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Article *in* International Journal of Forensic Mental Health · February 2010

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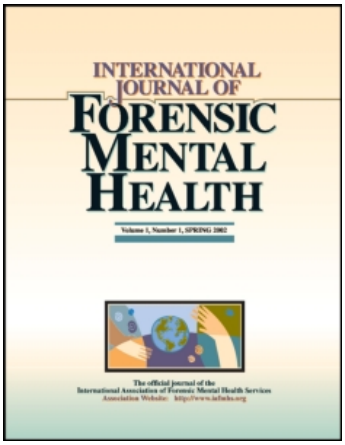

International Journal of Forensic Mental Health
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t906637422

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Online publication date: 13 May 2010

To cite this Article Kofler-Westergren, Birgitta , Klopf, Johannes andMitterauer, Bernhard(2010) 'Juvenile Delinquency: Father Absence, Conduct Disorder, and Substance Abuse as Risk Factor Triad', International Journal of Forensic Mental Health, 9: 1, 33 — 43
To link to this Article: DOI: 10.1080/14999013.2010.483345
URL: http://dx.doi.org/10.1080/14999013.2010.483345

INTERNATIONAL JOURNAL OF FORENSIC MENTAL HEALTH, 9: 33–43, 2010

ISSN: 1499-9013 print / 1932-9903 online
DOI: 10.1080/14999013.2010.483345

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Juvenile Delinquency: Father Absence, Conduct Disorder, and Substance Abuse as Risk Factor Triad

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This study investigated risk factors for juvenile delinquency within family structure, personality, and diagnostic variables in 75 juvenile delinquents referred for forensic assessment. A considerable amount of detrimental family characteristics were demonstrated: 66% of all juveniles had experienced father deprivation, 20% had never been living with the father, and 25% had an alcoholic father. The most negative effects were registered in 32 juvenile delinquents growing up without a father and also reporting a negative relationship to their mother. Here, conduct disorder, alcohol abuse as comorbidity, and paternal alcoholism were diagnosed more often as compared to juveniles experiencing father deprivation but who reported a positive relationship with their mothers. In a comparison between violent and nonviolent offender subgroups, a significantly higher frequency of substance abuse was obtained in the violent offenders. Moreover, trends towards more father deprivation and conduct disorder were registered in the violent offenders. Finally, results from multivariate analyses of all variable sets pointed to a triad of risk factors involved in juvenile violent offending: a diagnosis of conduct disorder, family psychopathology, especially father deprivation, and substance abuse. The role of protective influences and implications for intervention programs and prognosis are discussed.

Keywords: juvenile delinquincy, risk factors, father abuse, substance abuse, conduct disorder

INTRODUCTION

Juvenile delinquency is one of the most serious problems of modern society with multiple negative effects on health, educational, financial, vocational, and judicial systems. Over the past decade, trends have shown drastic increases in several countries. In the United States, juvenile crime rates for the ages 15 to 17 went up as much as 42% from 1989 to 1994 (Tarolla, Wagner, Rabinowitz, & Tubman, 2002). Similarly, an analysis of juvenile crime trends in West European countries during the post-war period (1950–1995) reports an overall rise; especially in violent crimes (Estrada, 1999). In Austria, most recent official crime statistics for the year 2008 show a dramatic increase of 8.6% in juvenile offending, despite an overall decrease in global crime rates. Even more disquieting is the increase of 25.8% in the younger age group of 10 to 14 years, especially considering results of numerous surveys showing that conduct disorder in childhood predicts adult antisocial personality disorder (Cambridge Study in Delinquent Development; Farrington, 2005).

As Cierpka, Lück, Strüber, and Roth (2007) point out in their analysis on the ontogenesis of aggressive behavior, there is a multitude of predisposing, mediating, and triggering intra- and extra-individual factors to be considered. Several recent reviews (Krampen, 2001; Seiffge-Krenke, Roth, & von Irmer, 2006) on the development of aggressive and delinquent behavior stress the importance of family risk factors, such as divorce, separation, changing family structure with an increasing tendency towards patchwork families, as well as generally unstable and dysfunctional family situations. Since the latter decades of the 20th century, single parenting is increasingly common in developed countries. Cabrera, Tamis-LeMonda, Bradley, Hofferth, and Lamb (2000) estimate the proportion of children living with only one parent (mostly the mother) at some time during childhood to increase beyond 50%. Several studies have investigated the consequences in several areas of child development. Barnow, Lucht, and Freyberger (2001) found that aggressive adolescents differed from a nonaggressive control group by an increased exposure to broken homes. According to results

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from a population-based study in Sweden (Ringbäck Weitoft, Hjern, Haglund, & Rosén, 2003), children growing up with a single parent show increased risks of psychiatric disease, suicide or suicide attempts, injury, and addiction as well as intentional violence. The Pittsburg Youth Study (Loeber, Farrington, Stouthamer-Loeber, & van Kammen, 1998) reported more marital conflict among parents of conduct disordered boys. Similarly, the Christchurch Study in New Zealand (Farrington, 2005) showed parental separation and single-parent families to be significant predictors of conduct disorder. The Dunedin Study in New Zealand (Arsenault, Moffitt, Caspi, Taylor, & Silva, 2000) reports that 28% of violent offenders were from single-parent families compared to 17% of nonviolent offenders and 9% of unconvicted boys. According to the longitudinal Newcastle 1000-Family Study, marital disruption (divorce or separation) in a boy's first 5 years predicted his later convictions up to age 32 (Farrington, 2005). A meta-analysis by Stevenson and Black (1988) showed that father absence was accompanied by aggressiveness in older boys. They conclude that disruptions in the father-son relationship may be particularly serious for adolescents, who may express their masculinity by externalizing behavior.

