IN REVIEW

Conduct Disorder: A Biopsychosocial Review

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Objective: To review published works on the epidemiology, risk factors, protective factors, typologies, and genetic aspects of conduct disorder (CD).

Method: Findings from refereed journal articles and current texts in the field are briefly summarized.

Results: CD is commonly encountered in clinical practice. Factors strongly predictive of future delinquency include past offenses, antisocial peers, impoverished social ties, early substance use, male sex, and antisocial parents. Factors that moderately predict recidivism include early aggression, low socioeconomic status (SES), psychological variables such as risk taking and impulsivity, poor parent–child relationships, poor academic performance, early medical insult, and neuropsychological variables such as poor verbal IQ. Mildly predictive variables include other family characteristics such as large family size, family stress, discord, broken home, and abusive parenting, particularly neglect. Protective factors include individual factors such as skill competence (in social and other arenas), adult relationships, prosocial and proeducational values, and strong social programs and supports.

Conclusions: We know a great deal about psychosocial risk factors for CD. Some research into protective factors and genetic contributions exists but is in its early stages. Future work will increase our knowledge about subtypes, developmental pathways, and CD treatment.

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Key words: conduct disorder, delinquency, risk factors, protective factors, genetics, subtypes

For our discussion is on no trifling matter, but on the right way to conduct our lives.

 Plato, The Republic

This article summarizes relevant findings on epidemiology, environmental contributions, subtypes, and genetic aspects of CD. Other important aspects, such as assessment, comorbidities, neuropsychiatric vulnerabilities, and treatment have been recently well-reviewed (1–3). This paper updates the reader on current thinking about psychosocial risk and protective factors and hints at emerging biological risk factors, such as genetics. We consulted original articles and reviews in both Medline and Psycinfo, particularly those published over the last 15 years. For further information, please consult the original referenced works. Clinical and public health implications are indicated, where appropriate.

Definitions

CD is 1 of 3 disruptive behaviour disorders (4), the others being oppositional defiant disorder (ODD) and attention-deficit hyperactivity disorder (ADHD). As indicated in the DSM-IV, CD connotes a severe externalizing disorder comprising serious aggressive and antisocial behaviours such as fighting, bullying, cruelty, robbery, forcing sexual activity, firesetting, theft, conning, truancy, and other rule violations. Antisocial behaviour describes actions contrary to the rights of others and rules of society. Adolescent antisocial behaviour that breaks the law (and gets caught) may result in contact with police and the courts; the terms “delinquent” and “young offender” would then apply. Thus, CD represents a constellation of antisocial behaviours; a subgroup of youths with severe CD will be delinquents (5). We will also use the terms “aggression” and “violence” in this overview. Aggression is defined as outward destructive behaviour that results from the confluence of longer-term factors (for example, biological, psychological and personality, family, peer, school, and community), short-term influences (for example, internal states of anger, boredom, or intoxication) and situational opportunity. Violence—a particular form of overt and intentional aggression—uses or credibly threatens to use physical force such as beating, kicking, choking, using a weapon, forcing sex, and throwing objects.
Epidemiology

CD is the most common reason for psychiatric evaluation of children or adolescents (6). Between 30% and 50% of all child psychiatry referrals tend to involve CD (7). The Ontario Child Health Study indicated that for ages 4 to 16 years, 5.5% suffered from this condition (8).

Not all youths with CD have a criminal record, and not all youths with a criminal record have CD. Crime statistics therefore can be informative but extremely controversial. Inflated statistics could result from population growth, police reporting practices, or growth of police forces. Equally possible, underreporting may occur. This could be due to the existence of special youth crime units and more community-based policing, along with conflict resolution strategies rather than formal prosecution. In any event, Statistics Canada data indicate that youth offences increased steadily until 1991 but have declined since. In 1986, there were 136,787 charges laid against youth in Canada; in 1991, there were 171,673; by 1994, these had declined to 143,337. By 1998–1999, courts heard 106,665 adolescent cases in Canada. While this decline in overall numbers is comforting, another disturbing trend is occurring. The proportion of youth charged with violent offences seems to be increasing. In 1986, 408 youths per 100,000 were charged with a violent crime (that is, homicide, attempted murder, assault, sexual offences, abduction, and robbery). In 1995, the rate was up to 938, representing a growth rate of 13% per annum. We expect a 31% increase in the juvenile population over the next 2 decades (9). Accordingly, CD is and will continue to be a fairly significant public health problem, warranting much attention from both the mental health community and the juvenile justice system.

