZ**

Davranım bozukluğu (DB) çocuk ve ergen psikiyatri kliniklerine bakıldığında toplumsal ve uluslararası farklılıklar olmakla beraber fazla rastlanan etiyolojisi oldukça heterojen olan ciddi bir ruhsal bozukluktur. DB, başkalarının temel haklarını, bulunduğu yaşa uygun sosyal norm ve değerleri ya da var olan kuralların istikrarlı olarak agresif davranış örüntüleriyle çiğnenmesi olarak tanımlanabilir. DSM-II'den beri çeşitli başlıklar altında tanımlanmıştır ve en son DSM-5'te "Yıkıcı Bozukluklar, Dürtü Denetim ve Davranım Bozuklukları" başlığı altında tanımlanmıştır. Etiyolojisinde genetik faktörler, bireysel faktörler ve psikososyal faktörler rol alarak geniş bir etiyolojiyi oluşturmaktadır. Başlangıcı çocukluğa dayansa da yardım aranmadığı takdirde daha ciddi daha başka ruhsal bozukluklara sebep olmaktadır. DB' nin birçok ruhsal bozuklukla da komorbiditesi vardır. Bu nedenle ayırıcı tanının iyi yapılması ve etkili bir tedavi seçeneği oluşturulması gerekmektedir. Tedavide kendine özgü bir ilacı yoktur. Farklı disiplinler bir araya gelerek uzun süre çalışarak başarılı sonuçlar elde edebilir. Bu yazıda genel olarak DB' nin tanımı, DSM-5 tanı kriterleri, epidemiyolojisi, etiyolojisi, eş tanı, ayırıcı tanı, prognoz ve tedavi yaklaşımları gözden geçirilmiştir.
**Anahtar sözcükler:** Davranım bozukluğu, derleme, ruh sağlığı

## Introduction

Conduct disorder (CD) is a mental disorder characterized by aggressive and antisocial behaviors in which the person violates the basic rights of other people, shows a damaging attitude towards animals and objects, and constantly and repeatedly defies the values of society and established laws (Kohls et al. 2021, Tonyalı et al. 2019). It manifests itself by showing frequent or severe antisocial behaviors for at least 6 months. When we look at the clinical picture of young children, there are clear defiance behaviors such as defiance, hostility, adaptation problems, and destructiveness beyond normal, while behaviors such as stealing, cheating, running away from school or home, lying, fighting, and damaging things are observed in older children. In more severe cases, extreme behaviors, such as outbursts of anger, starting fires, and harming animals or other children, can be observed (Mohamed 2022, Yücel 2020). Although these behavioral problems can be observed in various environments, Baumann et al. (2022) addressed a different point in a study that examined the cyberbullying experiences of individuals with conduct disorders. Accordingly, it has been revealed that individuals with conduct disorders can be either perpetrators or victims of cyberbullying (Bauman et al. 2022).

Multifactorial conditions contribute to the development of CD, one of the most challenging and persistent

**Address for Correspondence:** Ahmet Özbay, Milli Eğitim Bakanlığı, Istanbul, Turkiye
**E-mail:** ahmetozbay@hotmail.com
**Received:** 22.07.2023 | **Accepted:** 26.09.2023

mental health disorders in children and adolescents. Children and adolescents with CD have this disorder because of the influence of underlying genetic components, as well as environmental factors. Particularly, when the disorder is persistent, it constitutes strong risk factors for delinquency (especially repeated, severe and violent crimes), antisocial personality disorder (ASPD), substance abuse, and is also associated with early pregnancy, failure to complete high school, increased number of vehicle accidents, high injury rates, poor peer relations and physical health problems. Additionally, CD is a strong risk factor for depression and anxiety in adulthood (Salmanian et al. 2018, Masroor et al. 2019, Kerekes et al. 2020).

This study aimed manuscript to provide an updated and comprehensive overview of Conduct Disorder (CD), a serious and prevalent psychiatric disorder in childhood, adolescence, and adulthood. It summarizes the current knowledge on the definition, diagnosis, epidemiology, etiology, comorbidity, treatment, and prognosis of CD. It also identifies gaps and limitations in the existing literature and suggests directions for future research. This review aimed to inform and guide clinicians, researchers, policymakers, and educators working with children, adolescents, and adults with CD.

## DSM and ICD

Although not mentioned as a conduct disorder, it was first defined as a "Childhood Non-Socialized Aggressive Reaction" in the Diagnostic Statistical Manual of Psychiatry 2nd edition (DSM-II) (APA 1968). In the DSM-III, the concept of conduct disorder is defined for the first time, and four subtypes of the disorder are defined. These types are non-socialized aggressive, non-socialized non-aggressive, socialized aggressive, and socialized non-aggressive (APA 1980). In the DSM-III-R, three of the 13 diagnostic criteria defined under the main heading "Disruptive Behavior Disorders" must have been present for at least 6 months. Additionally, the number of the four subtypes defined in the DSM-III was reduced to three. These subtypes are the individual, group, and non-separated aggressive types (APA 1987). In the DSM-IV, conduct disorder was included under the main heading "Attention Deficit and Disruptive Behavior Disorders" and 15 criteria were defined. To make a diagnosis in this regard, it is emphasized that at least three or more of the diagnostic criteria must have been present for the last year (12 months), provided that at least one diagnostic criterion has been present in the last six months, and that there must be a repetitive pattern of behavior that is seen continuously in a repetitive manner, attacking the fundamental rights of others or ignoring age-appropriate social values and rules. Symptoms cause impairment in the daily functioning of the patient. Based on the age at onset, conduct disorder symptoms are divided into two types: those that start in childhood and those that start in adolescence. If at least one of the symptoms of conduct disorder is seen before the age of 10, it is classified as childhood-onset type; if none of the symptoms are seen before the age of 10, it is classified as adolescent-onset type (APA 1994). In addition, in the DSM-IV-TR, the type with an uncertain age of onset was added (APA 2000).

In the DSM-5, the subtypes of conduct disorder and diagnostic criteria did not change, but while it was included under the title of "Disruptive Conduct Disorders" in DSM-IV-TR, it was included under the title of "Disruptive, Impulse Control, and Conduct Disorders" in DSM-5, and determinants such as lack of guilt or remorse, lack of concern for feasibility, lack of empathy, and inadequate or shallow effects were added to reveal the presence or absence of prosocial emotions. Among these added determinants, an individual's lack of anxiety, guilt, remorse, regret, or feeling bad about the negative consequences of his/her actions constitutes the lack of guilt or remorse determinant; the individual's lack of effort in the face of what is expected of him/her in work, school, or other serious activities constitutes the lack of concern about his/her ability to perform; not thinking about the impact of one's actions towards others on others, not caring about the feelings of others, not caring about the feelings of others is a sign of lack of empathy; and finally, shutting down one's feelings towards others, showing insincere or self-interested feelings (e.g. showing feelings to intimidate others) is a sign of inadequate or shallow affect. It was also classified as severe, moderate, or mild to indicate the severity of behaviors. The DSM-5 diagnostic criteria for conduct disorder are as follows (APA 2013, Çıkılı 2015, Yücel 2020):

A. At least three of the 15 criteria in the categories below must have been present within the last year (12 months), and at least one diagnostic criterion must have been present within the last six months. There must also be a repeated and consistent pattern of behavior that ignores the fundamental rights of others, age-appropriate social values, or established rules.
Showing aggression towards people and animals
1. They often bully, intimidate, or intimidate others.
2. Most of the time they fight, they start fights.
3. Use a tool that could cause serious injury to others (stone, penknife, broken glass, weapon).
4. He treated people without compassion.

5. Animals were treated for a lack of compassion.
6. Stole in front of other people (assault and robbery, extortion, robbery with a gun).
7. He forced another person to engage in sexual activity.

