

This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.

Author(s): Pulkkinen, Lea; Fadjukoff, Päivi; Pitkänen, Tuuli

Title: Persistent offenders and adolescence-limited offenders : differences in life-courses

Year: 2020

Version: Published version

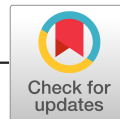
Copyright: © 2020 The Authors. Criminal Behaviour and Mental Health published by John Wil

Rights: CC BY 4.0

Rights url: <https://creativecommons.org/licenses/by/4.0/>

Please cite the original version:

Pulkkinen, L., Fadjukoff, P., & Pitkänen, T. (2020). Persistent offenders and adolescence-limited offenders : differences in life-courses. *Criminal Behaviour and Mental Health*, 30(4), 196-209.
<https://doi.org/10.1002/cbm.2157>



Persistent offenders and adolescence-limited offenders: Differences in life-courses

Lea Pulkkinen¹ | Päivi Fadjukoff¹ | Tuuli Pitkänen²

¹Department of Psychology, University of Jyväskylä, Jyväskylä, Finland

²A-Clinic Foundation, Helsinki, Finland

Correspondence

Lea Pulkkinen, Sulkapolku 6 B 37, 00370
Helsinki, Finland.
Email: lea.pulkkinen@psyka.jyu.fi

Abstract

Background and Aims: As our previous study indicated, almost half of juvenile delinquents continued offending in adulthood, while the rest ceased to do so. We compared these groups with each other and with non-offenders in the life-course use of alcohol, identity development and life situation.

Methods: Based on the Jyväskylä Longitudinal Study of Personality and Social Development, four groups were formed at age 42 for men and women: persistent, adolescence-limited and adult-onset offenders and non-offenders. Longitudinal data ($N = 369$; 53% males) have been collected at ages 8, 14, 20, 27, 36, 42 and 50.

Results: Persistent offending, but not adolescence-limited offending, was associated with the accumulation of problems in adulthood and an elevated risk of death before age 54. For males, persistent offending was associated with heavy drinking from adolescence to middle age, diffuse identity, high divorce rates and poverty. For females, persistent offending was associated with heavy drinking in adulthood and a higher rate of being outside the workforce in middle age. In males, adolescence-limited offending was associated with more controlled drinking in adulthood, and in females, with early divorce from the partner and advanced identity.

Conclusions: Detecting the risks of the accumulation of problems and potential for positive transitions of juvenile delinquents until middle age will be important for prevention and treatment.

This is an open access article under the terms of the Creative Commons Attribution License, which permits use, distribution and reproduction in any medium, provided the original work is properly cited.

© 2020 The Authors. *Criminal Behaviour and Mental Health* published by John Wiley & Sons Ltd

KEYWORDS

drinking behaviour, identity, life-course, middle age, offender, self-control

1 | INTRODUCTION

Rolf Loeber with his collaborators (Loeber, Green, & Lahey, 2003) stresses the need for prospective longitudinal studies on antisocial behaviour. The Jyväskylä Longitudinal Study of Personality and Social Development (JYLS; Pulkkinen, 2017) offers opportunities to prospectively analyse pathways of antisocial behaviour. Our present interest was in possible differences between offender groups such as the life-course-persistent and adolescence-limited offenders (ALO; Moffitt, 1993) for both genders in the use of alcohol, identity development and various life outcomes and in the accumulation of problems.

Continuity in the use of alcohol is high from adolescence to adulthood (Pitkänen, Kokko, Lyyra, & Pulkkinen, 2008). Heavy drinking increases the risk of criminal behaviour: 56% of the convicted assaults, 35% of robberies and 11% of thefts in 2010 were committed under the influence of alcohol; the percentages for other drugs were 0.4, 4 and 2%, respectively (Yearbook, 2011). Due to a high connection between criminal offending and the use of alcohol already in the teenage years (Gottfredson & Hirschi, 1990), our first hypothesis was that juvenile delinquency is associated with the use of alcohol. The second hypothesis was that the association between criminal offending and heavy drinking remains in individuals who continue offending after adolescence but declines in those who cease offending.

The third hypothesis concerned the accumulation of problems such as heavy drinking and antisocial behaviour (Rönkä & Pulkkinen, 1995), conceptualised as syndromes (Jessor & Jessor, 1977) or patterns (Magnusson & Bergman, 1988), through contemporary, interactive or cumulative continuity, as analysed by Caspi, Bem, and Elder (1989). We expected that heavy drinking, criminal arrests, health problems and poverty accumulate until middle age particularly in life-course persistent offenders (PO). Prospective longitudinal studies suggest that there is a higher number of risk factors associated with life-course offending than adolescent-limited offending (Jolliffe, Farrington, Piquero, Loeber, & Hill, 2017).

Our fourth hypothesis was that differences exist in identity development between offender groups. Identity means a self-structure that provides a person with a sense of consistency and continuity, thus enabling personal psychosocial progress and well-being (Erikson, 1968). Studies in adolescent and student populations have demonstrated that heavy alcohol use at a young age is associated with less mature identity development, whereas higher identity achievement is related to lower levels of alcohol consumption (e.g. Bishop, Weisgram, Holleque, Lund, & Wheeler-Anderson, 2005; Laghi, Baiocco, Lonigro, & Baumgartner, 2013). We have found that advanced identity is associated with the length of education (Fadjuoff, Kokko, & Pulkkinen, 2007), precedes later social well-being (Fadjuoff & Pulkkinen, 2006), and is associated with adaptive adjustment in middle age (Fadjuoff, Feldt, Kokko, & Pulkkinen, 2019). Thus, we expected to find less advanced identity development in life-course PO.