Until recently, research on child and juvenile psychopathology has shown a deficit with respect to the role of fathers (Laucht, 2003). As Phares points out (1992), there has been a tendency to "blame the mothers" for the problems of their children. In general, fatherhood in the 21st century can be characterized by two contrasting trends (Cabrera et al., 2000): increased absence of the father on the one hand, but at the same time increased involvement of the present father. Fthenakis (1985, 1992) devoted much of his research to the consequences of changing family structure. Wallerstein (1989) has emphasized the most drastic consequences of father deprivation, based on criminal statistics from the U.S.: "more than 1/3 of children from divorced families suffer from severe psychological disorder. Almost 2/3 of all rapists, 3/4 of juveniles convicted of homicide and a similar high proportion of juvenile prisoners grew up without a father." Petri (1999) calls the European post-war children "the fatherless generation" which in turn—not by a military but a marital struggle—produces the next fatherless generation. Yet, compared to past generations, fathers (when present) nowadays are spending more time with their children than in many past decades (Pruett, 2008). A review by Pleck (1997) over the past 20 years yielded an increase in proportional engagement (about 30%) as well as availability and accessibility (50%) of fathers as compared to the past generation.

In their review, Phares and Compas (1992) conclude that numerous behavior characteristics, personality traits, and psychological disorders of the father constitute risk factors for psychological deficits in their children. Correlations have been found especially to externalizing disorders such as hyperactivity, aggressive, and delinquent behavior. For instance, sons of alcoholic fathers show increased risk for developing alcohol problems as well as conduct disorder (Petermann, 1995). In the prospective-longitudinal Mannheim Study of Risk Children (Furtado, Laucht, & Schmidt, 2002), 219 children were analyzed from birth up to the age of 11 years. A significantly higher rate of expansive symptoms and disorders was found in children of alcoholic fathers. Wallander (1988) found that paternal alcohol abuse was associated with the number of arrests at the age of 18. Summing up the evidence, Phares and Compas (1992) conclude that "evidence indicates that the presence of paternal psychopathology is a sufficient but not necessary condition for child or adolescent psychopathology." There is also a need for an analysis of protective factors. For instance, what maternal factors may protect adolescents from detrimental effects due to paternal absence or psychopathology? Furthermore, as Rothbaum and Weisz stress in their meta-analysis of 47 studies (1994) on the association between parenting and child externalizing behavior, there is a strong need for separate analyses of delinquent samples and general population samples. Seiffge-Krenke et al. (2006) compared 241 male adult prisoners with long and short prison sentences in personality structure, family stress factors, and coping style. The single factor with the highest predictive power concerning the length of prison sentence was the family factor "growing up without parents." In addition, one-third of all prisoners had fathers with alcohol problems.

Personality traits such as sociability, impulsiveness, and inhibition have also been linked to delinquency (Dunedin Study in New Zealand; Caspi, 2000). Lynam and Moffitt (1995) showed that impulsiveness and low IQ were independent risk factors for delinquency. Also, hyperactivity and poor concentration predict violent offending (Pittsburgh Youth Study; White, Moffitt, Caspi, Bartusch, Needles, & Stouthamer-Loeber, 1994). In a longitudinal study, Raine, Brennan, Farrington, and Mednich (1997) found that disinhibition and reduced anxiety levels were associated with later aggressive behavior. With respect to diagnosis, research findings demonstrate that the majority of juvenile offenders (between 75 and 100%) show conduct disorder and/or antisocial personality disorder (Tarolla et al., 2002). Violent behavior is associated with destructive aggression and with regard to children and juveniles it is usually classified as social conduct disorder, in line with diagnostic manuals (DSM-IV, ICD-10). For adult criminals, however, the respective diagnosis would be antisocial personality disorder. Although according to classification criteria the diagnosis antisocial personality disorder should not be assigned before the age of 18, studies have reported overlapping characteristics between adolescent conduct disorder and adult antisocial personality disorder (Loeber, Burke, Lahey, Winters, & Zera, 2000; Vloet, Herpertz, & Herpertz-Dahlmann, 2006). According to Herpertz and Saß (2000), it is estimated that at least 10% of juveniles with conduct disorder develop an antisocial personality disorder. Therefore, it is essential to identify risk factors associated with the development of juvenile delinquency, also when considering recidivism

potential (Marczyk, Heilbrun, Lander, & DeMatteo, 2003). Considering the above-mentioned trend towards more violent crimes among children and juveniles, it is also of great theoretical and practical importance to differentiate between violent and nonviolent forms of delinquency (Arseneault et al., 2000; Moffitt, Caspi, Harrington, & Milne, 2002; Cierpka et al., 2007).

Highly significant findings are also demonstrated for the role of alcohol and other drugs with respect to delinquency (Krahe & Greve, 2002; O'Neill, Lidz, & Heilbrun, 2003). According to Tarolla et al. (2002), estimates of substance abuse among juvenile delinquents range between 27% and 63%. In the Dunedin Study (Arseneault et al., 2000), subjects with drug abuse (alcohol and marihuana) were significantly more likely to commit violent crimes. Furthermore, 50% of all subjects meeting the criteria for a mental disorder had at least one other disorder. The authors conclude that their findings are similar to those from the United States, Scandinavia, and Israel. Therefore, in assessing violence risk it is also important to consider comorbidity.