Breaking Things Damaging Things

8. He deliberately sets fire with the intention of causing significant damage.
9. Intentionally damaged property and assets of others (apart from setting fires).

Fraud or Theft

10. Forcibly entered another person's home, building, or car.
11. Often lies ("double-crosses" others) to gain a gain, gain a benefit, or evade responsibilities.
12. Stole valuable objects without others seeing (stealing goods from shops).

Significant Breaking of Rules

13. Spending most nights out, despite parental prohibitions, starting before the age of 13.
14. Has run away from home at least twice while staying in the home of parents or their substitutes, or has run away from home once without returning after a long period.
15. Most of the time, starting before the age of 13, they were truant from school.

B. This behavioral disorder causes clinically significant impairment in school, occupational or social functioning.

C. Individuals aged 18 years or older, do not meet the criteria for antisocial personality disorder.

**Table.1 Change of conduct disorder throughout the history of DSM**

| | **DSM-II** | **DSM-III** | **DSM-III-R** | **DSM-IV** | **DSM-IV-TR** | **DSM-5** |
|---|---|---|---|---|---|---|
| Title mentioned | Childhood unsocialized aggressive reaction | conduct disorder | Disruptive behavior disorders | Attention deficit and disruptive behavior disorders | Disruptive behavior disorders | Disruptive, impulse control and conduct disorders |
| Diagnostic Criteria | It is characterized by quarrelsomeness, physical and verbal aggression, destructiveness, overt or covert hostile disobedience and vindictiveness, in which theft, lying, tantrums, and hostile teasing of other children are common. Individuals with this disorder generally lack parental acceptance and discipline. | More serious than the ordinary pranks and mischiefs of children and adolescents, they are repetitive forms of behavior that violate the fundamental rights of others or important age-appropriate social rules and norms. aggressive or submissive sexual activity depending on the subtype. Early smoking, alcohol consumption, and substance use are common. In addition, irritability, outbursts of anger, and | | A. A repetitive pattern of behavior in which the basic rights of others or age-appropriate social rules and norms are violated: *Showing aggression towards people or animals* 1. They may exhibit threatening, intimidating or bullying behaviors. 2.They may often initiate physical fights 3. They may use a weapon that will cause significant physical harm (knife, gun, broken glass, stick, etc.) 4. He treats people without any compassion. | | A. Within the last year (12 months), at least three of the 15 criteria in the categories listed below must be present, and at least one diagnostic criterion must be present within the last six months. In addition, there must be a repetitive and stable pattern of behavior, ignoring the basic rights of others, age-appropriate social values, or established rules. *Showing aggression towards people and animals* one. Often, bullies intimidate, or intimidates others. 2. He often fights and starts these fights. 3. Used a vehicle that could cause serious injury to |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | provocative recklessness are present. | | 5. He treated animals without compassion.<br>6. Stole in front of other people (assault, robbery, robbery, robbery with a gun)<br>7.Forced someone else to engage in sexual activity.<br>*Behaviors that cause property loss or damage*<br>8. Intentionally starting a fire<br>9. Intentionally damaging other people's property (breaking car windows, etc.) other than starting a fire.<br>*Fraud or theft*<br>10.He entered someone else's house, building, or car.<br>11. Often lies ("scams" others) to obtain a gain, benefit, or avoid responsibilities.<br>12. Stolen valuable objects without others seeing (stealing from shops)<br>*Significant breaking of the rules*<br>13. Spending the night outside most of the time, starting before the age of thirteen, despite the prohibitions imposed by parents<br>14. He had run away from home at least twice while staying at the home of his parents or their substitutes, or had run away | | others (stone, pocket knife, broken glass, gun)<br>4. He treated people without compassion.<br>5. He treated animals without compassion.<br>6. Stole in front of other people (assault, robbery, robbery, robbery with a gun)<br>7.Forced someone else to engage in sexual activity.<br>*Breaking and damaging things*<br>8.He intentionally started a fire to cause significant damage.<br>9. He deliberately damaged other people's property (other than starting a fire)<br>*Fraud or theft*<br>10.He entered someone else's house, building or car by force.<br>11. Often lies ("scams" others) in order to obtain a gain, benefit, or avoid responsibilities.<br>12. Stolen valuable objects without others seeing (stealing from shops)<br>*Significant breaking of the rules*<br>13. Spending the night outside most of the time, starting before the age of thirteen, despite the prohibitions imposed by parents<br>14.Has run away from home at least twice while staying at the home of their parents or their substitutes, or has run away from home once |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | from home once, from which he did not return for a long time.<br>15. He was truant from school most of the time, starting before the age of 13.<br>B. Three (or more) characteristic behaviors must be present in the last 12 months and at least one behavior must be present in the last 6 months. Conduct disorders cause clinically significant impairments in academic, occupational, or social functioning.<br>C. Conduct disorders can only be diagnosed in individuals over the age of 18 years when the criteria for antisocial personality disorder are not met. | | without returning for a long time.<br>15. Has been truant from school most of the time, starting before the age of 13.<br><br>B. This behavioral disorder causes clinically significant impairments in school, occupational, or social functioning.<br>C. If an individual is 18 years of age or older, he/she does not meet the criteria for antisocial personality disorder. |
| Duration | - | - | | 12 month | | 12 month |
| Subtypes | - | unsocialized aggressive | individual aggressive | type that begins in childhood | type that begins in childhood | type that begins in childhood |
| | | unsocialized nonaggressive _ | group aggressive | | Type that begins in adolescence | Type that begins in adolescence |
| | | socialized aggressive | unreserved aggressive | Type that begins in adolescence | Age of onset uncertain | Age of onset uncertain |
| | | socialize nonaggressive | - | | - | - |
| Determinants | - | - | - | - | - | Lack of guilt or remorse |
| | | | | | | Not having concerns about ability |
| | | | | | | lack of empathy |
| | | | | | | Inadequate or shallow affect |

| **Table.2 Changes in conduct disorder for ICD-10 and ICD-11** | | |
|---|---|---|
| | **ICD-10** | **ICD-11** |
| Related title | Behavioral and emotional disorders | Disruptive behavior or dissocial disorders |
| Diagnostic criteria | 1. There are frequent or severe outbursts of anger, depending on the developmental level.<br>2.He often argued for adults.<br>3. Often, they disobey rules or reject requests from adults.<br>4. He often intentionally does things to annoy others.<br>5. Often blames others for his mistakes or negative behavior.<br>6. It is easily annoyed or resentful by others.<br>7. Often angry or resentful.<br>8. Often vindictive or seeking revenge.<br>9. He lies in escaping his responsibilities and gaining benefits.<br>10.Fight starts a fight (it does not include fights with siblings).<br>11.Uses weapons (knives, stones, sticks, etc.) that cause serious physical harm to others.<br>12. Spends the night outside despite the family's prohibitions, which started before the age of 13.<br>13.It is physically aggressive towards others.<br>14.He was physically cruel to animals.<br>15. Willfully damages other people's properties (except when starting a fire).<br>16. Starting fire with the intention of causing serious harm.<br>17. Steals valuables without being seen by others (forgery, stealing from shops)<br>18.There is truancy from the school that started before the age of 13 years.<br>19. Runs away from home at night at least twice (or once if not returned for a long time)<br>20. Steals in front of others (armed robbery, purse-snatching)<br>21.Forces another person to engage in sexual activity.<br>22. Bullies others (harassing, torturing, causing harm or pain)<br>23.Breaks into other people's vehicles, buildings, and houses. | *Aggression towards humans and animals:*<br>1. Threatening or bullying others<br>2.Physical fight, provocation<br>3. Uses weapons (bricks, broken bottles, guns, pocket knives, etc.) that cause serious physical harm to others.<br>4.Physical cruelty to people<br>5.Physical cruelty to animals<br>6.Aggressive forms of theft (snatching, mugging, etc.)<br>7.Forcing another person to engage in sexual activity<br>*Destruction of property:*<br>8. Intentionally setting fires, even with the intention of causing serious damage to the property of others<br>9. Intentionally damaging other people's property (intentionally breaking other children's toys, scratching cars, puncturing tires)<br>*Theft and aggression:*<br>10. Stealing valuables (theft, forgery)<br>11. Lying (defrauding others) to avoid responsibility or to obtain goods or favors.<br>12.Breaking into others' vehicles, buildings or homes<br>*Serious rule violations:*<br>13. Despite their parents' prohibitions, children or young people constantly stay out all night, constantly run away from home, or fail to go to school or work without permission. |
| Duration | 6 months | 12 months |
| Subtypes | Conduct disorder limited to the family environment | childhood onset |
| | unsocialized conduct disorder | pubertal onset |
| | socialized conduct disorder | |
| | oppositional defiant disorder | |
| | Other conduct disorders | |