Several researchers have explored CD subtypes and developmental pathways to antisocial or violent behaviour. One such example is life-course persistent (LCP) offending versus adolescence-limited antisocial behaviour (10). The LCP pathway involves early onset, active and diverse delinquency, increasingly serious crime, and continuation into adulthood. It accounts for about 5% to 8% of the offender population, but most offenses. The behaviours to watch for in children and youth are as follows: biting and hitting at age 4 years; shoplifting and truancy at age 10 years; selling drugs and stealing cars at age 16 years; robbery and rape by age 22 years; fraud and child abuse by age 30 years; addictions, underemployment, drunk driving, violent assault, domestic violence, child neglect and abandonment; and psychiatric illness past age 40 years. Adolescence-limited offenders tend to have less preadolescence history of conduct problems. They can offend with peers but may behave well in school and at home. Only 25% of these late starters continue their delinquent careers in adulthood. Similarly, a recent Canadian study found that 4% of kindergarten boys continued through adolescence to have a high rate of aggression and that the 2 most predictive variables were teenage pregnancy and low educational achievement in the mother (11). Thus, more and earlier psychosocial intervention—especially with the early-onset aggressive and antisocial children and their high-risk parents—would hopefully save the child, family, and society much emotional, physical, and financial damage.

Psychosocial Risk Factors

Risk factors are those individual, familial, or environmental factors that have been shown in research to increase a child’s risk of future conduct problems. While 20% to 30% of adolescents commit a violent act, only 5% to 8% of males and 3% to 6% of females are responsible for most such acts (12). Knowledge of these youths’ characteristics—especially if used to inform effective interventions—could be quite therapeutic and preventive in reducing their suffering and associated social damage.

A huge body of longitudinal research that discusses risk factors exists (for example, 13–16). There are, however, a great variety of methodologies, samples, measurements, and outcome variables. Accordingly, metaanalyses of these prospective studies also exist (17,18). Clinical implications will be discussed where relevant.

Strongly Predictive Risk Factors

Prior Antisocial Behaviour. Prior antisocial behaviour (for example, stealing, property destruction, early sexual intercourse, and drug selling) is probably the strongest predictor of future offending for males, but not necessarily for females (19). Early onset of delinquent behaviour has consistently predicted more chronic and serious violence and offending in many studies (20).

At any age of childhood, past charges, aggression, and violence raise one’s clinical suspicion of future delinquency risk. In one study, 50% of boys convicted for a violent crime between age 10 and 16 years were convicted again of violence by age 24 years, compared with 8% of those not convicted as youths (21). Also, discipline problems at ages 8 to 10 years, self-reported conduct problems by 14 years, regular cigarette smoking by 14 years, and sexual intercourse by 14 years predicted later violence in males (22). An early history of problematic behaviours and delinquency should therefore be taken fairly seriously, because these high-risk children and youths tend not to grow out of these behaviours and may require more intensive and sustained intervention.

Antisocial Peers. By adolescence, delinquent peers contribute greatly to the overall spread of antisocial behaviour and delinquency. Youths with CD tend to have problematic families in the first place, and they are also rejected frequently by prosocial peers. As they separate, they can become attached to delinquents’ mutual friends or to other youths with longer criminal histories (23). Further, gangs are also responsible for a significant proportion of serious and violent offenses (24); gang involvement appears to add an additional risk level
above and beyond delinquent peers and groups. Clinically, it may be easier to steer children toward prosocial peers and activities before adolescence.

**Social Ties.** This category includes low popularity and few social activities, especially in adolescence. Children who suffer from early peer rejection are more likely to be bullied, disruptive in class, and socially aggressive in interactions (25). These children often already have higher levels of aggressive and externalizing behaviours; thus, peer rejection likely increases their risk for future conduct difficulties (26). The clinical implications are several. Getting a sense of the youth’s extracurricular hobbies, interests, and activities is important and will help build a therapeutic alliance. In addition, exploring personality traits, such as neuroticism or extraversion, could be relevant, as in the Five Factor Model of personality (27). The presence of cluster A personality traits—particularly paranoid or schizoid—should be ascertained. Caution, however, should be used in diagnosing personality disorder in children and youth.