Moreover, the role of biogenetic factors and their interplay with psychosocial variables in the development of aggressive behavior has been repeatedly stressed in the past decade (see for instance Rhee and Waldman, 2002; Caspi, McClay, Moffitt, Mill, Martin, et al., 2002; Moffitt, 2005; Nilsson, Sjöberg, Damberg, Leppert, Öhrvik, et al., 2006). Findings from these studies have triggered new and more fruitful discussions (Viding, 2004; Reif, Rösler, Freitag, Schneider, Eujen et al., 2007; Miller, 2007; Torgersen, 2009) around the old nature versus nurture debate (for review see Rutter, 2002), extending the polarizing perspective to a gene X environment interaction one (Caspi and Moffitt, 2006; Wermter, Laucht, Schimmelmann, Banaschewski, Sonuga-Barke, et al., 2009), thus reconciling strict hereditarian and environmentalist viewpoints. Specifically, it must be considered that effects from environmental risk factors also include some degree of genetic mediation (i.e., parental qualities are also genetically influenced), and, vice versa, some genetic risk factors have demonstrable effects only if combined with specific environmental risk exposure (Moffitt et al., 2002; Wermter et al., 2009). As a further consequence, such "endophenotypes" are also inherited. Therefore, as Torgersen (2009) points out, in addition to gene-experience interactions we are also "... dealing with an unknown amount of gene-gene interaction" (p. 629). This, however, remains the topic of future collaborative research (Caspi and Moffitt, 2006) between neuroscience, genetic epidemiology and molecular genetics, summarized by Kendler (2005) as 'psychiatric genetics.'

As illustrated by the research findings summarized above, there are multiple and diversified pathways towards explaining antisocial behavior. Therefore, the preferred approach is one of explanatory pluralism rather than either biological or environmental reductionism. Obviously, the challenge is to identify such mediating factors across several variable dimensions which may interact to increase or reduce the risk for the development of delinquent behavior, without necessarily attributing causality. And as Rutter (2002) succinctly puts it: "there is no necessary connection between the causes of the origin of a risk factor and its mode of risk mediation" (p. 4). In an attempt to also identify risk factors which may help to differentiate between violent and nonviolent forms of delinquency, the present study investigated family background, personality factors, intelligence and concentration test achievement as well as diagnostic characteristics in a sample of 75 juvenile delinquents referred from juvenile court for psychological and forensic-psychiatric assessment. Specifically, a comparison between subgroups with violent and nonviolent offenses addressed the following questions:

1. Do juvenile violent offenders show more general family disruption, paternal absence and/or psychopathology compared to nonviolent offenders?
2. Do juvenile violent offenders show more psychopathology with respect to personality and psychiatric diagnostic measures?
3. Do juvenile violent offenders show more comorbidity than nonviolent offenders, with special emphasis on substance abuse?
4. Are there differences in test achievement between violent and nonviolent offenders?

METHOD

Subjects

The sample consisted of 75 juvenile delinquents (61 males, 14 females) between 14 and 18 years of age (age, $M = 16.5$ years; $SD = 1.4$) referred to the Department of Forensic Neuropsychiatry of the University of Salzburg/Austria from the local juvenile court for psychological/psychiatric assessment and forensic expert opinion with regard to criminal responsibility. At our forensic department, forensic assessment generally includes both psychological and neuropsychiatric evaluation. The juvenile offenders were referred by the investigative prosecutor ahead of main trial, the forensic report being regarded both as an additional piece of evidence and support for the legal decision. According to Austrian legislation, the minimum age of criminal responsibility is 14 years. This corresponds to the average age within other EU countries (Schepker & Toker, 2007). Up to the age of 18, offenders are considered as juveniles with milder sentences and emphasis on compensation and probation measures. The legal question under concern regards mainly §4/2/1 JGG (juvenile court law) which describes maturation delays in the individual psychobiological development as reasons for not exacting punishment, thus excluding criminal responsibility in line with §11 StGB (Austrian criminal code). Specifically, this immaturity must be associated either with a disability to discriminate between right and wrong and/or a disability to

act accordingly. Furthermore, in some cases legal prognosis (in line with §21 StGB) or need for drug therapy (§22 StGB) were to be considered. Although in Austria the decision to refer a person accused of a crime for forensic evaluation remains at the discretion of the responsible district prosecutor, in cases of juvenile delinquents this is generally the rule. For this reason, our sample can be regarded as representative of juvenile offenders, at least for Austria.

Forensic characteristics: 30/75 (40%) juvenile delinquents were pending trial in confinement, the rest on release; 58/75 (77%) had no previous convictions, 7/75 (9%) had one, 4/75 (6%) had between 2 and 3 prior convictions, and 6/75 (8%) had 4 to 5. Violent crimes against another person was most frequent (52%), followed by property crime (21%), sexual assault (17%), and others (10%). With respect to the forensic basic question, only 10/75 (13%) juvenile delinquents were considered fully criminally responsible, whereas 18/75 (24%) were judged as immature in the legal sense of §4/2/1 JGG and not criminally responsible. The majority of the investigated adolescents, 45/75 (60%), however, were assessed as partly criminally responsible due to detrimental developmental factors. In adolescence, some degree of immaturity can be regarded as normative, due to the often observed differences between levels of biological/physiological and psychosocial maturity. The individual question of forensic relevance was if and to what extent it affected the offense. In 82% of the relevant cases the legal prognosis was considered to be positive, and 64% of the juveniles suspected of substance abuse were confirmed as drug dependent and in need of therapy.

Demographic characteristics: With regard to level of school education, 20/75 (27%) had visited a special school for mentally retarded or conduct disturbed children, 7/75 (9%) were still in elementary school, 31/75 (41%) had finished it and 17/75 (23%) had completed vocational school. There was not a single secondary scholar in the sample. 15/75 (20%) were in the working process, 25/75 (33%) were still in school, and almost half of the delinquent sample (35/75, 47%) were unemployed.