In International Statistical Classification of Diseases and Related Health Problems 11th edition (ICD-11) (WHO 2022), it is defined as "Conduct and Dysocial Disorder" under the main heading of "Disruptive Behavior or Dysocial Disorders". Similar to the DSM-5, behavioral patterns are classified into four categories (aggression towards people or animals, destruction of property, theft or aggression, and serious rule violations) and divided into two categories based on the age of onset: childhood onset and adolescent onset (WHO 2022). Here, unlike ICD-10 (WHO 2019), it is stated that the behavior pattern should be permanent and continuous for "at least 12 months" rather than "6 months or longer". In addition, the removal of various subtypes defined for conduct disorders in ICD-10 (conduct disorder limited to family environment, unsocialized conduct disorder, social conduct disorder, etc.) is another change made in the ICD-11 (WHO 2019, WHO 2022).

## Epidemiology

Considering the epidemiology of conduct disorder, it is frequently encountered in psychiatric clinics applications in children and adolescents. It is a serious disorder, especially because conduct disorders cause mental and legal problems, antisocial personality disorder and a shorter life span in the future (Uysal 2012). When the prevalence of conduct disorder is examined, it is seen that wide (1%–16%) results are reached and social and inter-national differences stand out. The DSM edition and characteristics of the research group may be effective in obtaining such different results (Ateş 2014). In a study conducted with 3278 children between the ages of 6 and 15 years in the United Arab Emirates, the rate of conduct disorder was 1.5% (Eapen et al. 1998). In a study conducted with 137 couples in a child and adolescent psychiatric hospital in Sweden, the rate of meeting the criteria for conduct disorders was 27.7% (Ramklint et al. 2002). In a study conducted with 10438 children between the ages of 5 and 15 in Great Britain, the prevalence of conduct disorder was 1.47% (Ford 2003); 2.2% between the ages of 7 and 14 in Brazil (Fleitlich-Bilyk and Goodman 2004); 2.5% between the ages of 13 and 15 in Taiwan (Gau et al. 2005); and 1.2% between the ages of 12 and 15 in Ireland (Lynch et al. 2006). In another study conducted in Iran on 9636 Iranian children and adolescents aged 6–17 years, the rate of conduct disorder was reported to be 32.9% (Mohammadi et al. 2014). In another study, which can be considered closer to the present day, the prevalence of CD among young people in Europe was examined, and the rate of CD in Europe was calculated as 1.5%, and this rate was calculated as 1.8% among males and 1.0% among females (Sacco et al. 2021).

**Table.3 Epidemiological studies conducted ınternationally and nationally**

| **International** | | | | **National** | | | |
|---|---|---|---|---|---|---|---|
| Study | Gender | | General Conduct Disorder Rate | Study | Gender | | General Conduct Disorder Rate |
| | F | M | | | F | M | |
| Eapen et al. (1998) | | | 1.5% | Gul et al. (2010) | | | 4.4% |
| Ramklint et al. (2002) | | | 27.7% | Ercan et al. (2019) | 0.29 % | 0.4 % | 0.36% |
| Ford et al. (2003) | | | 1.47% | | | | |
| Fleitlich-Bilyk and Goodman (2004) | | | 2.2% | | | | |
| Gau et al. (2005) | | | 2.5% | | | | |
| Lynch et al. (2006) | | | 1.2% | | | | |
| Mohammadi et al. (2014) | | | 32.9% | | | | |
| Sacco et al. (2021) | 1.0% | 1.8% | 1.5% | | | | |
| Polanczyk et al. (2015) | | | 2.1% | | | | |
| Erskine et al. (2013) | 1.5% | 3.6% | | | | | |
| Fairchild et al. (2019) | 1-2% | 3-4% | 2-2.5% | | | | |

In Türkiye, in a study conducted with 1126 children between the ages of 6-12 in Trabzon Province in 2010, the rate of conduct disorder was 4.4% (Gül et al. 2010). In another study conducted in Türkiye, the incidence rate of conduct disorder was found to be 0.36% and the incidence rate in girls, and 0.29% and the incidence rate in boys was 0.4% (Ercan et al. 2019).

A meta-analysis of 41 studies conducted in 27 countries between 1985 and 2012 found that the prevalence of conduct disorders was 2.1% (Polanczyk et al. 2015). In a study conducted in three periods in 1990, 2005, and 2010, the global prevalence of conduct disorder was 3.6% for men and 1.5% for women (Erskine et al. 2013). Another study reported that the global prevalence of conduct disorder was 2-2.5%, with a prevalence of 3-4% in boys and 1-2% in girls (Fairchild et al. 2019).

## Etiology

In the etiology of conduct disorders, it is not possible to talk about the effect of only one factor, as in other mental disorders. It would be more accurate to say that genetic factors come together with environmental factors in this disorder and cause its emergence in the epigenetic framework (Rodopman 2019). Kring et al. (2017) stated that genetics, psychology, neurobiology, and social factors play an important role in the etiology of conduct disorders by interacting among themselves. When we look at the literature, low socio-economic level, fragmented family, continuous exposure to physical and sexual abuse, having antisocial parents, parents with two or more children, excessive punishment or inadequate parental supervision, unemployment, and schools and neighborhoods with high crime rates are considered risk factors for conduct disorder (Arkan and Üstün 2009, Lillig 2018, Masroor et al. 2019, Salmanian et al. 2020). In addition, witnessing social violence or being a victim of social violence increases the likelihood of developing conduct disorder by two and four times, respectively (Chan et al. 2022). In addition, an increase in all these risk factors also increases the likelihood of developing conduct disorders (Sagar et al. 2019). Loeber et al. (2000) divided risk factors affecting conduct disorders into three groups. These are biological, child-related, and psychosocial factors. Biological factors include genetic, neuroanatomical, and neurochemical findings, autonomic nervous system stimulation, prenatal and postnatal problems, and neurotoxins; child factors are temperament, attachment, intelligence, academic achievement, and social cognition; psychosocial factors include child rearing, peer influence, child abuse, life stressors, and coping skills (Burke et al. 2002, Murray and Farrington 2010). In this review, the causes of conduct disorder are discussed in terms of genetic and biological factors, individual factors, and psychosocial factors:

### Genetic and Biological Factors

In a study of twins in which the relationship between genes and environment in the etiology of conduct disorder was addressed, 43% of individual differences in behavioral problems in children aged 9-10 years were explained by genetic factors and 44% by environmental factors, while another study suggested that genetic variance was 61% (Conner and Lochman 2010, Wesseldijk et al. 2018). In another study conducted with twins, aggressive behaviors (harming objects, animals, people, etc.) are genetic. However, negative behaviors such as running away from school and home, theft, and setting fires occur under the influence of the environment (Edelbrock et al. 1995). In addition, children whose fathers have antisocial personality disorder have twice the risk of developing conduct disorder and engaging in antisocial behaviors in adult life compared to children whose fathers do not have antisocial personality disorder (Blazei et al. 2008).

