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Adult life adjustment of vulnerable youths

The relationship between criminal history, employment history and adult life outcomes

Abstract

Purpose. This article examines adult outcomes of vulnerable youths. *Methods*. The sample consists of 251 boys and girls who were institutionalized in a Dutch juvenile justice institution in the 1990s. Information on personal and childhood characteristics was extracted from treatment files that were compiled during their stay in the institution. In addition, conviction data was used to determine subjects' criminal careers. Conducting face-to-face interviews with these former JJI-detainees when they were on average 34 years old, we collected retrospective information on employment history and several important current life-course outcomes. Group-based trajectory modeling was used to identify distinct offending and employment groups. *Results*. Results showed that previously institutionalized youths experience difficulties adjusting to conventional adult life. Most personal and childhood characteristics exert no significant effect on adult outcomes. Criminal behavior in young adulthood does impact adult life outcomes, as the two chronic offender groups show more difficulties in conventional adult life domains. Employment is associated with better adult outcomes, as the two employment groups that have an increasing or high employment rate in adulthood show higher levels of adult life adjustment. *Conclusions*. Adult life adjustment in this sample of previously institutionalized youths is mainly explained by events during young adulthood, and not so much by childhood risk factors. Ties to employment appear to facilitate transitions in other life domains, thereby promoting life success in adulthood.

1. Introduction

In the Netherlands, yearly over 4,000 youths are institutionalized in juvenile justice or youth care institutions because there are serious concerns about their behavior and development (Jeugdzorg Nederland 2013; CBS Statline 2013). These youths represent a particularly vulnerable group, as they

are generally characterized by troubled backgrounds. For example, they often come from adverse family situations, have experienced victimization, show academic failure, suffer from psychological problems, and many exhibit serious behavioral problems and delinquency. As these youths transition to adulthood, they tend to face additional problems, for which they have less resources to cope with, and therefore may experience difficulties adapting to conventional adult social roles (Osgood et al. 2005). Their vulnerable background and problematic behavior also places them at risk of developing a persistent pattern of criminal behavior in adulthood (e.g. Moffitt and Caspi 2001), which further reduces their long-term life-chances.

As of yet, we know very little about the adult outcomes of vulnerable youths. Retrospectively, adult offenders, especially those with a long history of offending, often report adverse conditions during their early life, but prospective knowledge about the extent to which vulnerable youths succeed in making a successful transition to adulthood and end up leading conventional lives is scarce. How are these youths progressing in conventional life domains such as employment, intimate relationships, parenthood and health? To what extent does their vulnerable background reduce their life-chances? To what extent does a history of criminal involvement affect their adjustment in adult life? And to what extent does employment - the life domain most targeted by interventions - contribute to adult life success? Finding answers to these questions is important, not only for detecting undesirable life careers and marginalization, but also for preventing major hidden societal costs like those resulting from these youths' criminal behavior, unemployment, welfare dependency, and health care expenditures (Caspi and Moffitt 1995; Piquero, Jennings and Farrington 2013). Therefore, the current study examines predictors of adult life adjustment of vulnerable youths in the Netherlands, by studying a sample of 251 previously institutionalized adults, using both officially registered longitudinal data and self-reported data collected in face-to-face interviews.

2. Theory

According to life-course theories, the transitional phase between adolescence and adulthood plays an important role in determining an individual's opportunities and life-chances. While with age most youths start to take up adult social roles such as work, marriage and parenthood, the conditions affecting the

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extent to which youths benefit from these life-course transitions may differ greatly between individuals. Previously institutionalized youths, who are characterized by vulnerable backgrounds, behavioral problems and delinquency, may have limited resources to exploit the opportunities presented to them to strengthen their social position and raise their life-chances. Due to childhood risk factors and early institutionalization they may also face structural and social disadvantage, cutting off opportunities to increase their human capital and causing difficulties in achieving long-term life success (Osgood et al. 2005; Uggen and Wakefield 2005).