Our last hypothesis was that, in accordance with the general theory of crime (Gottfredson & Hirschi, 1990), low self-control conceptualised within the impulse control model (Pulkkinen, 2017) characterises both male and female offenders and that antisocial propensity is found particularly in life-course PO.

2 | METHODS

2.1 | Sample

The initial sample of the JYLS (Pulkkinen, 2017) consisted of 12 entire school classes (369 students; 53% males, born in 1959) randomly drawn from the second-grade classes of different schools of a town in Central Finland. The major

data collections were conducted (with participation rates from the eligible sample in parentheses) when the participants were at the ages of 8 (100%), 14 (97%), 27 (88%), 36 (86%), 42 (83%) and 50 (84%) years. The retention rate was close to 90% until age 36 but declined to 77% at age 42 and 73% at age 50 due to deaths, illnesses and other reasons. A subsample was interviewed at ages 14 and 20 (Pulkkinen, 2017). By age 50, 10% of the initial sample had withdrawn from the study and 3.3% had died.

It had been found (Pulkkinen, 2017) that there was a high continuity in drinking patterns through adulthood and that several heavy drinkers died by age 50 or were less likely than others to participate in data collection at age 50 due to their poor condition. Scores for middle age variables were supplemented by scores for age 42, if available, in case of missing information at age 50; this procedure was applied up to 35 persons (12%).

In adulthood, the studied sample was compared in demographic variables with the age cohort born in Finland in the same year (1959) by using information from Statistics Finland. The demographic characteristics of the sample corresponded to the characteristics of the general population in marriage rate, family type, number of children, education and employment status (Pulkkinen, 2017).

2.2 | Offender categories

For the study of antisocial behaviour of the participants, the national register of criminal convictions was searched every 5 years between ages 21 (1981) and 47 (2006). The local police register was searched at age 20 (in 1980) for information about antisocial behaviour between ages 15 and 20. Personal interviews at ages 27, 36 and 42 were utilised to supplement the register-based information about antisocial paths. The Self-Report Delinquency Scale (Junger-Tas, Terlow, & Klein, 1994) was administered at age 36 and the Life History Calendar (Caspi et al., 1996) at age 42.

Antisocial behaviour of the male participants was assessed and categorised using different sources of information (Pulkkinen, Lyyra, & Kokko, 2009); the corresponding procedure was applied to women for the present study. We formed four offender groups (Figure 1) as suggested by Glueck and Glueck (1950, p. 285): 'delinquent boys and girls who abandon their antisocial behaviour' (ALO), those who 'continue in careers of crime' (PO), non-delinquents who 'later develop into delinquents' (adult-onset offenders, AOO) and 'the rest of the non-delinquents' (non-offenders, NO). Speeding and arrests for drunkenness were not used as criteria for the categorisation of offending if they had appeared only once. The peak age for the onset of delinquency was 16–17 years (Pulkkinen, 1988). In adulthood, the incidence of crimes decreased. For the PO, the range of the duration of the criminal career extended

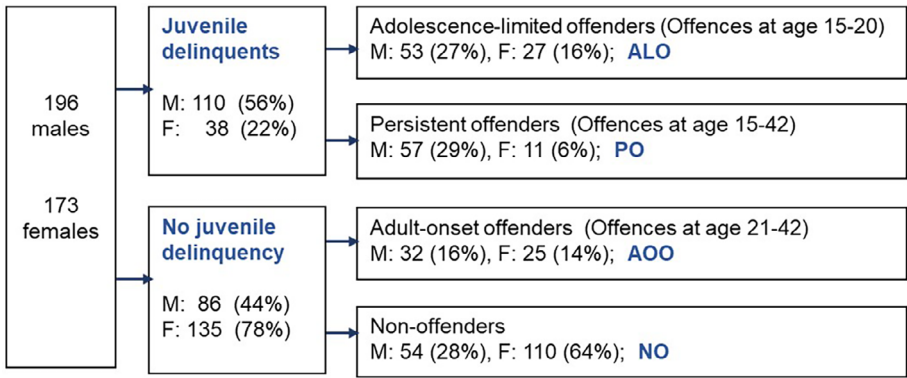


FIGURE 1 Offender groups and their proportions of the initial sample [Colour figure can be viewed at wileyonlinelibrary.com]

from about 7 to 25 years including juvenile delinquency before age 21 and convicted crime in adulthood. The prevalence of the offender categories is higher if both self-reports and official record are considered (Jolliffe, Farrington, Piquero, MacLeod, & van de Weijer, 2017), as it was the case in our study.

2.3 | Measures

Data were collected using several methods (Pulkkinen, 2017), such as teacher rating and peer nomination at ages 8 and 14; personal interviews by trained interviewers at ages 27, 36, 42 and 50; a Life Situation Questionnaire (LSQ) mailed to the participants and inventories.