Procedure

The extensive evaluation procedure (about 3 hours in duration), preceded by an inspection of legal files sent by court, a study of medical history and records, including all available information from parents/relatives or other caretaking institutions, consisted of:

1. a physical examination including EEG, blood and urine analysis;
2. an exploration including family variables (see later section), educational/professional aspects, medical and drug history;
3. psychiatric assessment (according to ICD-10 classification system);
4. standardized tests of intelligence (Hamburg-Wechsler), personality (Freiburger Personality Inventory and International Personality Disorder Examination), psychiatric scale of delusion and depression (PDS by von Zerssen), and performance measures of attention and concentration (Vigilance, Cognitrone, d^2 test). For legal prognosis, a test of dangerousness (FAF by R. Hampel and H. Selg) was administered.

Of course, the exploration considered more closely the offense itself and its circumstances.

Family Variables

A separate scoring sheet was designed to consider the following aspects of family history and actual situation:

- psychopathology of parents (such as psychiatric disease or substance abuse);
- family structure from birth to the age of 5 (intact family, single-parent, grandparents, foster home or institution);
- living together with father and mother (continuously, temporarily, or never) up to time of evaluation;
- relationship to parent after separation;
- presence of stepparent;
- self-reported quality of relationship to each parent and/or stepparent.

RESULTS

Data calculation and statistical analyses were conducted with the Statistical Package for Social Sciences (SPSS 15.0 for Windows).

Descriptive statistics for the whole sample

Family variables: With regard to the delinquents' families, a considerable amount of psychopathology (46%) was registered. The major factor with a 25% proportion was paternal alcoholism. In 9% suicide had been committed by a family member or close relative. Psychotic disorder was found in 3%, other symptom disorder in 9%. Before the age of 5, 61% of the juvenile sample had been living with both parents in a "normal" family setting, whereas 21% had been growing up with a single parent (the mother) to start out with, 9% with their grandparents and 8% in an institution. A closer look at the family structure for the whole time period up to evaluation revealed the following picture (Figure 1): only 1/3 of the juveniles had been living permanently with their fathers compared to nearly 2/3 with a mother presence. The proportion of temporary father deprivation seems remarkably high with 56% vs. 25% for the mother. And, nearly 1 out of 5 juvenile delinquents had never been living with their father. The juvenile delinquents also rated the quality of the relationship to their fathers more frequently as negative (26%) compared to their mother relations (14%). Of those juveniles living with a

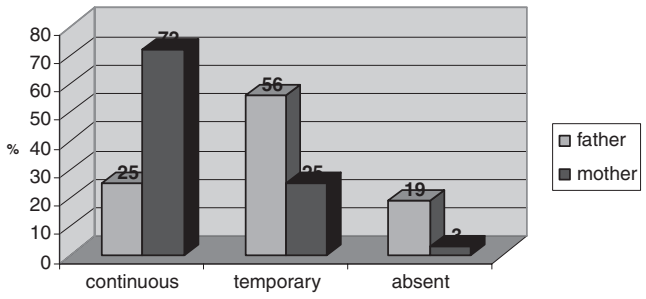

FIGURE 1 Father vs. mother presence ($n = 75$)

single parent, only 45% reported regular contact to the missing parent. A stepfather had been present at least temporarily in 36% of the cases, a stepmother in 17%. Of those juveniles living with a stepfather, merely 22% rated this relationship as positive compared to 38% for the stepmother subgroup.

Taking a closer look at those 32 juvenile delinquents who a) had been growing up without a father and b) also reported a negative relationship to their mothers revealed the following interesting associations (Table 1):

1. 44% of these cases were assigned the diagnosis conduct disorder compared to only 19% of father-deprived juveniles who reported a positive relationship to their mother (Chi square = 6.5, $p < .05$);
2. Alcohol abuse as comorbidity was found in 43% of this subgroup compared to 13% in the subgroup reporting a positive mother relationship (Chi square = 8.1, $p < .01$);
3. 69% of these cases showed pathological family characteristics, mainly paternal alcoholism (41%), whereas this was the case in 29% of the delinquent subgroup with more positive mother relations (Chi square = 14.2, $p < .001$).

Psychiatric diagnosis: As shown in Table 2, the two dominating diagnostic groups were conduct disorder (ICD-10 F91) with 27 cases and crisis during adolescence (ICD-10 F43) with 16 cases. These groups constitute nearly 60% of the sample. Drug abuse as main diagnosis was relatively less frequent (11 cases), as were psychotic disorders (schizophrenia or affective disorder; 9 cases). The mixed diagnostic group with 12 cases consisted of adolescents suffering from a combination between intelligence deficits and hyperactivity syndromes (ICD-10 F84.4). In addition, contributory diagnoses were considered. Here, drug abuse showed up to be the most frequent comorbidity with a proportion of 39%. This proportion even rose to 44% taking those 16 delinquents with paternal alcoholism into account.

TABLE 1
Percentage of risk factors (conduct disorder, alcohol abuse, pathological family characteristics) in 53 juvenile delinquents with father deprivation: a comparison between subgroups with reported positive ($n = 21$) and negative mother relationships ($n = 32$)

Positive mother relationship ($n = 21$)		Negative mother relationship ($n = 32$)	
Conduct disorder	19%	44%	$p < .05$
Alcohol abuse	13%	43%	$p < .01$
Pathological family characteristics	29%	69%	$p < .001$

TABLE 2
Main diagnostic groups (ICD-10), $n = 75$

Drug use	12
Psychosis	9
Juvenile crisis	16
CD	27
Others	11

Test performance: With regard to intelligence quotients (IQ), a great variability with a slight negative skewness was observed (range = 45–125; $SD = 13.9$). The average IQ of 93.4 for the whole sample lies at the lower end of normal range (90–110), with 33% below and 10% above. Thus, 57% of the juvenile sample showed average IQs. As expected, a significant correlation was observed with degree of school education (Spearman's rho = .55; $p < 01$). The difference in IQ between male ($M = 93.8$) and female ($M = 91.5$) offenders was not significant.