**Substance Use.** Early cigarette smoking and alcohol or other substance use, particularly before age 12 years, confers independently a greater risk of future antisociality. This may be due to any of 3 interrelated types of associations between drugs and crime: psychopharmacologic, economic compulsive, and systemic (28). Psychopharmacologic mechanisms increase violent outcomes more directly, either through intoxication or withdrawal. Economic-compulsive associations refer to situations in which children (or adults) commit a crime to obtain money to purchase drugs. Systemic issues relate to involvement in the drug trade (for example, dealers’ disputes, problems with informers, and punishment for adulterated drugs or unpaid debts). The 3 mechanisms outlined above support the notion that substance use leads to antisocial behaviour. There are, however, many other postulated explanations: youths with CD may self-medicate with marijuana if they have ADHD; situational factors such as bars or raves may increase the propensity for aggressive behaviours in vulnerable youths. No single model has yet been found to neatly explain the relation between substances and conduct problems, and we likely need to develop more complex interactive models, because the rate of comorbidity between substance abuse and CD is as high as 91% (29).

**Male Sex.** In studies and statistics, being male has consistently been shown to confer much higher risk of CD (the ratio of boys to girls is 5:1). Why the sex difference? Psychological explanations include differences in socialization and advanced adaptive development in girls. There are, however, likely hormonal, anthropological, and evolutionary aspects, as well. Even so, so-called indirect aggression or relational aggression likely applies more to girls (30). This involves such acts as spreading rumours, shunning or ostracizing peers, and conscripting others to “get even” physically. Criminology data indicate that males are more likely to be arrested for violent crimes, and females for “status offenses” (for example, truancy, prostitution, running away, underage drinking, or purchasing tobacco). When aggressive, girls are more likely to fight with a parent or sibling than with strangers—34% vs 9% for boys (31). Consequently, a clinical search for interpersonal or covert antisocial behaviours in females may yield additional information.

**Antisocial Parents.** Having a convicted mother, father, or sibling significantly predicts boys’ convictions. Further, this finding holds both for self-report and official criminal records (32). One study that used the Danish National Register found that men aged 18 to 23 years whose fathers had at least 2 criminal convictions were more likely to commit violent criminal acts (33). Whether this reflects genetic or social learning mechanisms, or both, is being debated (34).

**Moderately Predictive Risk Factors**

**Early Aggression.** Many have noted stability and continuity in early-onset aggressive behaviours in males (35). Having an aggressive style of behaviour and interaction may, however, have earlier precursors. Persistent attention-seeking at age 12 months has been found to relate to noncompliance at age 18 months, which then correlates with aggression at age 24 months. This has been related to maternal reports of externalizing problems at age 36 months (36).

Interestingly, in one study, two-thirds of 10- and 13-year-old boys with high teacher-rated aggression scores had, by age 26 years, a criminal record of violence. This correlation did not hold up for girls (37). Some researchers have opined that by age 8 years, children have an idiosyncratic aggression level that is fairly stable over time (38). The opposite end of the debate is, however, that aggression is not a stable trait and is entirely influenced by situational and contextual factors (39). Clinically, a careful history of the developmental course of various oppositional, aggressive, and conduct behaviours may suggest an LCP trajectory and its implied need for intensive treatment and resources.

**Low Family Socioeconomic Status (SES).** So many studies have found correlations between poverty and crime that it is considered by some to be a given that poor families and neighbourhoods are associated with delinquency. This is highly contextual and not necessarily causal, however. In the US, we found a difference between poor families in inner-city neighbourhoods and “other urban poor” neighbourhoods, with inner-city communities having delinquency rates over 2.5 times the national average (40). Further, families characterized by social isolation, broken homes, sparse networks, weak social supports, and poverty are much more likely to physically abuse children, increasing their risk of aggression (41).
From a public health perspective, it has been found that good parenting, stable family environment, and good early health and development can mitigate against the effects of impoverishment and unemployment; thus, the perceived association of poverty with crime may be justified only if there are biological and psychosocial vulnerabilities operating together (42).

**Psychological Characteristics.** These include a high activity level, risk taking, impulsiveness, and a short attention span. Together, these features were associated in a Swedish study of boys at age 13 years with a much higher rate of arrest for violence by age 26 years than was found for boys without these characteristics (43). A relevant finding in the adult literature is that antisocial personality disorder (APD) is associated with traits such as high novelty seeking (with impulsive and tempestuous behaviour), low harm avoidance (for example, fearless and daring), and low reward dependence (that is, aloof and independent) (44).