Socioemotional behaviour: Peer nomination at age 14 was used (Pitkänen, 1969) for assessing same sex classmates in variables indicating low self-control (aggression, anxiety and emotional lability) and high self-control (constructiveness, emotional stability and compliance) within a two-dimensional impulse control model (Pulkkinen, 2017, pp. 24–26).

Problem behaviour: Teachers' reports on their students' conduct problems at age 14 were collected by asking how frequently the student had been disciplined at school, involved in truancy, smoking and drinking and if the student had been in trouble with the police or other enforcement authorities (Savolainen, Mason, Lyyra, Pulkkinen, & Kokko, 2017). The variable was standardised with all participants ($n = 351$).

Antisocial behaviour: The number of types of offences committed from age 15 to 20 was coded in the scale from 0 = no offences to 3 = three types of offences (alcohol, theft and violent offences; Pulkkinen, 1983).

The age of onset of drinking was determined at ages 14, 20, 27, 36 and 42, with the priority given to the information received closest to the actual onset age (Pitkänen, Lyyra, & Pulkkinen, 2005).

Alcohol-related offences between ages 15 and 20 were coded using police register data. The sum of them included offences such as drunk driving, selling alcohol and detention for intoxication.

Drinking to intoxication at age 20 was coded using interview data at age 20. The categories were: 0 = does not use alcohol, 1 = does not drink to intoxication, 2 = drinks sometimes to intoxication and 3 = drinks often to intoxication.

Heavy drinking at ages 27, 36 and 50 was operationalised on the basis of the reported times of drinking to intoxication but controlled with the frequency of drinking at least five portions per occasion as reported in the quantity–frequency table (Pitkänen et al., 2008) included in the mailed LSQ. Heavy drinking was coded from 0 = not at all to 5 = several times a week.

Risky annual drinking at age 50 was counted using a quantity–frequency table (Pitkänen, 2006). Separate coding was used for females (0 = less than 7,000 g of pure alcohol per year, 1 = 7,000–10,000 g per year and 2 = over 10,000 g per year) and for males (0 = less than 10,000 g per year, 1 = 10,000–15,000 g per year and 2 = over 15,000 g per year).

Two screening tests were used (Pitkänen et al., 2005): the Cut-down, Annoyed, Guilt, Eye-opener (CAGE) questionnaire developed by Ewing and Rouse (Ewing, 1984) by coding the responses in a three-point scale (0 = no, 1 = sometimes and 2 = often) and the modified version of the Michigan Alcoholism Screening Test (MAST) developed by Selzer (1971). The latter consisted of 11 items including 2 items concerning alcohol dependence (Kaprio, 2006).

Problems due to drinking at age 50 were coded on the basis of the interview in which the participants were asked if they had experienced any of seven difficulties, such as being involved in a (physical) fight, an accident, absence from work and personal relationship because of drinking. The response options for each question were 0 = no, 1 = sometimes and 2 = often.

Treatment for substance use disorder by age 50 was based on data at health interviews at ages 36, 42 and 50 and at the life-history calendar. It was coded by 1 = yes or 0 = no.

Self-rated health was measured with a widely used single-item scale (Smith & Goldman, 2011) at ages 27, 36, 42 and 50. The options were 1 = very good, 2 = good, 3 = moderate, 4 = poor and 5 = very poor. However, at age 27, the options were 1 = good, 2 = moderate and 3 = poor.

Death: Data from the Statistics Finland have been obtained about the deaths of the participants of the longitudinal study until 2014 (age 54). It was coded 1 = yes or 0 = no.

Unemployed or retired at age 50 referred to people who were outside the work force because of unemployment or early retirement due to chronic disability (Savolainen et al., 2017). The data on unemployment and disability pension were collected by the mailed LSQ and validated and supplemented by the retrospective Life History Calendars administered at ages 42 and 50. It was coded 1 = yes or 0 = no.

Persistent poverty at age 50 (43) was operationalised as having annual income below 60% of the median (Savolainen et al., 2017) for two consecutive data collections (1 = yes; 0 = no). The data on income were obtained from government tax records at ages 43 and 50.

Divorce at least once until ages 28, 37 and 50 was assessed using all data available from the LSQ, personal interview and Life History Calendar. It was coded 1 = yes or 0 = no.

Identity status: The identity interview, based on the Erikson (1968) traditions and utilising Marcia's (1966) identity status paradigm, was conducted at ages 27, 36, 42 and 50 (Fadjukoff, 2007; Fadjukoff, Pulkkinen, & Kokko, 2016). Five domains were considered: religious beliefs, political ideology, occupational career, intimate relationships and lifestyle. On the basis of two dimensions (commitment and exploration), four identity statuses were defined: diffusion (no exploration, no commitment), moratorium (yes exploration, no commitment), foreclosure (no exploration, yes commitment) and identity achievement (yes exploration, yes commitment).

2.4 | Data analyses

Differences between the means of the four offender groups with 95% confidence intervals (95% CI) for all study variables enabling cross-sectional and longitudinal comparisons were reported online in Supporting Information Tables S1 and S2. Separately for males and females. One-way ANOVA and Bonferroni tests were used for comparing differences between the reported means, $p < .05$. Only significant differences between the means of the offender groups are presented in the text and tables. Additionally, t tests were used for studying the cross-sectional differences between the means of the offender groups and chi-squared tests for cross-tabulations. For effect size, Cramér's V was used, with 0.1–0.3 for small, 0.3–0.5 for medium and over 0.5 for large effect sizes.