Since Conduct Disorder are complex, many genes and genetic variants contribute to the phenotype, therefore research is ongoing to identify specific genes related to conduct disorder (Salvatore and Dick 2018). Research suggests that conduct disorders may share genetic effects with other externalizing disorders, including alcohol and substance use disorders. GABRA2, which is associated with alcohol and drug addiction in GABRA2 analyses, was associated with childhood conduct disorder for the GABRA2 SNP in a study conducted on 860 children and adolescents (Salvatore and Dick 2018). Sakai et al. (2010) reached the opposite conclusion and found no association between GABRA2 SNP and conduct disorders.

The monoamine oxidase-A (MAO-A) gene has been examined in the context of aggression in children, adolescents and adults (Veroude et al. 2016), and deficiencies in the MAO-A gene have been associated with aggression and it has been revealed that antisocial behaviors are highly likely to occur, especially in the presence of a history of physical or sexual abuse (Torry and Billick 2011). Another study, concluded that a functional polymorphism in the gene encoding MAO-A reduced the effect of maltreatment (Caspi et al. 2002). Contrary to these results, there are also studies that do not support that polymorphisms in the gene encoding MAO-A poses a genetic risk for conduct disorders (Haberstick et al. 2005, Young et al. 2006). A study of 442 Caucasian men found that MAO-A did not have a significant direct effect on violent and criminal behavior (Dunedin, as cited in Beaver et al. 2007). In addition, genes encoding vasopressin, oxytocin, and vasopressin receptors (AVP, OXTR, AVPR1A and AVPR1B) have been associated with aggression in children and variants in several OXTR genes have been associated with conduct disorders (Veroude et al. 2016).

Epigenetic mechanisms, which express gene-environment interaction, refer to processes that affect genes but can lead to changes in their functions without changing the DNA sequence. They emphasize that close environment, peer relationships, and familial psychosocial factors are environmental factors that lead to these changes (Holz et al. 2018). In addition, it has been stated that risk factors such as maternal psychopathology, substance abuse, and criminal behavior are other factors that constitute epigenetic risk factors. It has also been concluded that genetic variance for conduct disorders is higher in less restrictive environments in general gene-environment analyses (Salvatore and Dick 2018).

Another issue that can be considered a biological factors is gender. Conduct disorders are more common in men than in women (Abalı et al. 2006, Loeber et al. 2000, Salmanian et al. 2020). This sex-related difference emphasizes the relationship between androgen hormones and aggression in males (Çakar 2017, Rodopman 2019). Previous studies have shown that serotonin is the most effective neorutransmitter against aggression is serotonin (Searight et al. 2001). Serotonin is associated with impulsivity and aggression and is found in low amounts in people with impulse control and behavioral disorders (Rodopman 2019).

Maternal exposure to toxic substances such as alcohol, cigarettes, methadone, and opioids during the prenatal period puts the fetus at a high risk of behavioral problems (Dodge and Pettit 2003). According to a study, maternal smoking more than half a pack a day during pregnancy increases the risk of conduct disorder by 4.4 times (Larkby et al. 2011).

### Neuroimaging Studies

Neurodevelopmental theories of conduct disorder and other antisocial disorders suggest that dysfunctions in a number of cortical and subcortical regions, particularly the ventromedial frontal cortex, striatum, amygdala, the superior temporal cortex, and anterior and posterior cingulate cortex, are involved in the development of these disorders (Wallace et al. 2014). In a structural neuroimaging study comparing youth with conduct disorder and a control group, youth with conduct disorder showed decreased cortical thickness in the superior temporal gyrus, decreased surface area in the orbitofrontal cortex and increased cortical folding in the insula compared to youth in the control group (Fairchild et al. 2015). Similarly, Fahim et al. (2011) observed a decrease in cortical thickness, thinning in the cingulate, prefrontal and insular cortices, and a decrease in gray matter density in the same brain regions in children with conduct disorder compared to children in the control group. Huebner et al. (2008) reached a similar conclusion that gray matter decreased. In another structural neuroimaging study, gray matter differences were found in the parietal lobe, frontal lobe, anterior cingulate, ligual gyrus, posterior lobe of the cerebellum, and insula (Zhang et al. 2018). Finally, many neuroimaging studies have found a decrease in the amygdala volume (Fairchild et al. 2011, Rogers and De Brito 2016, Sterzer et al. 2007, Wallace et al. 2014).

### Individual Factors

Individual factors in children with conduct disorder include low self-esteem, impulsivity, temperament, executive dysfunction, low IQ, poor verbal skills, and low school success (Baker 2013, Murray and Farrington 2010). Being under the care of an institution is also at risk factor for conduct disorders (Ayaz et al. 2012). Chronic physical illness (especially neurological) or disability is another factor that increases the risk of conduct disorders (Rodopman 2019). Other risk factors emphasized within individual factors include attachment relationships and temperament. Although there is no clear evidence on attachment relationships, studies have reported certain links between insecure-avoidant or insecure attachment and destructive behaviors. Temperament, on the other hand, is a biologically based behavioral pattern that can be observed in early childhood. Children with difficult temperaments may cause maladaptive attitudes in parents, which facilitates the development of conduct disorders (Burke et al. 2002).

### Psychosocial Factors

Environmental risk factors are also important in explaining the etiology of conduct disorder. Twin studies have shown that the variance of common environmental effects in childhood behavioral problems is 30% (Baker 2013). Although conduct disorder can be seen at all economic levels, it is more common in families with low socio-economic status and problems such as unemployment (Chan et al. 2022, Çakar 2017, Searight 2001). Again, the likelihood of conduct disorder increases in families where the child is mistreated, physically or sexually abused, or has drug use or addiction (Afifi et al. 2011). In addition, the effect of the environment outside the family on the etiology has also been investigated, and it has been stated that making friends with deviant peers predicts conduct disorder and that the prevalence of conduct disorder is higher in neighborhoods with high levels of violence (Conner and Lochman 2010, Murray and Farrington 2010).

## Comorbidity (Co-Diagnosis)

Children and adolescents diagnosed with conduct disorders are more likely to have other psychiatric disorders (Greene 2002). In previous studies, 79% of adolescents diagnosed with conduct disorder had at least one additional psychiatric disorder. The most common psychiatric disorders associated with conduct disorders are oppositional defiant disorder (ODD), attention deficit hyperactivity disorder (ADHD), mood disorders, anxiety

disorders, substance abuse disorder, andposttraumatic stress disorder (Kohls et al. 2021, Rowe et al. 2010, Salmanian et al. 2020, Woodward et al. 2023). In addition, it has been stated that conduct disorder and bipolar disorder are comorbid, which is associated with negative life outcomes such as hospitalization and contact with security forces (Woodward 2023). Among all psychiatric disorders, oppositional defiant disorder and attention deficit hyperactivity disorder showed the highest comorbidity with conduct disorder. This is thought to be due to the fact that some environmental and social symptoms of these disorders are strongly similar (Salmanian et al. 2020). As a matter of fact, it is stated that some of the children and adolescents diagnosed with oppositional defiant disorder were diagnosed with conduct disorder later in life (Rowe et al. 2002, Maughan et al. 2004). Research, indicates that the best comorbidity diagnosis in children and adolescents diagnosed with conduct disorder is childhood attention deficit hyperactivity disorder (Çenteli 2021). In addition, it is thought that there is a close relationship between substance use and conduct disorder, and that all kinds of drug use are closely linked to conduct disorder (Masroor et al. 2019, Reebye et al. 1995, Tamam and Döngel 2018, Zohdi et al. 2022). In a study conducted by Hopfer et al. (Hopfer et al. 2013) on this subject, they revealed that individuals with conduct disorder started substance use at an early age and that their rates of developing substance use disorder were high. Therefore, the onset of substance use at an early age is one of the strongest predictors of later substance use problems (Anderson et al. 2018). Another study found that a history of early conduct disorder doubled the likelihood of substance use disorder (Sung et al. 2004). This relationship between conduct disorder and substance use is caused by at lack of impulse control, which is one of the leading symptoms of conduct disorder. Impulsivity is an underlying cause of addiction and the pathology of substance use disorders (Bakhshipour and Karimpour 2021, Zohdi et al. 2022).