Prospective and retrospective studies have linked hyperactivity and impulsivity to later violent behaviour (45,46). In fact, several studies suggest that youths with comorbid ADHD and CD in childhood are at high risk for chronic and persistent conduct and attention problems (47,48). This comorbidity therefore should be detected and aggressively treated in an attempt to reduce future risk.

**Parent–Child Relationships.** These include discipline practices (for example, mixed, inconsistent, or punitive), minimal involvement, poor supervision, low emotional warmth, and a negative attitude toward the child. Numerous studies have shown that these parenting practices are consistently linked with later delinquency and substance abuse (49). Similarly, low involvement and interaction—particularly between sons and fathers at age 8 years—was also found to predict later violence (22). In another study, a high degree of “negative family labelling” of the youth (a measurement of family bonding) was found to be associated with sexual aggression in later teenage years from ages 13 to 19 (50). A positive parenting style has been found to improve the outcome when environmental risk factors such as poverty exist (51). Clinically, family-focused treatments, such as Functional Family Therapy, Parent Management Training, or Multisystemic Therapy are among the most promising to reduce recidivism (1).

**School Attitude and Performance.** This category includes a low interest in education, dropping out, low school achievement, and truancy. Poor academic achievement in elementary school, and particularly in high school, has been related consistently to later conduct difficulties (52).

There has been a specific linkage demonstrated between attention deficits and underachievement (53). Thus, ruling out comorbid subtypes of ADHD at any age is imperative. Reviewing school records is time-consuming but invaluable.

We recommend intelligence and achievement testing (54). If possible, neuropsychological testing for verbal and executive function deficits, among other developmental delays, is also indicated.

**Medical and Physical Conditions.** These include pertinent findings in developmental history, medical conditions, and physical development. Prenatal and delivery complications somewhat predict, in particular, later violent offending (55). In a study to test biosocial interactions, birth complications (for example, forceps extraction, breech delivery, umbilical cord prolapse, preeclampsia, and long birth duration) greatly increased the risk of violent offending in adulthood, but only when associated with early child rejection (for example, unwanted pregnancy, attempted abortion, and institutional care for at least the first 4 months of life) (56). This has profound medical and public health implications. In similar interactional style, large body height and weight at age 3 years, coupled with fearlessness and novelty-seeking traits, were found to predict aggression at age 11 years (57). Other medical and psychiatric conditions worth ruling out include minor physical anomalies, head injuries, neurological conditions, bipolar disorder, dissociative disorders, and paranoid disorders (1,2,86).

**IQ.** Most studies have found that IQ scores of children with CD are on average 8 points lower than those of nondelinquent children, even when other variables such as SES, ethnicity, academic achievement, and motivation are controlled. Another consistent finding is that performance IQ is greater than verbal IQ (58). This strongly suggests specific language difficulties and possible neuropsychiatric dysfunction in children and youths with CD. Actually, when the subset of early-onset delinquents was examined, they were found to have IQ scores 17 points lower on average than those of nondelinquent subjects, a finding also observed in children with early brain damage (59,60). Thus testing, where available, could aid assessment and inform us about needed educational resources.

**Mildly Predictive Risk Factors**

**Other Family Characteristics.** These refer to factors such as high family stress, large family size, and marital discord. An early finding was that boys raised in high-conflict families were more likely to be convicted later of a violent crime (61). More specifically, being exposed to violence between parents increases the risk of later violence in the children when adults (62). This, however, has not always been found: in the Seattle Social Development Study, family conflict at age 10 years was not correlated with violence, according to self-reports, at age 18 years (63).

**Broken Home.** This category includes both family breakdown (for example, divorce) and separation from parents for other reasons. The relation between broken homes and child or youth aggression is complex, because families separate for many reasons. Notwithstanding this, parent–child separation
before age 10 years has been found in more than 1 study to predict convictions for violence in later adolescence and up to age 21 years (64).

Abusive Parents. This includes all categories such as emotional, physical, and sexual abuse, as well as maltreatment and neglect. It has been consistently found that, compared with those without an abuse history, adults who were sexually abused as children were less likely to commit violent crimes than were control subjects. Adults who were physically abused were slightly more likely, while those neglected as children were the most likely, to be arrested for violence (65). Thus, neglect—the most common and highest-risk form of abuse—should be seen as a serious public health issue with implications for violence prevention.