Some theorists suggest that missing out on the opportunities to adjust to adult roles is due to the same underlying predisposition that caused their problem behavior in early life in the first place. In this respect, Gottfredson and Hirschi (1990) argue that low self-control, which is assumed to remain relatively stable after childhood, causes (continued involvement in) criminal behavior and is expected to have long-term negative consequences in other life domains as well, such as unemployment and substance abuse. According to this static view, vulnerable youths characterized by problematic backgrounds are predetermined to end up doing poorly in conventional adult life domains. Life-course theories however, suggest that childhood risk factors alone cannot predict the long-term differences in life success, related to school, employment and crime. Instead they emphasize that social bonds, opportunities, and social stigma due to past criminal involvement, play an important role in explaining differences in life-chances (e.g. Sampson and Laub 1993).

One of the key transitions in early adulthood and a possible marker of future life success is employment. Work not only generates income and therefore contributes to financial independence (Arnett 2000), it also provides structure to everyday life, generates feelings of usefulness and purpose, and is a source of social contacts and status (Jahoda 1982; Hulin 2002). Because of this, employment is of great importance for one's identity, wellbeing and psychological health (Paul and Batinic 2010). Especially for criminally involved youth, employment can be crucial to help build a conventional identity, to foster transitions to other adult roles and to adopt a non-criminal lifestyle (Sampson and Laub 1993; Chung, Little and Steinberg 2005). Vulnerable youths however, are at increased risk of experiencing difficulties in the domains of education and employment. Prior criminal involvement, contact with the criminal justice system and institutionalization, can be taken as signaling negative

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characteristics and block opportunities for connecting to conventional domains (Becker 1963; Lemert 1967), for example when a certificate of good conduct is required to obtain a job. When in reaction to experiencing blocked opportunities, these youths again turn to crime and deviance, they are in danger of becoming trapped in a downward spiral of cumulative disadvantage, and may find that conventional opportunities that can help them live successful lives are getting more and more out of reach (Sampson and Laub 1997). Whereas previously institutionalized youths who continue to engage in criminal behavior are at risk of increasing marginalization, those who do manage to find employment may break out of the vicious circle, and start increasing their chances to become established in adult life domains.

3. Adult outcomes of vulnerable youths

Longitudinal studies following vulnerable or criminal youths well into adulthood are scarce. The few existing studies that do have a long enough follow up usually focus solely on outcomes in terms of (young) adult criminal behavior (e.g. Piquero, Brame, Mazerolle and Haapanen 2002; Wartna, Kalidien, Tollenaar and Essers 2006) and to date, little research attention is devoted to outcomes in other adult life domains. As a result, not much is known about long-term adult outcomes of vulnerable youths in important conventional life domains, such as the labor market, family life, and health.

The few studies that have paid attention to adult outcomes of vulnerable youths have examined different aspects of criminal history in relation to adult functioning. To begin with, research indicates that criminal involvement is related to poorer adult functioning. To illustrate, Sampson and Laub (1993; Laub and Sampson 2003) used the 'Unraveling Juvenile Delinquency' study by Glueck and Glueck (1950; 1968), in which 500 delinquent boys and a matched group of 500 non-delinquent boys were followed from ages 14 to 32, to consider multiple life domains in addition to criminal development. Although their key interest was explaining criminal desistance patterns, they also studied adult outcomes for the delinquent and non-delinquent boys and found continuity in troublesome behavior into young and middle adulthood. Juvenile delinquency was not only related to later criminal behavior, but also to negative outcomes in other life domains, such as employment and family life. For example, Sampson and Laub found that delinquent boys were more likely than their non-delinquent counterparts to experience job instability, as well as being economically dependent up to age 32. In addition, delinquents

were more likely to get divorced or separated, and to have weak attachment to their spouses (Sampson and Laub 1993).