Test results on concentration performance showed that nearly one half of the total sample (47%) had a slower than average reaction time (below 40^{th} percentile), and even more juveniles showed deficient qualitative performance, such as errors and missed signals (58% and 51%, respectively). All concentration indices showed significant correlations with IQ (Spearman's rho between .47 and .49; $p < .01$) and education (Spearman's rho between .28 and .42; $p < .05$).

Personality variables: Personality profile (according to the self-report questionnaire FPI-R) scores averaged for the whole sample revealed that only the dimension 'Satisfaction' (3.43) lies below the normal range of Stanine scores (between 4 and 6), signalling that the juvenile offenders generally reported below average life satisfaction. All other personality dimension averages lie within normal range. Looking at individual dimension scores, however, a somewhat more distinctive picture emerges (Figure 2). The dimensions with the relatively highest proportion of above average self-report values are aggression (41%), honesty (37%), and excitability (32%). Furthermore, 63% of the juvenile sample was unsatisfied and unhappy with their present life situation. Interestingly, merely 15% estimated themselves to be less than average sociable, whereas 20% even reported above average sociability.

With respect to self-reported aggression potential, an even more inconspicuous picture emerged. Here, the overall average for all factors lied within normal range, although self-aggression (Stanine = 6.02) and excitability (Stanine = 5.82)

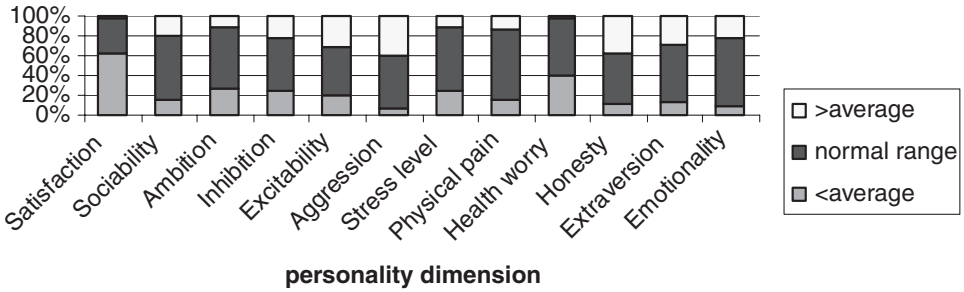

FIGURE 2 Proportion (%) of personality scores ($n = 75$).

values reached the highest limit. These were also the two factors with the highest proportion of above average individual scores (Figure 3) with 50% and 32%, respectively. In sum, only 14% of the total juvenile sample judged themselves to be generally more aggressive compared to a normal population.

Results from the depression scale revealed that 66% of the sample showed above average scores which correspond to the reported high proportion of increased self-aggression. The overall mean depression Stanine score of 6.9 ($SD = 1.69$; range = 3–9) and the highly significant correlation (Spearman's rho = .67; $p < 01$) between depression and self-aggression scores underlined this effect further.

The correlation matrix in Table 3 lists the significant associations between personality profile dimensions, aggression factors, and depression scores. With regard to personality profile, the highest correlating dimensions were sociability, excitability, aggression, and emotionality. Sociability showed a highly significant negative association with all aggression factors except for self-aggression, which in turn (as already mentioned) correlated markedly with depression score. Furthermore, level of sociability was positively associated with level of aggression inhibition. Excitability and aggression as personality traits were both positively associated with spontaneous and reactive aggression, as well as with total aggression. Here, aggression inhibition level correlated negatively with the personality dimension aggression. Emotionality correlated positively with spontaneous aggression and self-aggression, as well as depression score, but not with total amount of aggression or even excitability. The personality dimensions ambition, inhibition, and extraversion yielded no significant correlations with aggression profile or depression score. Rather unexpectedly, depression scores did not correlate significantly with degree of life satisfaction, but with amount of reported physical pain and level of emotionality in addition to self-aggression, the latter of which in turn did correlate negatively with life satisfaction.

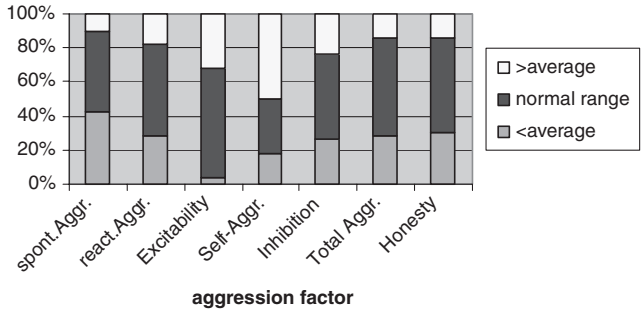

FIGURE 3 Proportion of aggression scores ($n = 75$).

Comparisons between violent and nonviolent subgroups

Next, the sample was divided into two subgroups according to the type of offense committed. The violent subgroup with 41 juveniles (32 males, 9 females) had committed violent offenses against another person, such as threatening, attacking/hurting with or without a weapon (simple and aggravated assault, robbery). The nonviolent subgroup consisting of 16 subjects (14 males and 2 females) were accused of property crimes, such as theft, burglary, or shoplifting, not involving person-directed violence. It was decided not to include sexual offenses for group comparisons, due to the small group size and very heterogeneous offense characteristics, and also considering the fact that these 13 juveniles were all male. For the remaining two subgroups, there were no significant differences between male and female distributions with respect to type of crime ($\chi^2 = 0.66$; ns). Thus, the comparisons between violent and nonviolent subgroups neither include 13 male juveniles with sexual offenses nor the 5 juveniles (2 male, 3 female) with mixed, other types of offenses such as forgery of documents or illegal driving.