3 | RESULTS

3.1 | Adolescent behaviour

3.1.1 | Socioemotional behaviour

For the male groups of offenders and NO, the PO differed from the ALO in higher aggression, lability and behaviour problems at school at age 14, and in more varied offences from age 15 to 20 (Table 1). The PO had been lower in anxiety than the NO. For females, the AOO had been more aggressive than the NO and less anxious than the ALO. No significant differences were found between the groups in the variables for high self-control. There were, however, differences in compliance when the NO were compared with the rest. The NO were more compliant than their counterparts, $t(5.1) = 2.10$, $p = .039$ for males; $t(160.1) = 2.54$, $p = .012$ for females, as well as more passive, $t(184) = 3.67$, $p < .001$ for males; $t(163) = 2.30$, $p = .023$ for females.

TABLE 1 Significant differences between the means of the offender groups in variables for adolescent behaviour, use of alcohol and adult outcomes, separately for men and women; one-way ANOVA^a

Men	0 NO		1 AOO		2 ALO		3 PO		F	p	Bonferroni
	Non-offender		Adult-onset offender		Adolescence-limited offender		Persistent offender				
	Mean		Mean		Mean		Mean				
Socioemotional behaviour											
Age 14	186	11.1	23.9		12.7		29.1		6.20	.001	0,2 < 3
14	186	24.7	19.6		13.9		8.1		4.42	.005	3 < 0
14	186	14.8	19.8		11.4		25.6		4.20	.007	2 < 3
14	186	13.0	25.8		15.5		20.1		3.06	.03	0 < 1
14	186	24.7	12.5		11.3		10.1		5.26	.002	2,3 < 0
Anti-social/problem behaviour											
14	189	-0.25	-0.01		0.18		2.14		5.37	.001	0,1,2 < 3
15-20	196	0.15	0.19		0.60		0.98		14.88	.001	0 < 2,3;1 < 3
Alcohol use											
14-42	191	16.2	15.6		14.9		14.9		3.79	.011	0 < 2,3
15-20	196	0.18	0.28		0.68		2.05		9.47	.001	0,1,2 < 3
20	66	1.59	1.64		2.06		2.33		4.49	.006	0 < 3
27	169	2.07	3.12		2.46		3.18		7.49	.001	0 < 1,3;2 < 3
36	160	2.08	2.70		2.27		3.27		6.52	.001	0,2 < 3
50	162	2.10	2.54		2.18		3.42		6.31	.001	0,2 < 3
50	157	0.35	0.45		0.34		0.77		3.15	.027	2 < 3
50	143	2.00	3.68		2.32		4.19		4.70	.004	0,2 < 3
50	160	1.41	2.48		1.98		3.47		8.03	.000	0,2 < 3
50	156	0.36	1.17		1.04		2.50		7.00	.000	0,2 < 3

TABLE 1 (Continued)

Men	0 NO	1 AOO		2 ALO		3 PO		F	p	Bonferroni
		Non-offender offender	Mean	Adult-onset offender	Mean	Adolescence-limited offender	Mean			
By 50	Treatment for substance use	169	0.00	0.22	0.02	0.29	0.29	4.40	.005	0.2 < 3
Social and economic problems										
By 36	Divorce (1 = yes, 2 = no)	172	0.16	0.45	0.35	0.47	0.47	3.77	.012	0 < 3
By 50	Divorce	185	0.25	0.47	0.56	0.53	0.53	4.01	.009	0 < 2,3
50 (43)	Persistent poverty	179	0.06	0.29	0.10	0.35	0.35	6.42	.000	0.2 < 3
Self-rated health and death										
By 54	Death by 2014	196	0.02	0.13	0.04	0.14	0.14	2.74	.045	
Women	0 NO	1 AOO		2 ALO		3 PO		F	p	Bonferroni
	Non-offender offender	Mean	Adult-onset offender	Mean	Adolescence-limited offender	Mean	Persistent offender			
Socioemotional behaviour										
Age 14	Aggression	165	11.9	26.3	21.9	21.4	21.4	3.30	.022	0 < 1
14	Anxiety	165	14.7	3.3	19.5	5.4	5.4	3.20	.025	1 < 2
14	Lability	165	15.2	29.1	26.5	27.6	27.6	3.75	.012	
14	Activity	165	19.0	29.3	25.8	39.5	39.5	2.64	.051	
14	Stability	165	22.6	21.6	16.1	23.7	23.7	0.68	.566	
Anti-social/problem behaviour										
15–20	Types of offences	173	0.05	0.04	0.41	0.55	0.55	10.37	.001	0.1 < 2,3
Alcohol use										
14–42	Onset age of drinking	165	15.9	15.6	14.5	14.9	14.9	2.65	.051	

(Continues)

TABLE 1 (Continued)