Conduct disorders are also associated with mood and anxiety disorders. Clinical studies have shown that approximately 50% of children and adolescents diagnosed with conduct disorders meet the diagnostic criteria for major depressive disorders or dysthymia. Moreover, these two disorders are reported to increase the likelihood of substance use problems and suicide in adolescence (Caserini et al. 2023). Although children who are not diagnosed with conduct disorder but have anxiety disorder are also at risk of developing conduct disorder in adolescence, which is a later period of their lives, children and adolescents diagnosed with conduct disorder are more likely to develop anxiety disorder (Ateş 2014, Çıkılı 2015).

To date, few studies have investigated the comorbidity rates of young people with conduct disorders and sex differences. A diagnosis of conduct disorder is more common in males than females (Salmanian et al. 2020). On the other hand, women diagnosed with conduct disorder also have higher comorbidity rates of psychiatric disorders throughout their lives than men. Oppositional defiant disorder is the most common comorbid disorder in both sexes (Kohls et al. 2021). In a study conducted by Ilomäki et al. (2012), while they found that women with conduct disorder experienced more post-traumatic stress disorder and tended to have more major depressive disorder than men, they did not observe any gender differences in comorbidities of conduct disorder (Ilomäki et al. 2012).

## Differential Diagnosis

The fact that conduct disorder may be accompanied by other psychiatric disorders makes it necessary to make a good differential diagnosis. The first psychiatric disorder to be considered in the differential diagnosis is an oppositional defiant disorder. Oppositional defiant disorder, which can be diagnosed at any age between early childhood and adulthood but generally begins before the age of 8 years, is a mental health disorder characterized by irritable mood, oppositional and argumentative behavior, constant anger and vindictiveness. However, oppositional defiant disorder may be comorbid with ADHD, substance use disorder, and conduct disorder due to common genetic factors or similar characteristics (Hawes et al. 2023). Some behaviors seen in children diagnosed with conduct disorders are also seen in children diagnosed with oppositional defiant disorder. In oppositional defiant disorders, there is a pattern of defiance against adults and authority, but the most important point to be considered when making the distinction is that children with oppositional defiant disorder do not attack the fundamental rights of others or social values and established rules (Lillig 2018, Sagar et al. 2019, Searight et al. 2001, Uysal 2012, Tamam and Döngel 2018).

Children diagnosed with attention deficit hyperactivity disorder may also exhibit aggressive behaviors, but this is due to impulsivity and hyperactivity. Children diagnosed with attention deficit hyperactivity disorder do not violate social values and rules even if they exhibit such behaviors (Uysal 2012, Yücel 2020). Intermittent Explosive Disorder characterized by disproportionately persistent aggressive outbursts and impulsivity in response to provocation or stressors (Shevidi et al. 2023, Tay et al. 2022). Another disorder that can be co-diagnosed with conduct disorders is the intermittent explosive disorder. According to Lilling (2018), although

there are aggressive behaviors in intermittent explosive disorder, these behaviors are impulsive rather than planned. In addition, unlike people with conduct disorder, people with intermittent explosive disorder experience guilt and regret after their outbursts of anger. Conduct disorders can be observed in children and adolescents with mood disorders, and the course of mood episodes is important when differentiating these conduct disorders. This behavior of the child or adolescent may belong to a manic or hypomanic period (Ateş 2014). In alcohol and substance use, overdose or substance withdrawal may lead to destructive behaviors, but these destructive behaviors disappear in the absence of these conditions (Yücel 2020).

## Prognosis

The prognosis of conduct disorders can vary. In general, a conduct disorder may resolve in adulthood, but in some individuals, it may persist in later periods, and these individuals show diagnostic criteria for antisocial personality disorder. In addition, studies indicate that childhood-onset conduct disorder has a poor prognosis and increases the likelihood of antisocial personality and substance use disorders in adulthood (Arkan and Üstün 2009, Çenteli 2021, Tamam and Döngel 2018). In addition, when conduct disorder is accompanied by attention deficit hyperactivity disorder, the prognosis is poor, and antisocial and violent behaviors are more common (Tamam and Döngel 2018). Studies have shown that 40% of individuals diagnosed with conduct disorder develop antisocial personality disorder, while the remaining 60% (who do not develop antisocial personality disorder) show impairment in social and occupational functions (Arkan and Üstün 2009, Tamam and Döngel 2018). Moreover, it has been shown that genetic factors may play a significant role in the development of chronic antisocial behavior. Most adolescents engage in some form of antisocial behavior, but the majority do not continue these behaviors into adulthood (Mezquita et al. 2021).

Some individuals experiencing resolution of the disorder in adulthood, while others continue to exhibit symptoms and meet the criteria for antisocial personality disorder (Berluti et al. 2023). Childhood-onset conduct disorder has been associated with a poor prognosis, as it increases the risk of developing antisocial personality and substance use disorders in adulthood (Eskander 2020). Furthermore, the prognosis is particularly poor when conduct disorder co-occurs with attention deficit hyperactivity disorder, as this combination is associated with a higher likelihood of antisocial and violent behaviors (Thabrew et al. 2017).

## Treatment Approaches

Since conduct disorder is a costly mental disorder in terms of its economic consequences for society, many forms of treatment have been tried for its treatment (Arkan and Üstün 2009, Sagar et al. 2019). Although no clear conclusion has been reached in the treatment of conduct disorder despite these trials, it has been stated that different disciplines can improve the results by working together for a long time (Sagar et al. 2019). Successful results can be achieved with multidimensional treatment that targets the school, family, and society where problematic behaviors occur together with children and adolescents (Çıkılı 2015). Multidimensional treatment includes Cognitive Behavioral Therapy (CBT), social skills training, parent-parent training or therapies, and psychopharmacological methods (Mohamed et al. 2022).

Conduct disorders do not have a specific medication, but it is known that the drugs used are antipsychotics, antidepressants, stimulants, benzodiazepines, and central system stimulants for anger outbursts and aggression (Arkan and Üstün 2009, Çıkılı 2015, Rodopman 2019, Sagar et al. 2019). At this point, the importance of psychosocial interventions in the treatment of conduct disorders is emphasized in the literature, the importance of interventions to be made according to child and adolescent age groups is emphasized, and it is stated that the onset of these behaviors in the most aggressive young people who are likely to exhibit antisocial behaviors in adulthood dates back to childhood (Sagar et al. 2019). In addition, interventions for behavioral problems are more effective when initiated in the middle childhood period (6-11 years) and are cognitive-behavior based (Smaragdi et al. 2020). In children with conduct disorder before the age of ten, treatment includes child-, school-, and family-oriented studies, wheares in the treatment of adolescence-onset conduct disorder, community-based practices, and partial hospitalization programs are added to the methods used in childhood-onset conduct disorder. In these psychosocial methods, whose evidence-based effectiveness has been investigated and positive results have been obtained, each study has a theoretical background and focuses on problematic areas in the child or family. For example, in child-focused studies, behavioral interventions aim to increase children's communication and problem-solving skills and anger and impulse control, wheares adolescent-focused methods address these problems with cognitive-behavioral interventions (Tonyalı et al. 2019). The use of cognitive-behavioral interventions is also considered important in terms of eliminating deficiencies in the social