Family factors: There was a trend towards more frequent temporary father deprivation in the violent subgroup compared to the nonviolent offenders (68% vs. 50%; $\chi^2 = 2.98$, $p = .08$), whereas for both groups the father had been missing completely throughout childhood and youth in about 80%. An opposite trend was observed with concern to family psychopathology. Here, the nonviolent subgroup generally showed more psychopathological factors of family members in comparison to the violent offenders (69% vs. 44%), with paternal alcoholism as the major factor (64% vs. 56%).

Psychiatric diagnosis: As already reported, the two dominating diagnostic groups were conduct disorder with 27 cases on the one hand, and crisis during adolescence with 16 cases, on the other hand. Of the juveniles diagnosed with conduct

TABLE 3
Correlations (FPI-R, FAF, DS), $n = 75$

	FAF							
FPI-R	Spont. Aggr.	React. Aggr.	Excitability	Self-Aggr.	Inhibition	Total Aggr.	Honesty	D-Score
Satisfaction				−.56**		−.37*		
Sociability	−.48**	−.52**	−.44**		.35*	−.54**		
Ambition								
Inhibition								
Excitability	.55**	.47**	.60**			.60**		
Aggression	.74**	.72**	.65**		−.42*	.82**		
Stress level			.34*					
Physical pain				.46**				.52**
Health worry					.35*			
Honesty	.48**					.37*	.65**	
Extraversion								
Emotionality	.34*			.60**			.39*	.39*
D-Score				.67**				

* $p < .05$. ** $p < .01$.
Spont. Aggr. = Spontaneous Aggression; React. Aggr. = Reactive Aggression; Self-Aggr. = Self-Aggression; Total Aggr. = Total Aggression

disorder, 63% belonged to the violent subgroup, compared to 22% of the subgroup with property crime ($\chi^2 = 26.9$, $p = .08$). The respective proportions for the second diagnostic group were 44% vs. 25%, respectively. Looking at contributory diagnosis, the differences were even more marked. Drug abuse as the most frequent comorbidity was significantly more frequent ($\chi^2 = 28.8$, $p = 017$) in the violent subgroup (68%) as compared to the nonviolent subgroup (23%).

Personality variables: A comparison of mean scores for all personality dimensions (of the self-report questionnaire FPI-R) between the two subgroups (Figure 4) yielded significant differences only in the two dimensions sociability and inhibition. The violent subgroup showed significantly ($t = 2.2$, $p = .03$) lower average sociability scores (Stanine = 4.6) compared to the nonviolent subgroup (Stanine = 6.0). However, the violent subgroup reported a significantly higher ($t = 2.1$, $p = .04$) inhibition level (Stanine = 5.1) than the property crime subgroup (Stanine = 3.4). Furthermore, there was a general tendency for violent delinquents towards less ambition, more excitability and aggression, as well as a higher level of stress and physical pain. Regarding the self-report aggression questionnaire, none of the factors showed significant group differences. However, nonviolent delinquents showed a marked tendency towards higher honesty levels compared to the violent subgroup. Results from the depression scale showed no significant differences in group mean scores, with Stanine = 6.9 for the violent and 7.0 for the nonviolent subgroup, respectively.

Test performance: Intelligence test results revealed marginally significant ($t = 1.8$, $p = .08$) differences in IQ scores between violent (95.4) and nonviolent (88.3) subgroups. There was a general trend towards higher scores in all intelligence subtests for the violent offenders, most markedly in the block design and digit symbol subtests. With regard to concentration indices, a similar trend towards better results for the violent subgroup was observed, also reaching marginal significance for reaction time ($t = 1.7$, $p = .09$).

Multivariate analyses

In a final step, all personality and test performance data were analyzed in a stepwise discriminant analysis in

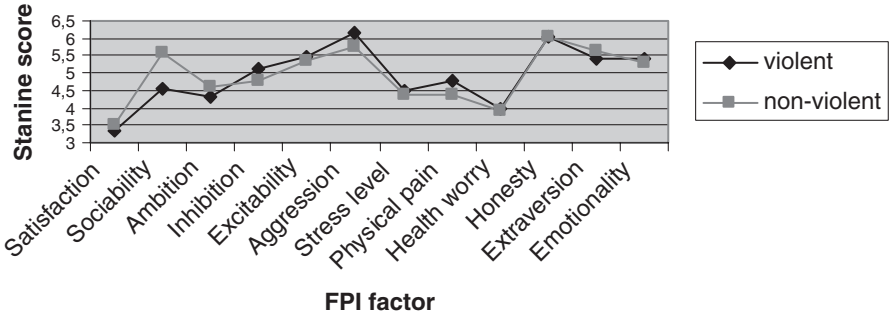

FIGURE 4 Comparison of personality profile (FPI-R) between violent and non-violent subgroups.

TABLE 4
Coefficients from regression analysis of family and diagnostic variables

	Standardized Coefficients			
	Beta	SE	*F*	*P*
Childhood (pre-school)	.074	.179	.172	.914
Family psychopathology	.491	.187	6.929	.001
Diagnosis (ICD-10)	−.420	.182	5.295	.002
Contributory diagnosis	.278	.178	2.462	.070
Father presence	−.394	.184	4.579	.024
Mother relationship	.107	.176	.372	.549

Note. Dependent variable: subgroups (violent vs. nonviolent).

order to identify those variables differentiating the two groups most markedly. Interestingly, the personality dimension sociability was the one single variable with the highest discriminatory power ($\chi = 6.7$, Wilk's Lambda $= 0.6$, df $=$ 1, $p = 01$; canonical correlation $= .55$). Sociability score alone correctly classified subjects into violent or nonviolent subgroups with a hit rate of 77.2%! With regard to family and diagnostic variables, a regression analysis for categorical data revealed significant beta coefficients for the following variables: family psychopathology, ICD-10 diagnosis, contributory diagnosis, and father presence (Table 4), but no significant predictor power between violent and nonviolent subgroups with respect to family structure during childhood (up to the age of 5 years) or mother relationship. Admittedly, due to the small sample size (especially of the nonviolent subgroup) the statistical power is relatively low, ranging between 50–60% instead of the generally recommended 80% (Moher, Dulberg, & Wells, 1994). Therefore, future replications with larger samples are needed.