Women		0 NO		1 AOO		2 ALO		3 PO		F	p	Bonferroni
		Non-offender offender		Adult-onset offender		Adolescence-limited offender		Persistent offender				
		Mean		Mean		Mean		Mean				
15-20	Alcohol offences	173	0.05		0.00		0.19		1.55	6.18	.001	0,1,2 < 3
20	Drinking to intoxication	67	1.43		1.33		1.91		2.33	3.69	.016	
27	Heavy drinking	154	1.24		1.48		1.67		2.63	4.35	.006	0 < 3
36	Heavy drinking	150	1.38		1.50		1.69		2.80	4.06	.008	0,1 < 3
50	Risky annual drinking	114	0.09		0.27		0.05		0.60	4.23	.007	0,2 < 3
50	MAST, 11 questions	108	1.50		0.90		1.15		3.10	3.49	.018	1,2 < 3
50	CAGE, 4 questions	115	1.18		1.13		1.19		2.80	2.80	.043	0 < 3
50	Problems due to drinking	112	0.28		0.41		0.76		1.80	5.68	.001	0,1 < 3
By 50	Treatment for substance use	122	0.01		0.00		0.00		0.20	6.50	.000	0,1,2 < 3
Social and economic problems												
By 27	Divorce (1 = yes 0 = no)	162	0.15		0.24		0.44		0.40	4.34	.006	0 < 2
By 36	Divorce	152	0.32		0.58		0.63		0.70	5.05	.002	0 < 2
By 50	Divorce	162	0.35		0.56		0.70		0.70	5.23	.002	0 < 2
50	Unemployed or retired	135	0.14		0.09		0.09		0.50	3.89	.011	0,1,2 < 3
Self-rated health and death												

Abbreviations: CAGE, Cut-down, Annoyed, Guilt, Eye-opener; MAST, Michigan Alcoholism Screening Test.
^aMeans of the offender groups with 95% confidence intervals and F-ratios for all study variables are presented in a Supporting Information Table S1.

3.2 | Life-course drinking and adult outcomes

3.2.1 | Use of alcohol

The male PO and ALO had started the use of alcohol around 1 year earlier than the NO, but only the PO differed from the NO in drinking to intoxication at age 20. In adulthood, the male PO differed from the NO and from the ALO in drinking heavier through adulthood, having more problems due to drinking, scoring higher in screening tests and in having received treatment for substance use. Moreover, the female PO differed from the other groups in these measures, most consistently from the NO but in some variables also from the AOO and ALO. The male AOO differed from the NO by heavier drinking at age 27.

3.2.2 | Health and survival

No significant differences in self-rated health were found between the male or female offender groups at any ages. Twenty participants (15 men and 5 women; 7.7 and 2.9% from the sample, respectively) had died by age 55. Their distribution over the offender groups differed from the random distribution: nine participants of the PO (13.2%), five of the AOO (8.8%), two of the ALO (2.5%) and four of the NO (2.4%) had died, $\chi^2(3) = 13.52$, $p = .004$, Cramér's $V = 0.19$.

Women of the PO group were more often outside the work force in middle age than were women of the other groups, whereas persistent poverty was more common among men of the PO group than among the ALO and the NO.

3.2.3 | Partner relationships

In men, the PO group had divorced at least once by age 36 more often than the NO had done so, and the divorce rate was higher in both the PO and ALO than in the NO by age 50. On the contrary, the higher divorce rates of the female ALO differed from the NO already at age 27 and further at ages 36 and 50.

3.3 | Identity development

No identity status differences between the male and female groupings were found at age 27. However, at later ages, the male PO had been coded on the identity diffusion status more frequently than all other groups and in identity achievement status less frequently than some other groups (Table 2). Among the women, the ALO progressed in identity development by scoring higher than the NO in identity achievement at ages 36 and 50 (42).

4 | DISCUSSION

The results supported our hypotheses on the connection between (a) the use of alcohol and juvenile delinquency, (b) persistent offending and heavy drinking in adulthood and (c) persistent offending and the accumulation of various problems. The PO and the ALO had started the use of alcohol earlier (under age 15, on average) than the NO (around age 16), but in late adolescence, only the PO differed from the NO in heavier drinking. In adulthood, several indicators measuring heavy drinking and problems associated with it showed the more controlled use of alcohol among the ALO, compared with the PO.

TABLE 2 Significant differences between the means of the offender groups in identity status variables, separately for men and women; one-way ANOVA^a

Identity status	n	0 NO		1 AOO		2 ALO		3 PO			Bonferroni
		Non-offender		Adult-onset offender		Adolescence-limited offender		Persistent offender			
		Mean		Mean		Mean		Mean	F	p	
Men											
Age 27											
Age 36											
Diffusion	139	0.67		0.46		0.91		1.60	8.0	.000	0,1,2 < 3
Achievement	139	1.77		1.96		1.49		1.03	2.7	.051	3 < 1
Middle age 50											
Diffusion	133	0.86		0.96		1.09		1.85	5.2	.002	0,1,2 < 3
Achievement	133	2.50		2.04		2.02		1.31	3.8	.012	3 < 0
Women											
Age 27											
Moratorium	142	0.76		0.62		1.28		1.71	4.3	.006	n.s.
Age 36											
Diffusion	131	1.10		0.68		0.52		0.63	3.1	.030	2 < 0
Achievement	131	1.45		1.91		2.35		1.63	3.2	.026	0 < 2
Middle age 50											
Achievement	125	1.97		2.55		3.00		2.40	3.0	.033	0 < 2

^aMeans of the offender groups with 95% confidence intervals and F-ratios for all study identity status variables are presented in a Supporting Information Table S2.