In addition, attention has been paid to the relationship between the level of criminal involvement and the level of adult functioning, indicating that outcomes in adulthood are worse for those delinquents with a more extensive criminal history. For example, using data from the Cambridge Study in Delinquent Development, a longitudinal study in which 411 boys from South London were followed from age eight to adulthood, Farrington et al. (2006) studied adult life adjustment at age 48 for persistent offenders, desisters, late onset offenders and never convicted men, the latter being the largest group. Using self-report information collected at ages 32 and 48, the researchers determined to what extent these men were living 'successful lives', defined by doing well in six out of nine important life domains, including employment, intimate relationships, and mental health. At age 32, almost 80 percent of the men lived successful lives, and at age 48, this percentage had increased to almost 90 percent. However, when analyzing life success among active offenders, the study shows that at age 32, only 42 percent of all persistent offenders lived successful lives, compared to 90 percent of those who were not convicted. At age 48, despite an overall increase in life success, the percentage of persisters living a successful life was still the lowest by far (Farrington et al. 2006).

In a follow up study, also using the Cambridge data, Piquero et al. (2010) used developmental trajectories of criminal convictions up to age 40, in addition to childhood risk factors, to predict 'life failure' (the opposite of the abovementioned measure of 'life success') at age 48. This study showed that, even when controlling for early risk factors, the two groups with the most persistent offending patterns - the very low rate chronic offenders and the high-rate chronic offenders – experienced significantly more life failure at age 48 (Piquero et al. 2010, see also Jennings et al. 2015).

Moreover, in an earlier study Moffitt, Caspi, Harrington and Milne (2002) examined adult outcomes at age 26 for life-course persistent offenders (males who showed extreme antisocial behaviour in both childhood and adolescence; LCP), adolescence limited offenders (males who displayed extreme antisocial behaviour only in adolescence; AL), a recovery group (extreme antisocial behaviour in childhood but not in adolescence), abstainers (no antisocial behaviour in childhood and adolescence), and an unclassified group (consisting of males who showed normative antisocial behaviour). Looking

at a large number of adult outcomes at age 26, the findings revealed that in general, the LCP and AL males fared worse in a variety of life domains compared to the other groups, and that problems were often worst for LCP males. To illustrate, LCP men showed more as well as more serious offending behaviour in adulthood, more often experienced mental health problems, had worse problems with alcohol, had more problems at work, had spent more time unemployed, and more often received benefits. Moreover, using a scale consisting of ten adult adjustment problems (comprising for example conviction records, a substance-dependence diagnosis, receiving benefits and long-term unemployment), LCP men experienced significantly more problems than all other groups (Moffitt et al., 2002).

Nilsson and Estrada (2009) conducted a longitudinal study in which they followed a Swedish birth cohort - comprising both males and females - to age 48. They employed a similar classification as Farrington et al. (2006) by distinguishing between persisters, desisters, late onset offenders and unconvicted men and women, and studied adult life course conditions, such as employment and family formation, for these four groups. Results showed that adult outcomes of desisters were comparable to the outcomes of those never convicted. However, men and women who were registered for crime both as youths and as adults (the persisters), showed the poorest outcomes at age 48. For example, employment participation among those who were convicted was lower compared to those never convicted and the proportion receiving welfare or disability pensions was considerably higher among persisters than among those never convicted. Furthermore, a large proportion of the male and female persisters was living alone at age 48, as opposed to cohabitating or being married. Finally, the Nilsson and Estrada study showed that women with a history of convictions showed poorer adult outcomes than convicted men.

Furthermore, attention has been paid to examining effects of official contact with the youth justice system on outcomes in adulthood. For example, Bernburg and Krohn (2003) found significant negative effects of contact with the police and the juvenile justice system in adolescence on educational achievement and employment in early adulthood for males. Moreover, Rutter, Quinton and Hill (1990) followed a sample of boys and girls who were institutionalized in group homes because their parents were unable to take care of them, and a control group of youths who were not institutionalized. They demonstrated that, compared to the controls, previously institutionalized men and women showed worse

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outcomes with regard to psychosocial functioning, a measure that included living conditions, work, marriage, psychopathology, and crime. Using propensity score matching, Gilman, Hill and Hawkins (2015) studied the long-term consequences of juvenile incarceration on functioning in adulthood. Their findings indicate that youths who were institutionalized in adolescence were more likely to have alcohol abuse problems and to receive public assistance between ages 27 and 33, compared to youths who did not experience institutionalization.