Finally, a comparison of predictive power between diagnostic and family variables revealed the following picture (Figure 5): 63% of the offenders with a CD diagnosis belonged to the violent subgroup, 70% of offenders diagnosed with both CD and drug abuse were violent offenders, whereas even 82% of those juveniles with a combination of the "risk factors" CD, drug abuse, and father deprivation were among the violent offenders.

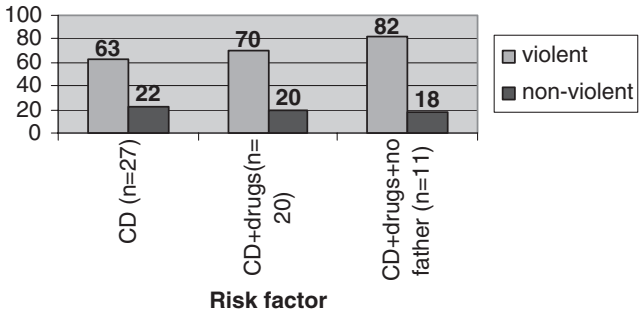

FIGURE 5 Proportion (%) violent vs. non-violent crime in relation to risk factors.

DISCUSSION

The present study investigated risk factors for juvenile delinquency within family background, personality, and diagnostic variables in a sample of 75 juvenile delinquents referred from the local juvenile court for forensic assessment. Due to the frequently reported increasing rates of violent crimes among children and juveniles, a special emphasis was put on a comparison between subgroups with violent and nonviolent offenses, in an attempt to identify specific risk factors for crime associated with violence. For the whole sample investigated, a considerable amount of detrimental family characteristics was obtained. Two out of three juvenile delinquents had experienced father deprivation, one out of five had never been living with his or her father, and one out of four had an alcoholic father. Moreover, less than half of those juveniles growing up without a father reported a regular contact with him. The subjective quality of the father relationship was also generally rated more negatively than the mother relationship. Interestingly, the most detrimental effects with respect to frequency of conduct disorder (CD), alcohol abuse as comorbidity and paternal alcoholism were demonstrated in the subgroup of 32 juveniles growing up without a father and at the same time reporting a negative relationship to their mother. This finding compares well with the study by McCord (1982) who showed less prevalence of offending for boys reared in broken homes with affectionate mothers (22%) compared to boys living with single, nonaffectionate mothers (62%). Similarly, Farrell and White (1998) showed that the association between peer pressure and drug use increased as a function of the level of mother-adolescent distress among juveniles with father deprivation. These findings seem to suggest that the presence of an affectionate mother might to an extent compensate for the adverse effects of father deprivation.

A comparison between violent and nonviolent offenders showed a marginally significant trend towards more frequent father deprivation in the violent subgroup, a result corresponding well with several studies mentioned initially (for instance Stevenson & Black, 1988; Arsenault et al., 2000; Barnow et al., 2001). Several theories attempt to account for the adverse effects of father deprivation (reviewed by Farrington, 2005). Trauma theories, for instance, postulate a traumatic effect on the child due to the severed attachment to the missing parent. Selection theories focus on a priori existing risk factors in disrupted families, such as marital conflict and economical problems. According to the Cambridge study (Juby & Farrington, 2001), most results support the life course theories, which focus on the broken home as a sequence of stressful experiences. Petri (1999) emphasizes the concept of triangulation as a condition sine qua non for a stable identity formation. The presence of both parents enables identification with both female and male characteristics, supposedly necessary for an integration of both into a complete identity. As a system, the two-parent family can

be seen as a balanced cycle with mutual interactions and feedback regarding mother/father or, more generally speaking, female/male role efficacy. This balanced system, in turn, serves as an important model especially at the adolescent stage requiring the most ever of adaptation.

However, there is actually no theory necessary to explain why a continuous setting of quarrelling or even fighting parents, who break up, separate and reconcile repeatedly, before finally divorcing in a continued struggle about money, custody and visiting rights, subsequently change partners and create patchwork scenarios, and in their own despair look for relief in alcohol and other drugs, etc., might promote aggression or even delinquency in their participating children/adolescents. A rather more positive and interesting focus for further research would be the contrasting question why so many children remain stable and develop resilience (Lösel & Bliesener, 1990; Masten & Reed, 2002). Here, the "protective factor-resilience cycle" as described by Petzold and Müller (2004) can serve as a useful model. According to this model, protective factors, such as the already described positive relationship to the mother in case of father deprivation, interact with resilience factors (a general psychophysiological robustness) in order to maximize coping ability to stressful life events and to enable the development of psychosocial and emotional competency despite growing up in a high-risk environment.

With regard to diagnosis, a marginally significant difference was obtained between violent and nonviolent subgroups. The overall dominating diagnosis conduct disorder (CD) was substantially more frequent in violent offenders (63%) as compared to the nonviolent subgroup (22%). As initially mentioned, several researchers have pointed to overlapping characteristics between juvenile CD and adult antisocial personality disorder (Loeber et al., 2000; Vloet et al., 2006). Another study (Eklund & Klinteberg, 2006) favors a distinction between adolescence-limited and persistent criminality. Furthermore, it has been estimated (Herpertz & Saß, 2000) that at least 10% of juveniles diagnosed with CD will later develop an antisocial personality disorder. In our earlier study on adult criminals (Klopf, Kofler-Westergren, & Mitterauer, 2007), we emphasized the higher violence risk for offenders scoring high on Factor 2 (antisocial life style) of the PCL-SV (Hare, 2003). Thus, it is of great prognostic value to identify early risk factors associated with violent offending. Given the diagnosis CD, a juvenile offender is obviously at higher risk of committing violent crimes than offenders without such a diagnosis.