In addition to problem drinking, the accumulation of problems in the lives of the PO was noticeable, including an elevated risk of premature death, persistent poverty and divorce among men and falling outside the work force among women. The results were in line with the register-based follow-up study concerning criminality and mortality of 10,888 patients with substance use disorders (Kaskela & Pitkänen, 2016; Pitkänen, Kaskela, & Levola, 2020).

We expected that life-course persistent offending with accumulated problems would be associated with less advanced identity development in adulthood. This hypothesis was confirmed for the male PO whose identity status was more diffuse than in others. For females, the ALO surprisingly demonstrated most positive identity development and were more advanced in adult identity since age 36 than the NO. This finding suggests that for women, the offender behaviour in adolescence might represent a period of exploration, which could later be utilised as a resource for identity development. Exploration, a period of re-consideration, choosing between alternatives and trying out various roles and life plans is a common process in identity development (e.g., Kroger & Marcia, 2011). The female ALO also had a higher divorce rate already at age 27, which might indicate the ALO's efforts to find a new path in their lives. No differences emerged between the groups in identity foreclosure, although it has been associated with conservative values (Kroger & Marcia, 2011) possibly related to compliance and with non-offending.

Our last problem concerned differences between the offender groups in self-control and antisocial propensity. Our previous study with males (Pulkkinen et al., 2009) indicated that the PO, as compared with the ALO, displayed higher disobedience and physical aggression already at age 8. In early adulthood, they received higher scores in psychoticism assessed by the Eysenck Personality Questionnaire (Eysenck & Eysenck, 1975) and experience seeking and disinhibition assessed by the Sensation Seeking Scale (Zuckerman, 1979). Girls were not included in the previous study. There were no significant associations between the offender groups at age 8 and these personality tests.

The profile of the male PO confirmed our hypothesis on the association between low self-control and criminal offending as suggested by Gottfredson and Hirschi (1990) and findings in other longitudinal studies such as the Dunedin Study (Piquero, Moffitt, & Wright, 2007) and the Pittsburgh Youth Study (Loeber, Slot, & Stouthamer-Loeber, 2006). As argued by Loeber et al. (2003), the symptoms of antisocial personality were unfolding over time, starting from oppositional behaviour in childhood and conduct problems in adolescence. In accordance with findings on the relation between parenting and children's offending (Farrington, 2018), family atmosphere (child-centred parenting; Kokko & Pulkkinen, 2000) had been poorer in the homes of the PO than ALO, and the PO's parents had been heavy drinkers more often than those of the NO (Pulkkinen et al., 2009). Differences were not found in the parents' occupational status (blue-collar/white-collar). Poor atmosphere at home provokes low self-control in children (Pulkkinen, 2017).

The NO exceeded the offenders in compliance (submissiveness), as found by Glueck and Glueck already in 1950. It should be noted that no significant differences between the male offender groups, or even between the NO and all criminal offenders, were found in the other indicators of high self-control: emotional stability and constructive behaviour ('Tries to solve annoying situations reasonably, negotiates, conciliates, strives for justice'). Crime may also demand careful planning and trustful networking. Values beyond an individual's action, including caring for other people, are decisive for the motivation to undertake the action.

The hypothesis on the connection between low self-control and criminal offending did not apply to the male ALO. In childhood and adolescence, they differed from the NO only in the earlier age of onset of drinking. After adolescence, they ceased offending and reduced drinking. In their adult outcomes, no differences were found compared to the NO. As shown in our previous study, boys who later became PO or ALO had lower school success at age 8 than the NO did, but only the PO had been lower than the NO in school success at age 14, which may indicate an increase in maturation after early years among the ALO. Poor school success in adolescence with childhood aggression predicts crime (Pulkkinen, 2018).

The strengths of this longitudinal study are in its duration and high participation rate. Most studies on antisocial behaviour are focused on men, but our data also include women. The weakness is in the small sample size, yet the sample size has made it possible to conduct the study intensively with several data collection waves.

CONFLICT OF INTEREST

The authors declare no potential conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as there is no permission to share the confidential data.