Taken together, only a small number of studies have examined adult outcomes of vulnerable youths. These studies show that, in general, people with a history of serious behavioral problems, delinquency or institutionalization in adolescence are more likely to experience difficulties in conventional adult life domains. This is especially so for those with a more extensive criminal history (e.g. Farrington et al. 2006). However, some important features of the currently available studies potentially limit the generalizability of these conclusions. First, with the exception of the Swedish study by Nilsson and Estrada (2009), these studies were carried out in Anglo-Saxon countries that are characterized by a sociocultural context that differs in important ways from that of other Western-European nations. For instance, whereas many US employers have access to the criminal records of potential employees, most European employers do not, or to a far more limited extent (Bushway, Nieuwbeerta and Blokland 2011). Second, the adolescents followed in these studies came of age in vastly different historical contexts. National and temporal differences in for example the penal climate, the welfare system and public health care, may impact the way in which adolescent behavior problems relate to adult life success. Third, prior research predominantly studied male samples and as a result had to remain silent on the risk factors for adult life failure in vulnerable women. Finally, limited attention has been paid to examining protective factors that might help vulnerable youths make a successful transition into adulthood (e.g., Werner 1989). To date, it is unclear to what extent employment, which is not only one of the most important adult roles, but is also the life domain that is most easily targeted by interventions, contributes to adult life adjustment. Taken together, still little is known about the extent to which vulnerable boys and girls in countries with comparatively strong social safety nets, such as the Netherlands, are able to establish themselves as adults in contemporary society, and what factors might help or hinder them in making a successful transition into adulthood.

4. The current study

Building upon the existing body of literature discussed above, the current study focuses on childhood risk factors, employment and criminal career patterns as they relate to long-term life-chances of vulnerable youths. Using data from a contemporary sample of previously institutionalized Dutch men and women (N=251), the current study will test whether we can prospectively identify those youths most at risk of failing to become healthy, self-sufficient, productive members of society. To do so, the study addresses the following research questions: First, what is the level of adjustment in conventional adult life domains of men and women previously institutionalized in a juvenile justice facility? Second, to what extent do personal and childhood characteristics of previously institutionalized men and women predict their level of adult life adjustment? Third, to what extent does criminal behavior of previously institutionalized men and women, over and above personal and childhood characteristics, predict their level of adult life adjustment? And fourth and finally, to what extent does employment history of previously institutionalized men and women predict their level of adult life adjustment, when personal and childhood characteristics and criminal history are taken into account? Answers to these questions can shed light on the degree to which adult life adjustment is explained by stable individual characteristics, as stated by static theories (e.g. Gottfredson and Hirschi 1990), or whether events in young adulthood, namely criminal behavior and employment, influence adult outcomes as well, as is assumed by those taking a life course approach (e.g. Sampson and Laub 1993).

5. Method

5.1 Sample

This study uses data from the 17up study, a longitudinal study following vulnerable youths well into adulthood.[1] The original sample of the 17up study comprises of 270 boys and 270 girls who were institutionalized in a Dutch judicial treatment institution for juveniles in the 1980-90s. The boys were discharged from the institution between 1989 and 1996, the girls between 1990 and 1999. At that time,

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[1] For this study, formal consent was obtained from the Dutch Ministry of Security and Justice. In addition, the Ethics Committee of the Faculty of Law (CERCO) of VU University approved the study and its procedures.

juveniles could be referred to the judicial treatment institution based on a criminal law measure or a civil law measure. A criminal law measure could be imposed when a juvenile had committed an offense and was aged between 12 and 18. A civil law measure could be imposed when a child was under age 18 and it was impossible for a child to remain at home, for example because of behavioral problems or an adverse family situation. All boys and girls in the sample showed serious behavioral problems, often including delinquency. During their stay, all respondents received treatment, which aimed at reducing the juveniles' problematic and delinquent behavior, as well as providing them education.