Drug abuse as comorbidity seems to represent an additional risk factor involved in violent crime, since a significantly higher frequency (68%) was diagnosed in the violent subgroup as compared to the nonviolent offending group (23%). These figures correspond closely to the estimated range (between 27% and 63%) of substance abusing juvenile delinquents in general (Tarolla et al., 2002), i.e., not differentiating between type of crime. Similar results were reported in the Dunedin Study (Arseneault et al., 2000). Thus, juveniles diagnosed with CD who also abuse drugs are more likely to commit violent crimes.

What personality test results concerns, two out of three juvenile offenders reported to be unhappy and dissatisfied with their present life which, in turn, correlated with self-aggression scores. Furthermore, depression scale results yielded a similar proportion (66%) of above average scores which also corresponded significantly with level of reported self-aggression. Unexpectedly though, life satisfaction levels did not correlate significantly with depression scores, but with level of emotionality and reported physical pain. One plausible explanation for these findings is suggested by Beyer (2006): "Depression in adolescents is more often represented by irritability, hypersensitivity to threat, and agitation – the very conditions that increase the likelihood of aggression." (p. 208). Whereas 50% of all juvenile offenders rated themselves to be more self-aggressive compared to a normal population, only 14% did so with regard to global aggression potential. Not surprisingly, sociability in combination with excitability, aggression, and emotionality, turned out to be the highest correlating personality dimensions. Sociability, as an index of social adjustment, showed highly significant negative correlations with all external aggression factors, but not with self-aggression. Level of sociability was also positively associated with level of aggression inhibition. Most importantly, the violent subgroup showed significantly lower sociability scores than the nonviolent offenders. Admittedly, the general finding that juvenile delinquency is associated with lower degrees of socialization seems tautological. However, the fact that this association showed up to be markedly stronger for delinquents committing violent crimes is of great prognostic value, especially considering results from longitudinal studies linking personality and temperament traits already at childhood with delinquency at a later age (i.e., Dunedin longitudinal study; Caspi, 2000; Farrington, 2005). Contrary to expectations, the violent offenders had higher scores in aggression inhibition, in spite of the positive association to degree of sociability. It can only be speculated here that maybe the lower honesty scores of the violent subgroup might have caused this spurious effect.

With regard to intelligence and concentration test results, a strong tendency was demonstrated towards better achievement in the violent group. Considering the whole sample, every second juvenile showed lower than average reaction time as well as deficits in qualitative performance. These findings are in line with the Pittsburgh Youth Study (Farrington, 2005) reporting poor concentration performance (combined with hyperactivity) to be predictive of violent offending. Similarly, Lynam and Moffitt (1995) showed that low IQ and impulsiveness were independent risk factors for delinquency in general.

To sum up, results from multivariate analyses of all variable groups point to the following triad of risk factors involved in juvenile violent offending:

1. a diagnosis of conduct disorder, associated per definition with lower levels of sociability;
2. family psychopathology, mainly father deprivation but also paternal alcoholism;
3. substance abuse as co-morbidity.

Implications from these findings for healthcare providers would be to adequately assess, at the earliest possible stage, children and adolescents for these risk factors in order to provide appropriate treatment and family support, especially in single-parent families, with the aim to enhance protective influences. Furthermore, these risk factors should also be taken into account in evaluations of legal prognosis of offenders. Early interventions might not only prevent later maladjustment in its multifaceted forms, only one of which is expressed in violent offending, but also contribute to minimize the huge negative social consequences.

Admittedly, the generalization of these findings is limited by the relatively small sample size, especially of the nonviolent subgroup. For the same reason, an analysis of gender differences with regard to the investigated risk factors was not possible. It is generally a well established finding that women commit fewer crimes than men, especially violent crimes. Nevertheless, violent female behavior is an increasing phenomenon and family factors such as father absence, parental divorce, and neglect have also been reported to correlate both with general and violent offending (Weizmann-Henelius, Viemerö, & Eronen, 2004). Furthermore, possible differences between violent and nonviolent offenders with regard to temporary or permanent father absence, as suggested by our results, need larger samples for statistical confirmation. Overall, the statistical power of the analyses performed is limited by the small sample size of the subgroups. Furthermore, genetic risk factors were not considered in this study. Thus, some heterogeneity due to this unmeasured variable must also be considered. Despite these limitations, our results correspond well with the cited literature and point to the need for prospective longitudinal studies with larger samples focusing on separate and combined influences of each risk factor associated especially with different types of violent offending in order to analyze mediating and moderating factors more closely. Furthermore, studies dealing with protective factors and resilience of children and juveniles are of utmost importance. Ideally, these studies should be multidisciplinary and longitudinal and they need to consider genetic risk factors and their interaction with environment and experience in order to differentiate between causes and consequences. At any rate, early identification of children at risk is crucial, since findings (see, for instance, Viding, 2004) demonstrate that children with conduct problems at an early age carry the highest risk for developing life-course persistent antisocial and violent behavior. It is conceivable that there are developmental vulnerability periods during which exposure to specific environmental pathogens may have the most detrimental consequences on phenotype as well as genotype. There are important implications for prevention and treatment programs if subtypes of risk susceptibility and resilience could be identified. Coming to the bottom line, our concern should be directed towards an increased quality of childhood and adolescence as the "simplest" and most general protective factor counteracting the development of aggressive and delinquent behavior.

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