ORCID

Lea Pulkkinen  <https://orcid.org/0000-0002-4290-6690>

Tuuli Pitkänen  <https://orcid.org/0000-0002-2381-9436>

REFERENCES

- Bishop, D. I., Weisgram, E. S., Holleque, K. M., Lund, K. E., & Wheeler-Anderson, J. R. (2005). Identity development and alcohol consumption: Current and retrospective self-reports by college students. *Journal of Adolescence*, 28(4), 523–533. <https://doi.org/10.1016/j.adolescence.2004.10.007>
- Caspi, A., Bem, D. J., & Elder, G. H. (1989). Continuities and consequences of interactional styles across the life course. *Journal of Personality*, 52, 375–406. <https://doi.org/10.1111/j.1467-6494.1989.tb00487.x>
- Caspi, A., Moffitt, T., Thornton, A., Freedman, D., Amell, J. W., Harrington, H., ... Silva, P. A. (1996). The Life History Calendar: A research and clinical assessment method for collecting retrospective event-history data. *International Journal of Methods in Psychiatric Research*, 6, 101–114. [https://doi.org/10.1002/\(SICI\)1234-988X\(199607\)6:2<101::AID-MPR156>3.3.CO;2-E](https://doi.org/10.1002/(SICI)1234-988X(199607)6:2<101::AID-MPR156>3.3.CO;2-E)
- Erikson, E. H. (1968). *Identity: Youth and crisis*. New York: Norton.
- Ewing, J. A. (1984). Detecting alcoholism: The CAGE-questionnaire. *JAMA*, 252, 1905–1907. <https://doi.org/10.1001/jama.252.14.1905>
- Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck personality questionnaire*. London: Hodder & Stoughton.
- Fadjukoff, P. (2007). *Identity formation in adulthood*. (Doctoral dissertation). Jyväskylä Studies in Education, Psychology and Social Research 319, University of Jyväskylä, Finland. Retrieved from <https://jyx.jyu.fi/dspace/handle/123456789/13394>
- Fadjukoff, P., Feldt, T., Kokko, K., & Pulkkinen, L. (2019). Identity status change within personal style clusters: A longitudinal perspective from early adulthood to midlife. *Identity*, 19(1), 1–17. <https://doi.org/10.1080/15283488.2019.1566066>
- Fadjukoff, P., Kokko, K., & Pulkkinen, L. (2007). Implications of timing of entering adulthood for identity achievement. *Journal of Adolescent Research*, 22, 504–530. <https://doi.org/10.1177/0743558407305420>
- Fadjukoff, P., & Pulkkinen, L. (2006). Identity formation, personal control over development, and well-being. In L. Pulkkinen, J. Kaprio, & R. Rose (Eds.), *Socioemotional development and health from adolescence to adulthood* (pp. 265–285). Cambridge: Cambridge University Press.
- Fadjukoff, P., Pulkkinen, L., & Kokko, K. (2016). Identity formation in adulthood: A longitudinal study from age 27 to 50. *Identity: An International Journal of Theory and Research*, 16(1), 8–23. <https://doi.org/10.1080/15283488.2015.1121820>
- Farrington, D. P. (2018). Origins of violent behaviour over the life span. In A. T. Vazsonyi, D. J. Flannery, & M. DeLisi (Eds.), *The Cambridge handbook of violent behaviour and aggression* (2nd ed., pp. 3–30). Cambridge: Cambridge University Press.
- Glueck, S., & Glueck, E. (1950). *Unraveling juvenile delinquency*. New York: The Commonwealth Fund.
- Gottfredson, M. R., & Hirschi, T. (1990). *A general theory of crime*. Stanford, CA: Stanford University Press.
- Jessor, R., & Jessor, S. L. (1977). *Problem behaviour and psychosocial development: A longitudinal study of youth*. New York: Academic Press.
- Jolliffe, D., Farrington, D. P., Piquero, A. R., Loeber, R., & Hill, K. G. (2017). Systematic review of early risk factors for life-course-persistent, adolescence-limited, and late-onset offenders in prospective longitudinal studies. *Aggression and Violent Behavior*, 33, 15–23. <https://doi.org/10.1016/j.avb.2017.01.009>
- Jolliffe, D., Farrington, D. P., Piquero, A. R., MacLeod, J. F., & van de Weijer, S. (2017). Prevalence of life-course-persistent, adolescence-limited, and late-onset offenders: A systematic review of prospective longitudinal studies. *Aggression and Violent Behavior*, 33, 4–14. <https://doi.org/10.1016/j.avb.2017.01.002>
- Junger-Tas, J., Terlow, J.-G., & Klein, W. W. (Eds.). (1994). *Delinquent behaviour among young people in the Western world: First results of the international self-report delinquency study*. Amsterdam: Kugler Publications.
- Kaprio, J. (2006). The FinnTwin studies. In L. Pulkkinen, J. Kaprio, & R. J. Rose (Eds.), *Socioemotional development and health from adolescence to adulthood* (pp. 3–91). New York: Cambridge University Press. <https://doi.org/10.1017/CBO9780511499784.023>