Risk Factors: Synthesis

No single factor accurately predicts later conduct problems. Factors aggregate to produce increased vulnerability in these children. An excellent example is the Cambridge Study in Delinquent Development (66), in which 411 boys in working-class London, England, were followed from age 8 to 40 years. Vulnerability scores were calculated based on 5 risk factors: low family income at age 8 years, large family size by age 10 years (4 or more biological siblings), low nonverbal IQ at age 8 to 10 years, and poor parenting (harsh or inconsistent discipline and parent conflict) at age 8 years. For those with no risk factors, convictions for violence were increased by only 3%, compared with control subjects. Having 4 to 5 factors present, however, increased one’s risk by 31%. Thus, the interaction between individual and environmental risk factors really determines the overall variance in the outcome of these youths.

Protective Factors

Protective factors are not simply the absence or opposite of risk factors, although this is sometimes the case. In fact, despite exposure to multiple known risk factors, many children avoid serious antisocial behaviour (67). Protective factors are best defined as those variables that offset the effects of risk factors. Research, however, has largely ignored these factors in favour of elucidating risk. It is quite likely that more emphasis on these variables could significantly influence practice and policy.

Individual Protective Factors (13,68)

Female Sex. Being female may be protective via different parenting or socialization patterns; also, girls generally mature and acquire skills more quickly.

High Intelligence. This is as measured by standard IQ testing. Such testing, however, has been criticized as too limited with respect to types of intelligence and cultural diversity.

Positive Social Orientation. This would likely include the absence of antisocial attitudes and cognitive biases, such as interpreting social cues as necessarily hostile or threatening.

Resilient Temperament. This usually means possessing good coping skills and the ability to endure stress, hardship, or trauma without mental decompensation.

Competence at a Skill. Attaining at least 1 area of good ability at a skill, hobby, or interest has been noted to be protective, perhaps leading to other prosocial activities and interactions.

Anxiety. According to some research, having anxiety, worry, and guilt tends to protect against the development of antisocial behaviour.

Social Factors (67,69,70)

Warm, Supportive Relationships with Adults. Positive interactions, warmth, or mentorship from adults has been found to be greatly beneficial in influencing away from CD.

Individual and Family Commitment to Social Values Such As Prosocial Norms or Academic Achievement. Aspiring to universal values such as positive social interactions with others and school success helps children decrease their risk of conduct problems and increases their achievements and opportunities.

Recognition for Involvement in Positive Extracurricular Activities. Not just being involved in prosocial activities but actually being acknowledged, and even rewarded, helps perpetuate such positive behaviour.

Societal Factors (71,72)

Increased Economic Equality and National Social Program Support. Developed countries with larger social-program spending tend to have lower homicide rates.

Social Organization. Strong and stable community institutions (for example, church, neighborhood organizations, and extended families), as opposed to disorganized, chaotic, and crumbling communities, tend to be protective.

Genetic Contributions

It is well known that psychiatric disorders often run in families. Simple mendelian inheritance, however, is not found with such complex conditions. Given the diagnostic heterogeneity of CD, a more appropriate phenotype, such as aggressivity or violence, is used in research. Genetic studies can be broadly categorized into 2 types: those using twin, adoption, or familial methods, and those using molecular biology methods. Discussing the science behind these is beyond the scope of this article. One excellent representative twin study looked at the relation between child behaviour checklist (CBCL) syndromes such as mood and anxiety disorders, attention deficits, antisocial behaviour, and aggressive behaviour (73) and temperament ratings using the Emotionality, Activity,
Sociability Temperament Survey (74,75). The study looked at heritability (the relative impact of genes as opposed to environment) and operated under the assumption that temperament consists of stable and largely genetically determined traits. Emotionality in boys and high activity scores—particularly in younger children—were found to predict aggressive behaviour. Further, aggressive behaviour, but not general antisociality, was found to have significant association with temperamental traits and higher heritability. Among the drawbacks of such studies, however, are reporting biases and environmental influences on gene expression.

Some of these problems are addressed by molecular approaches such as association studies, candidate gene studies, and linkage analysis (76). This discussion will focus on the search for candidate genes, which entails educated guesses about known genes that may be related to the study of aggression.

There have, for example, been 2 reports finding an association between novelty seeking (characterized by qualities such as being impulsive, quick tempered, and seeking stimulation) and the dopamine receptor gene DRD4 (77,78). Unfortunately, this association was not replicated in another study (79).

A later study looked at catechol-O-methyltransferase (COMT) (80). This enzyme is involved in the breakdown of the neurotransmitters norepinephrine, epinephrine, and dopamine. Strous found that having 2 copies (homozygosity) of the low-activity allele of the COMT gene was associated with medium-to-high risk of dangerous behaviour in subjects with schizophrenia. Monoamine oxidase (MAO) activity is also genetically controlled by a gene on the X chromosome. Low MAO activity has been associated with violent offenders (81) and, in a large family, with several male subjects displaying mental retardation and aggression (82).