information processing mechanism in children and adolescents revealed in the studies (Sagar et al. 2019). In addition, it has been stated in the literature that adolescents in middle adolescence and older do not benefit sufficiently from treatment programs, therefore, mentalization-based treatment was developed for adolescents with CD. According to this model, attachment disorders and deficits in mentalization are expressed as underlying causes of aggressive behaviors, while increased threat perception in social life or decreased sensitivity to others' distress and failure to prevent aggressive behavior are said to be underlying causes of mentalization deficits. Therapists who apply mentalization-based treatment avoid being knowledgeable in the face of destructive aggression, take the stance of not knowing the mental states underlying the behavior, and try to gain a psychological understanding of adolescents' aggression, mentalize the emotions that arise, and thus try to help adolescents psychologically buffer their arousal (Hauschild et al. 2022). Another intervention method, the school-oriented method, is based on social-cognitive theory, while teachers, psychological counselors, and psychologists participate in these practices (Tonyalı et al. 2019). In the family-oriented method (parent education programs), the education programs are divided into two categories: behavioral-based and relationship-based. Behavioral-based education programs are based on social cognitive theory and target behaviors to be changed in children through the mutual interactions of the child, mother, and father, with the mother and father as the focus of the program. The other parent education program, the relationship-based program, is based on humanistic, psychodynamic, and family system theories, and aims to understand the feelings and thoughts that are the cause of children's problematic behaviors and to evaluate parents' responses to the child by focusing on the child (Arkan and Üstün 2009, Tonyalı et al. 2019).

## Conclusion

Conduct disorder is a psychiatric disorder characterized by aggressive and antisocial behaviors during childhood or adolescence. Recent studies have pointed out another important aspect of conduct disorder and revealed that children and adolescents with conduct disorder may be perpetrators or victims of cyberbullying in addition to traditional bullying, which can be considered an alternative in the understanding and treatment of conduct disorder. Although the etiology is not clearly defined, as in many psychiatric disorders, there is an etiology that is influenced by many biological, individual, and psychosocial factors. Comorbidity of conduct disorder with many psychiatric disorders has been observed, but it should be carefully differentiated from oppositional defiant disorder and attention deficit hyperactivity disorder, which have the highest comorbidity. Since conduct disorder is a problem that negatively affects the child, family, and society, a multidisciplinary approach should be taken for its treatment. These treatments can be in the form of psychopharmacological treatments to prevent the child's outbursts of anger and aggression, as well as parent education programs that involve parents and cognitive behavioral therapy that addresses the child's cognitive problems.

## References

Abalı O, Onur M, Gürkan K, Çelik Ö, Tüzün ÜD (2006) İlköğretim çağı çocuklarındaki davranım bozukluğu semptomlarının sosyodemografik verilere göre değerlendirilmesi. Dusunen Adam, 19:14-19.

Afifi TO, McMillan KA, Asmundson GJ, Pietrzak RH, Sareen J (2011) An examination of the relation between conduct disorder, childhood and adulthood traumatic events, and posttraumatic stress disorder in a nationally representative sample. J Psychiatr Res, 45:1564-1572.

Anderson SL, Zheng Y, McMahon RJ (2018) Do callous-unemotional traits and conduct disorder symptoms predict the onset and development of adolescent substance use? Child Psychiatry Hum Dev, 49:688-698.

APA (1968) Diagnostic and Statistical Manual of Mental Disorders, 2nd ed. Washington DC, American Psychiatric Association.

APA (1980) Diagnostic and Statistical Manual of Mental Disorders, 3rd ed. Washington DC, American Psychiatric Association.

APA (1987). Diagnostic and Statistical Manual of Mental Disorders, 3rd ed rev. Washington DC, American Psychiatric Association.

APA (1994) Diagnostic and Statistical Manual of Mental Disorders, 4th ed. Washington DC, American Psychiatric Association.

APA (2000). Diagnostic and Statistical Manual of Mental Disorders, 4th ed rev. Washington DC, American Psychiatric Association.

APA (2013) Diagnostic and Statistical Manual of Mental Disorders, 5th ed. Washington DC, American Psychiatric Association.

Arkan B, Üstün B (2009) Davranım bozukluğu olan çocuklara psikiyatrik yaklaşımda anne-baba eğitim programları: iki örnek bağlamında değerlendirme. Psikiyatride Güncel Yaklaşımlar, 1:155-174.

Ateş S (2014) Davranım bozukluğu tanısı alan ergenlerin ebeveynlerinde psikopatolojik özellikler ve cinsiyetlerine göre karşılaştırılması (Uzmanlık tezi). İstanbul, İstanbul Bakırköy Prof. Dr. Mazhar Osman Ruh Sağlığı ve Sinir Has. Eğitim ve Araştırma Hastanesi.

Ayaz M, Ayaz AB, Başgül ŞZ, Karakaya I, Şişmanlar ŞG, Yar G et al. (2012) 3-5 yaş grubu kurum bakımındaki çocuklarda ruhsal hastalık sıklığı ve ilişkili etmenler. Turk Psikiyatri Derg, 23:82-88.

Baker K (2013) Conduct disorders in children and adolescents. Paediatr Child Health, 23:24-29.

Bakhshipour RA, Karimpour VA (2021) The role of ımpulsivity and sensitivity to reward in dropout of addiction treatment in heroin addicts. Addict Health, 13:45-51.

Baumann S, Bernhard A, Martinelli A, Ackermann K, Herpetz DB, Freitag C et al. (2022) Perpetrators and victims of cyberbullying among youth with conduct disorder. Eur Child Adolesc Psychiatry, 32:1643-1653.

Beaver KM, Wright, JP, DeLisi M, Walsh A, Vaughn MG, Boisvert D et al. (2007) A gene x gene interaction between DRD2 and DRD4 is associated with conduct disorder and antisocial behavior in males. Behav Brain Funct, 3:30.

Berluti K, Ploe ML, Marsh AA (2023) Emotion processing in youths with conduct problems: an fMRI meta-analysis. Transl Psychiatry, 13:105.

Blazei RW, Iacono WG, McGue M (2008) Father-child transmission of antisocial behavior: the moderating role of father's presence in the home. J Am Acad Child Adolesc Psychiatry, 47:406-415.

Burke J, Loeber R, Birmaher B (2002) Oppositional defiant disorder and conduct disorder: a review of the past 10 years, part II. J Am Acad Child Adolesc Psychiatry, 41:1275-1293.

Caserini C, Ferro M, Nobile M, Scaini S, Michelini G (2023) Shared genetic influences between depression and conduct disorder in children and adolescents: a systematic review. J Affect Disord, 322:31-38.

Caspi A, McClay J, Moffitt TE, Mill J, Martin J, Craig IW et al. (2002) Role of genotype in the cycle of violence in maltreated children. Science, 297:851-854.

Chan L, Simmons C, Tillem S, Conley M, Brazil IA, Baskin SA (2023) Classifying conduct disorder using a biopsychosocial model and machine learning method. Biol Psychiatry Cogn Neurosci Neuroimaging, 8:599-608.

Conner BT, Lochman JE (2010) Comorbid conduct disorder and substance use disorders. Clin Psychol (New York), 17:337-349.

Çakar FS (2017) Davranım bozukluğu. In Çocuk ve Ergenlerde Gelişimsel ve Davranışsal Bozukluklar (Ed S Avşaroğlu):1-19. Ankara, Vize Yayıncılık.

Çenteli K (2021) Davranım bozukluğu olan ergenlerin ailelerinde disiplin uygulamaları: Fenomenolojik bir çalışma (Yüksek lisans tezi). İzmir, Ege Üniversitesi.

Çıkılı UM (2015) Dikkat eksikliği hiperaktivite bozukluğu ve davranım bozukluğu olan erkek çocuk ve ergenlerde nöropsikolojik test ve dinlenme hali fonksiyonel manyetik rezonans görüntüleme (rs-fMRG) profili (Uzmanlık tezi). Kayseri, Erciyes Üniversitesi.

Dodge KA, Pettit GS (2003) A biopsychosocial model of the development of chronic conduct problems in adolescence. Dev Psychol, 39:349-371.