- Kaskela, T., & Pitkänen, T. (2016). The effects of gender and previous prison sentence on the risk of committing crime among a substance-abusing population. *Crime & Delinquency*, 64(6), 703–722. <https://doi.org/10.1177/001128716682229>
- Kokko, K., & Pulkkinen, L. (2000). Aggression in childhood and long-term unemployment in adulthood: A cycle of maladaptation and some protective factors. *Developmental Psychology*, 36, 463–472. <https://doi.org/10.1037/0012-1649.36.4.463>
- Kroger, J., & Marcia, J. E. (2011). The identity statuses: Origins, meanings, and interpretations. In S. Schwartz, K. Luyckx, & V. Vignoles (Eds.), *Handbook of identity theory and research*. New York: Springer. https://doi.org/10.1007/978-1-4419-7988-9_2
- Laghi, F., Baiocco, R., Lonigro, A., & Baumgartner, E. (2013). Exploring the relationship between identity status development and alcohol consumption among Italian adolescents. *Journal of Psychology*, 147(3), 277–292. <https://doi.org/10.1080/00223980.2012.688075>
- Loeber, R., Green, S. M., & Lahey, B. B. (2003). Risk factors for adult antisocial personality. In D. P. Farrington & J. W. Coid (Eds.), *Early prevention of adult antisocial behaviour* (pp. 79–108). Cambridge: Cambridge University Press.
- Loeber, R., Slot, N. W., & Stouthamer-Loeber, M. (2006). A three-dimensional cumulative developmental model of serious delinquency. In P.-O. H. Wikström & R. J. Sampson (Eds.), *The explanation of crime: Context, mechanisms, and development* (pp. 153–194). Cambridge: Cambridge University Press.
- Magnusson, D., & Bergman, L. R. (1988). Individual and variable-based approaches to longitudinal research on early risk factors. In M. Rutter (Ed.), *Studies of psychosocial risk: The power of longitudinal data* (pp. 45–61). New York: Cambridge University Press.
- Marcia, J. E. (1966). Development and validation of ego-identity status. *Journal of Personality and Social Psychology*, 3, 551–558. <https://doi.org/10.1037/h0023281>
- Moffitt, T. E. (1993). Adolescence-limited and life-course-persistent antisocial behaviour: A developmental taxonomy. *Psychological Review*, 100, 674–701. <https://doi.org/10.1037/0033-295X.100.4.674>
- Piquero, A. R., Moffitt, T. E., & Wright, B. E. (2007). Self-control and criminal career dimensions. *Journal of Contemporary Criminal Justice*, 23, 72–89. <https://doi.org/10.1177/1043986206298949>
- Pitkänen, L. (1969). *A descriptive model of aggression and nonaggression with applications to children's behaviour*. (Doctoral dissertation). Jyväskylä Studies in Education, Psychology and Social Research 19, University of Jyväskylä, Jyväskylä, Finland. Retrieved from <http://users.jyu.fi/~leapulkk>
- Pitkänen, T. (2006). *Alcohol drinking behaviour and its developmental antecedents*. (Doctoral dissertation). Jyväskylä Studies in Education, Psychology and Social Research 293, University of Jyväskylä, Finland.
- Pitkänen, T., Kaskela, T., & Levola, J. (2020). Mortality of treatment-seeking men and women with alcohol, opioid or other substance use disorders—A register-based follow-up study. *Addictive Behaviors*, 105, 106330. doi.org/10.1016/j.addbeh.2020.106330
- Pitkänen, T., Kokko, K., Lyyra, A.-L., & Pulkkinen, L. (2008). A developmental approach to alcohol drinking behaviour in adulthood: A follow-up study from age 8 to age 42. *Addiction*, 103(Suppl. 1), 48–68. <https://doi.org/10.1111/j.1360-0443.2008.02176.x>
- Pitkänen, T., Lyyra, A.-L., & Pulkkinen, L. (2005). Age of onset of drinking and the use of alcohol in adulthood: A follow-up study from age 8–42 for females and males. *Addiction*, 100, 652–661. <https://doi.org/10.1111/j.1360-0443.2005.01053.x>
- Pulkkinen, L. (1983). The search for alternatives to aggression. In A. P. Goldstein & M. Segall (Eds.), *Aggression in global perspective* (pp. 104–144). New York: Pergamon Press.
- Pulkkinen, L. (1988). Delinquent development: Theoretical and empirical considerations. In M. Rutter (Ed.), *Studies of psychosocial risk: The power of longitudinal data* (pp. 184–199). New York: Cambridge University Press.
- Pulkkinen, L. (2017). *Human development from middle childhood to middle adulthood: Growing up to be middle-aged (in collaboration with Katja Kokko)*. London: Routledge.
- Pulkkinen, L. (2018). Longitudinal study of personality and social development: Insights about aggression after five decades. In A. T. Vazsonyi, D. J. Flannery, & M. DeLisi (Eds.), *The Cambridge handbook of violent behaviour and aggression* (2nd ed., pp. 31–51). Cambridge: Cambridge University Press.
- Pulkkinen, L., Lyyra, A.-L., & Kokko, K. (2009). Life success of males on nonoffender, adolescence-limited, persistent and adult-onset antisocial pathways: Follow-up from age 8 to 42. *Aggressive Behaviour*, 35, 117–135. <https://doi.org/10.1002/ab.20297>
- Rönkä, A., & Pulkkinen, L. (1995). Accumulation of problems in social functioning in young adulthood: A developmental approach. *Journal of Personality and Social Psychology*, 69, 381–391. <https://doi.org/10.1037/0022-3514.69.2.381>
- Savolainen, J., Mason, W. A., Lyyra, A.-L., Pulkkinen, L., & Kokko, K. (2017). Antisocial and human capital pathways to socio-economic exclusion: A 42-year prospective study. *Developmental Psychology*, 53(8), 1597–1609. <https://doi.org/10.1037/dev0000344>

- Selzer, M. L. (1971). The Michigan alcoholism screening test: The quest for a new diagnostic instrument. *American Journal of Psychiatry*, 127, 1653–1658. <https://doi.org/10.1176/ajp.127.12.1653>
- Smith, K. V., & Goldman, N. (2011). Measuring health status: Self-, interviewer, and physician reports of overall health. *Journal of Aging Health*, 23, 242–266. <https://doi.org/10.1177/0898264310383421>
- Yearbook. (2011). *Yearbook of alcohol and drug statistics 2011*. National Institute of Health. Retrieved from: Helsinki. <http://urn.fi/URN:NBN:fi-fe201205085274>
- Zuckerman, M. (1979). *Sensation seeking: Beyond the optimal level of arousal*. Hillsdale: Erlbaum.

SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

How to cite this article: Pulkkinen L, Fadjukoff P, Pitkänen T. Persistent offenders and adolescence-limited offenders: Differences in life-courses. *Crim Behav Ment Health*. 2020;1–14. <https://doi.org/10.1002/cbm.2157>