Between July 2010 and January 2012, a follow-up study was carried out which aimed at conducting face-to-face interviews with as many of the original 540 previously institutionalized youths as possible. At the start of the follow-up study, 22 subjects (4.1%) of the original 540 boys and girls had died.[2] This observed death rate is relatively high, given that subjects are still in their thirties (CBS Statline 2013). In addition, 14 subjects had emigrated, and five subjects were living in institutions, such as a psychiatric institution or a forensic clinic, that refused to cooperate with the study. This left 499 men and women that could be approached for an interview. These subjects first received a letter containing information about the study, after which trained interviewers approached them at home, or, in some cases, in the prison or in the treatment center for psychiatric or addiction problems where they resided. Homeless subjects were approached through shelters and municipal welfare departments.

If respondents were willing to take part in the study, the actual interviews were conducted using a laptop, either at the respondent's home or at another place (for example a nearby cafe) if the respondent so desired. Interviews lasted 1,5 hours on average and respondents received a gift voucher of €25 at the completion of the interview.

All in all, 251 respondents (118 men, 133 women) participated in the study, which comes down to a 50.3 percent response rate. Of those not participating, 156 individuals refused, 83 could not be contacted after six to eight attempts, four individuals were reached but were too ill to participate (due to severe

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[2] As was noted by an anonymous reviewer of a previous version of this article, compared to expectations based on mortality rates in the general Dutch population a disproportionate number of individuals in the original sample died prior to the end of the current follow up, rendering the group of individuals that did survive to this age – and that are under scrutiny here – somewhat more homogeneous. In turn, this may have negatively affected the predictive value of childhood characteristics in the remaining sample.

psychiatric problems such as psychosis), and five individuals did not turn up (repeatedly) for their interview appointment. A response analysis was conducted, to compare those who participated in the study with those who could not be approached or refused to participate. Groups were compared on a number of personal and background characteristics, living situation, employment, marital status, and criminal behavior. Responders and non-responders did not differ significantly on these characteristics besides those without an officially registered home address being under-represented in the subsample (Van der Geest, Bijleveld and Verbruggen 2013). Although the subsample can thus be considered to be representative of the original sample with regard to most of the measured characteristics, those without a registered home address being under-represented in the subsample could mean that the findings regarding levels of adult life adjustment might to some extent be positively biased.

On average, respondents were interviewed 17 years after they had left the institution (17.7 years, SD = 2.8). For men the follow-up period is 19.4 years (SD = 2.3), for women 16.3 years (SD = 2.3). The average age of the respondents at the time of the interview was 36.8 for men (SD = 2.4) and 32.9 for women (SD = 2.5).

5.2 Measures

Personal and childhood characteristics. Personal and childhood characteristics were extracted from treatment files that were constructed during the juveniles' stay in the treatment institution by a multi-disciplinary team of psychologists, psychiatrists, social workers, and pedagogical staff working on the groups in the institution. These files contain for example psychological and psychiatric reports, outcomes of standardized and validated instruments, such as the Wechsler Intelligence Scale for Children-Revised and the Child Behavior Checklist, reports from the Dutch Child Protection Board and treatment evaluations. Based on the information on youths' personal and childhood characteristics present in the treatment files, for this study we included the following variables in the analyses: adverse family situation (i.e. a sum of whether respondents grew up in a family where there was alcohol abuse, substance abuse, a parent with psychopathology, family members with a criminal history or unemployment), victimization (i.e. a sum of whether respondents experienced neglect, physical abuse or sexual abuse), psychological problems (yes/no), aggression (yes/no), and impulsiveness (yes/no).

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Dichotomous variables were used as this allows for a more comprehensible interpretation of the model estimates, and also because not all variables were measured on an interval scale. Information on the youths' family situation and victimisation was collected from reports and assessments prior to the youths' institutionalisation, whereas psychological problems, aggression and impulsiveness were measured by psychologists and psychiatrists during institutionalisation. Furthermore, since education is a possible protective factor important for positive adult outcomes (e.g. Bernburg and Krohn 2003; Tanner, Davies and O'Grady 1999), information on education was collected in the interviews using a questionnaire, which included questions about whether respondents followed and finished an education while institutionalized or after they had left the institution.