Eapen V, Al-Gazali L, Bin-Othman S, Abou-Saleh M (1998) Mental health problems among school children in United Arab Emirates: prevalence and risk factors. J Am Acad Child Adolesc Psychiatry, 37:880-886.

Edelbrock C, Rende R, Plomin R, Thompson LA (1995) A twin study of competence and problem behavior in childhood and early adolescence. J Child Psychol Psychiatry, 36:775-785.

Ercan ES, Polanczyk G, Ardıç UA, Yüce D, Karaçetin G, Tufan AE et al. (2019) The prevalence of childhood psychopathology in Turkey: a cross-sectional multicenter nationwide study (EPICPAT-T). Nord J Psychiatry, 73:132-140.

Erskine HE, Ferrari AJ, Nelson P, Polanczyk GV, Flaxman AD, Vos T et al. (2013) Research Review: epidemiological modelling ofattention-deficit/hyperactivity disorder and conductdisorder for the Global Burden of Disease Study 2010. J Child Psychol Psychiatry, 54:1263-1274.

Eskander N (2020) The psychosocial outcome of conduct and oppositional defiant disorder in children with attention deficit hyperactivity disorder. Cureus, 12:e9521.

Fahim C, He Y, Yoon U, Chen J, Evans A, Pérusse D (2011) Neuroanatomy of childhood disruptive behavior disorders. Aggress Behav, 37:326–337.

Fairchild G, Passamonti L, Hurford G, Hagan CC, von dem Hagen EA, van Goozen SH et al. (2011) Brain structure abnormalities in early-onset and adolescent-onset conduct disorder. Am J Psychiatry, 168: 624–633.

Fairchild G, Toschi N, Hagan CC, Goodyer IM, Calder AJ, Passamonti L (2015) Cortical thickness, surface area, and folding alterations in male youths with conduct disorder and varying levels of callous-unemotional traits. Neuroimage Clin, 8:253–260.

Fairchild G, Hawes DJ, Frick PJ, Copeland WE, Odgers CL, Franke B et al. (2019) Conduct disorder. Nat Rev Dis Primers, 5:1-25.

Fleitlich-Bilyk B, Goodman R (2004) Prevalence of child and adolescent psychiatric disorders in southeast Brazil. J Am Acad Child Adolesc Psychiatry, 43:727-734.

Ford T, Goodman R, Meltzer H (2003) The British child and adolescent mental health survey 1999:the prevalence of DSM-IV disorders. J Am Acad Child Adolesc Psychiatry, 42:1203-1211.

Gau SS, Chong MY, Chen TH, Cheng AT (2005) A 3-year panel study of mental disorders among adolescents in Taiwan. Am J Psychiatry, 162:1344-1350.

Greene RW, Biederman J, Zerwas S, Monuteaux MC, Goring JC, Faraone SV (2002) Psychiatric comorbidity, family dysfunction, and social impairment in referred youth with oppositional defiant disorder. Am J Psychiatry, 159:1214-1224.

Gül N, Tiryaki A, Kültür SE, Topbaş M, Ak I (2010) Prevalence of attention deficit hyperactivity disorder and comorbid disruptive behavior disorders among school age children in Trabzon. Klin Psikofarmakol Bülteni, 20:50-56.

Haberstick BC, Lessem JM, Hopfer CJ, Smolen A, Ehringer MA, Timberlake D et al. (2005) Monoamine oxidase A (MAOA) and antisocial behaviors in the presence of childhood and adolescent maltreatment. American journal of medical genetics. Part B, Am J Med Genet B Neuropsychiatr Genet, 135:59–64.

Hauschild S, Kasper L, Volkert J, Sobanski E, Taubner S (2022) Mentalization-based treatment for adolescents with conduct disorder (MBT-CD): A feasibility study. Eur Child Adolesc Psychiatry, doi:10.1007/s00787-022-02113-4.

Hawes DJ, Gardner, F, Dadds MR, Frick PJ, Kimonis ER, Burke JD et al. (2023) Oppositional defiant disorder. Nat Rev Dis Primers, 9:31.

Holz NE, Zohsel K, Laucht M, Banaschewski T, Hohmann S, Brandeis D (2018). Gene x environment interactions in conduct disorder: Implications for future treatments. Neurosci Biobehav Rev, 91:239–258.

Hopfer C, Salomonsen SS, Mikulich GS, Min SJ, McQueen M, Crowley T et al. (2013) Conduct disorder and initiation of substance use: A prospective longitudinal study. J Am Acad Child Adolesc Psychiatry, 52:511-518.

Huebner T, Vloet TD, Marx I, Konrad K, Fink GR, Herpertz SC et al. (2008). Morphometric brain abnormalities in boys with conduct disorder. J Am Acad Child Adolesc Psychiatry, 47:540–547.

Ilomäki E, Hakko H, Ilomäki R, Räsänen P (2012) STUDY-70 workgroup. Gender differences in comorbidity of conduct disorder among adolescents in Northern Finland. Int J Circumpolar Health, 71:17393.

Kerekes N, Zouini B, Karlsson E, Cederholm E, Lichtenstein P, Anckarsäter H et al. (2020) Conduct disorder and somatic health in children: a nationwide genetically sensitive study. BMC Psychiatry, 20:595.

Kohls G, Konrad K, Bauman S, Bernhard A, Martinelli A, Ackermann K et al. (2021) Sex differences in psychiatric comorbidity and clinical presentation in youths with conduct disorder. J Child Psychol Psychiatry, 63:218-228.

Kring AM, Johnson SL, Davidson G, Neale J (2017) Anormal Psikoloji (Çeviri Ed. M. Şahin). Ankara, Nobel Yayınevi.

Larkby CA, Goldschmidt L, Hanusa BH, Day NL (2011) Prenatal alcohol exposure is associated with conduct disorder in adolescence: findings from a birth cohort. J Am Acad Child Adolesc Psychiatry, 50:262-271.

Lillig M (2018) Conduct disorder: recognition and management. Am Fam Physician, 98:584-592.

Loeber R, Burke JD, Lahey BB, Winters A, Zera M (2000) Oppositional defiant and conduct disorder: A review of the past 10 years, part I. J Am Acad Child Adolesc Psychiatry, 39:1468-1484.

Lynch F, Mills C, Daly I, Fitzpatrick C (2006) Challenging times: prevalence of psychiatric disorders and suicidal behaviours in Irish adolescents. J Adolesc, 29:555-573.

Masroor A, Patel RS, Bhimanadham NN, Raveendran S, Ahmad N, Queeneth U et al. (2019) Conduct disorder-related hospitalization and substance use disorders in American Teens. Behav Sci (Basel), 9:73.

Maughan B, Rowe R, Messer J, Goodman R, Meltzer H (2004) Conduct disorder and oppositional defiant disorder in a national sample: developmental epidemiology. J Child Psychol Psychiatry, 45:609-621.

Mezquita L, Bravo AJ, Pilatti A, Ortet G, Ibáñez MI, Team CAS (2021) Preliminary validity and reliability evidence of the Brief Antisocial Behavior Scale (B-ABS) in young adults from four countries. Plos ONE, 16:e0247528.

Mohamed MS, Marzouk SA, Ahmed FA, Nashaat NAM, Thabet ORAE (2022) Cognitive behavioral program on aggression and self-concept among institutionalized children with conduct disorder. Arch Psychiatr Nurs, 39:84-90.

Mohammadi MR, Salmanian M, Ghanizadeh A, Alavi A, Malek A, Fathzadeh H et al. (2014) Psychological problems of Iranian children and adolescents: parent report form of strengths and difficulties questionnaire. J Ment Health, 23:287-291.

Murray J, Farrington DP (2010) Risk factors for conduct disorder and delinquency: Key findings from longitudinal studies. Can J Psychiatry, 55:633-642.