Finally, the gene for tryptophan hydroxylase (the rate-limiting enzyme in serotonin production) has also been studied. Manuck and others found that people who had at least 1 copy of the TPH*U allele had higher anger and aggression scores (83). This genotype has also been associated with impulsive aggression in male patients with personality disorders (84) and in violent suicide attempters (85).

There are some tantalizing early findings in this field; however, more work is needed. We are progressing on genetic markers, as well as on specific phenotypes: in the future, it is likely that specific genes will be linked with, and provide information about, risk factors for aggressive and violent behaviours. Early identification can then lead to more successful prevention.

Clinical Implications

- Conduct disorder will continue to occupy much energy and interest from the public and the profession.
- Knowledge of known risk and protective factors can guide assessment and treatment recommendations.
- Emerging research, particularly neurobiological research, will greatly influence our future thinking and practice regarding antisocial behaviour in children and youths.

Limitations

- Studies cited have differed in methodologies. Thus, caution is indicated when extrapolating directly to clinical populations.
- In practice, youths and families usually exhibit various combinations of risk and protective factors and must be conceptualized in more complex terms than actuarial analysis of unidimensional factors.
- Biological risk factors were not addressed. These include structural or functional neuroimaging findings (for example, prefrontal cortical deficits), neurophysiological variables (such as neurotransmitter roles), and psychophysiological variables (such as low heart rate and underarousal).

Summary

Evidence from clinical and criminological sources indicates an increasing trend of aggressive and violent behaviours among youths within an overall pattern of declining offending. Most of the children and youths who commit antisocial acts come into our offices daily. Knowledge of risk and protective factors helps assessment, recommendations, and treatment. Incarcerated youths and those with CD who are treated in mental health settings are quite similar (86). They suffer from neurological, psychiatric, and cognitive difficulties; they also have similar ages of behavioral problem onset and similar family backgrounds. Analysis of risk and protective factors can guide early prevention initiatives and interventions. Caution regarding overinterpretation of the literature is warranted, however: statistical correlation in studies does not equal causation. Many life experiences also intervene to mediate between immutable risk factors (for example, male sex) and risk. Lastly, our understanding is still evolving in this area, and clinicians may expect further developments from the biological, psychological, sociological, criminological, anthropological, and philosophical disciplines. In particular, studies from genetics, neuroimaging, and other biological sciences, when coupled with psychosocial research, will add immensely to the field. All of these will be necessary as our society debates prevention, treatment, and punishment for children, youths, and adults with antisocial behaviours.
References


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Résumé—Trouble des conduites : une étude biopsychosociale

Objectif : Examiner les travaux publiés sur l’épidémiologie, les facteurs de risque, les facteurs de défense, les typologies et les aspects génétiques des troubles de conduite (TC).

Méthode : Les résultats des articles de revues examinés et des textes courants du domaine sont brièvement résumés.

Résultats : Les TC se rencontrent souvent dans la pratique clinique. Les facteurs fortement prédicteurs de délinquance future incluent les infractions passées, les camarades antisociaux, des liens sociaux médiocres, la consommation précoce de substances, le sexe masculin et des parents antisociaux. Parmi les facteurs qui prédissent modérément la récidive, on trouve les agressions précoce, le faible statut socio-économique (SSE), les variables psychologiques comme la prise de risques et l’impulsivité, les mauvaises relations parent-enfant, un faible rendement scolaire, une blessure médicale précoce, et les variables neuropsychologiques comme un piétre quotient intellectuel verbal. Les variables peu prédicteurs comprennent d’autres caractéristiques familiales comme une grande famille, le stress familial, la discorde, la famille désunie et la violence des parents, en particulier, la négligence. Les facteurs de défense incluent des facteurs individuels comme les compétences (dans le domaine social et autres), les relations adultes, les valeurs prosociales et proéducatives ainsi que de bons programmes et soutiens sociaux.

Conclusions : Nous en savons beaucoup sur les facteurs de risque psychosociaux des TC. Il existe quelques études sur les facteurs de défense et la contribution génétique, mais elles en sont aux premiers stades. Les travaux futurs accroîtront nos connaissances sur les sous-types, les mécanismes de développement et le traitement des TC.