Polanczyk GV, Salum GA, Sugaya LS, Caye A, Rohde LA (2015) Annual research review: A meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J Child Psychol Psychiatry, 56:345-365.

Ramklint M, Von Knorring AL, Von Knorring L, Ekselius L (2002) Personality disorders in former child psychiatric patients. Eur Child Adolesc Psychiatry, 11:289-295.

Reebye P, Moretti M, Lessard J (1995) Conduct disorder and substance use disorder: Comorbidity in a clinical sample of preadolescents and adolescents. Can J Psychiatry, 40:313-319.

Rodopman AA (2019) Karşıt olma karşıt gelme bozukluğu ve davranım bozukluğunda izlem ve süreç, prognostik faktörler ve erken tedavinin etkisi. Turkiye Klinikleri J Child Psychiatry-Special Topics, 5:76-81.

Rogers JC, De Brito SA (2016) Cortical and subcortical gray matter volume in youths with conduct problems: A meta-analysis. JAMA Psychiatry, 73:64–72.

Rowe R, Costello EJ, Angold A, Copeland WE, Maughan B (2010) Developmental pathways in oppositional defiant disorder and conduct disorder. J Abnorm Psychol, 119:726-738.

Rowe R, Maughan B, Pickles A, Costello EJ, Angold A (2002) The relationship between DSM-IV oppositional defiant disorder and conduct disorder: findings from the great smoky mountains study. J Child Psychol Psychiatry, 43:365-373.

Sacco R, Camilleri N, Umla-Runge K (2021) The prevalence of conduct disorders among young people in europe: Asystematic review and meta-analysis. Eur Psychiatry, 64:637-638.

Sagar R, Patra BN, Patil V (2019) Clinical practice guidelines for the management of conduct disorder. Indian J Psychiatry, 61:270-276.

Sakai JT., Stallings MC, Crowley TJ, Gelhorn HL, McQueen MB, Ehringer MA (2010) Test of association between GABRA2 (SNP rs279871) and adolescent conduct/alcohol use disorders utilizing a sample of clinic referred youth with serious substance and conduct problems, controls and available first degree relatives. Drug Alcohol Depend, 106:199–203.

Salmanian M, Mohammadi MR, Keshavarzi Z, Brand S (2018) An update on the global prevalence of conduct disorder (2011–2017): Study protocol for a systematic review and meta-analysis. J Forensic Leg Med, 59:1-3.

Salmanian M, Mohammadi MR, Hooshyari Z, Mostafavi SA, Zarafshan H, Khaleghi A et al. (2020) Prevalence, comorbidities, and sociodemographic predictors of conduct disorder: The national epidemiology of Iranian children and adolescents psychiatric disorders (IRCAP). Eur Child Adolesc Psychiatry, 29:1385-1399.

Salvatore JE, Dick DM (2018) Genetic influences on conduct disorder. Neurosci Biobehav Rev, 91:91–101.

Searight HR, Rottnek F, Abby SL (2001) Conduct disorder: diagnosis and treatment in primary care. Am Fam Physician, 63:1579-1588.

Shevidi S, Timmins MA, Coccaro EF (2023) Childhood and parental characteristics of adults with DSM-5 intermittent explosive disorder compared with healthy and psychiatric controls. Compr Psychiatry, 122:152367.

Smaragdi A, Blackman A, Donato A, Walsh M, Augimeri L (2020) Sex differences in the classification of conduct problems: Implications for treatment. J Dev Life Course Criminol, 6:280-295.

Sterzer P, Stadler C, Poustka F, Kleinschmidt A (2007) A structural neural deficit in adolescents with conduct disorder and its association with lack of empathy. NeuroImage, 37:335–342.

Sung M, Erkanlı A, Angold A, Costello EJ (2004) Effects of age at first substance use and psychiatric comorbidity on the development of substance use disorders. Drug Alcohol Depend, 75:287-299.

Tamam L, Döngel BD (2018) Yıkıcı bozukluklar, dürtü kontrol ve davranım bozuklukları. In Temel ve Klinik Psikiyatri (Ed O Karamustafalıoğlu):539-550. Ankara, Güneş Yayınevi.

Tay A, Mohsin M, Rees S Silove D (2022) Prevalence and correlates of DSM-IV and DSM-5 ıntermittent explosive disorder amongst Myanmar refugees living in Malaysia: A population-based study. Epidemiol Psychiatr Sci, 31:e57.

Thabrew H, McDowell H, Given KS, Murrell K (2017) Systematic review of screening instruments for psychosocial problems in children and adolescents with long-term physical conditions. Glob Pediatr Health, 4:2333794X17690314.

Tonyalı A, Göker Z, Üneri ÜŞ (2019) Çocuk ve ergen davranım bozukluğu tedavisinde psikososyal müdahaleler. Psikiyatride Güncel Yaklaşımlar, 11:284-303.

Torry ZD, Billick S (2011) Implications of antisocial parents. Psychiatr Q, 82:275–285.

Uysal T (2012) İzmir ili Konak merkez ilçede ilköğretim 1.sınıf, 2.sınıf, 3.sınıf, 4.sınıf ve 5.sınıf öğrencilerinde dikkat eksikliği ve hiperaktivite bozukluğu, karşıt olma karşıt gelme bozukluğu ve davranım bozukluğu prevalansı (Uzmanlık tezi). İzmir, Ege Üniversitesi

Veroude K, Zhang-James Y, Fernàndez-Castillo N, Bakker MJ, Cormand B, Faraone, SV (2016) Genetics of aggressive behavior: An overview. Am J Med Genet B Neuropsychiatr Genet, 171B: 3–43.

Young SE, Smolen A, Hewitt JK, Haberstick BC, Stallings MC, Corley R et al. (2006) Interaction between MAO-A genotype and maltreatment in the risk for conduct disorder: Failure to confirm in adolescent patients. Am J Psychiatry, 163:1019–1025.

Zhang J, Liu W, Zhang J, Wu Q, Gao Y, Jiang Y et al. (2018) Distinguishing adolescents with conduct disorder from typically developing youngsters based on pattern classification of brain structural MRI. Front Hum Neurosci, 12:152.

Wallace GL, White SF, Robustelli B, Sinclair S, Hwang S, Martin A et al. (2014) Cortical and subcortical abnormalities in youths with conduct disorder and elevated callous-unemotional traits. J Am Acad Child Adolesc Psychiatry, 53:456–65.

Wesseldijk LW, Bartels M, Vink JM, Van Beijsterveldt CEM, Ligthart L, Boomsma DI et al. (2018) Genetic and environmental influences on conduct and antisocial personality problems in childhood, adolescence and adulthood. Eur Child Adolesc Psychiatry, 27:1123-1132.

WHO (2019) International Statistical Classification of Diseases and Related Health Problems 10th version (ICD-10). Geneva, World Health Organisation.

WHO (2022) International Statistical Classification of Diseases and Related Health Problems 11th version (ICD-11). Geneva, World Health Organisation

Woodward D, Wilens TE, Yule AM, Di Salvo M, Taubin D, Berger A et al. (2023) Examining the clinical correlates of conduct disorder in youth with bipolar disorder. J Affect Disord, 329:300-306.

Yücel Y (2020) Davranım bozukluğu temel belirtileri gözlenen ön ergenlere yönelik hazırlanan müdahale programının etkililiğinin değerlendirilmesi (Doktora tezi). İstanbul, İstanbul Arel Üniversitesi.

Zohdi Y, Mohammadkhani P, Karipour VA (2022) The role of anhedonia and low arousal in substance use disorder among adolescents with conduct disorder symptoms. Pract Clin Psychol, 10:111-120.

**Authors Contributions:** The author(s) have declared that they have made a significant scientific contribution to the study and have assisted in the preparation or revision of the manuscript
**Peer-review:** Externally peer-reviewed.
**Conflict of Interest:** No conflict of interest was declared.
**Financial Disclosure:** No financial support was declared for this study.