Criminal history. Respondents' criminal history is reconstructed using officially registered information on convictions. Information on convictions was collected from judicial documentation abstracts of the Netherlands Ministry of Security and Justice. These abstracts contain information on every case that is registered at the public prosecutor's office. Information about the type of offense and offense date is available. Using data on convictions, a dichotomous variable was constructed indicating whether a person was convicted for an offense between ages 12 and 17. Furthermore, based on conviction data from ages 18 to 34, developmental trajectories were estimated (described in more detail below). Convictions pertain to a wide range of offenses, such as violent offenses, property offenses, serious public order offenses, drugs offenses, and weapon offenses (following a classification used by Loeber et al., 1998, and as used in previous work on the 17up dataset, e.g., Van der Geest et al., 2009; Verbruggen et al., 2012; Verbruggen et al., 2015). Given that minor offenses, such as vandalism and road traffic offenses, are relatively common even in the general population, convictions for minor offenses are excluded from the analyses.

Employment history. Information about employment history was collected during the interviews using a life history calendar. This is a structured instrument for gathering more reliable retrospective information about the occurrence and timing of important life events over the life course. The calendar provides the respondent with visual cues which stimulate cross-domain referencing thereby facilitating respondents' accurate recall of the timing and duration of events and transitions in different life course

domains (Freedman, Thornton, Camburn, Alwin and Young-DeMarco 1988). Using the life history calendar respondents indicated for each age year whether they were employed or not. Using information on respondents' self-reported formal employment (temporary work, regular work or business ownership) in the years from ages 18 to 34, developmental employment trajectories were estimated (described in more detail below).

Adult life adjustment. The dependent variable in this study is respondents' level of adult life adjustment in the year they were interviewed. In the interviews, questions were asked following semi-structured and structured questionnaires to collect information about several adult life domains. Based on this information, the following variables were constructed: *(1) Regular accommodation.* Subjects were considered to have regular accommodation when they lived in a house at the time of the interview, as opposed to living in an institution or detention center, staying at relatives or friends, or being homeless. *(2) Employment.* This variable measures whether respondents were formally employed (i.e. employment for which taxes are paid) at the time of the interview. (3) *Intimate relationship.* This variable measures whether subjects were in a romantic relationship at the time of the interview. *(4) Regular contact with children*. Subjects were asked whether they had children, and if so, how often they had contact with their child(ren). Respondents who had daily or weekly contact with child(ren) were coded as having regular contact with children, as opposed to respondents who had less frequent or no contact with their child(ren). *(5) Satisfactory health*. Using questions derived from the Dutch Health Monitor (GGD 2005), respondents were asked whether they had taken medication prescribed by a doctor during the past 12 months (excluding birth control), and whether they had had contact with one of the following seven health care professionals: medical specialist, company doctor, mental health service, psychologist, psychiatrist, addiction care service, or an emergency room. Visits to general practitioners are excluded, given that these are relatively common. For example in 2011, 72% of the people in the general Dutch population visited a general practitioner (Gijsen and Poos, 2013). Based on these eight indications of health problems, respondents were considered to be in satisfactory health when they had a score of 0 or 1, and coded as having no satisfactory health situation when they scored 2 or higher. *(6) Alcohol abuse* and *(7) Drug abuse.* Items derived from the Composite International Diagnostic Interview

(CIDI) were used to ask subjects whether they had used alcohol and drugs (soft and hard drugs) in the past twelve months, and whether they had experienced difficulties on conventional life domains as a consequence of their alcohol or drug use. Following the criteria for alcohol abuse and drug abuse of the DSM-IV-TR, it was determined whether subjects met the criteria for alcohol abuse or drug abuse.[3] *(8) Self-reported crime*. Using items from the International Self-Report Delinquency scale (ISRD), respondents reported whether they had committed one or more offenses (i.e. vandalism, theft, burglary, fraud, threat/assault, violent offense, sex offense, and drug dealing) in the past twelve months.

All variables were coded dichotomous, with a value of 1 indicating 'adjusted' and 0 'not adjusted'. Alcohol abuse, drugs abuse and self-reported crime are taken as indictors of unsuccessful adjustment, therefore, these variables were coded as 0 when subjects were classified as having an alcohol abuse problem, a drug abuse problem, or had committed an offense. For each subject the average level of *adult life adjustment* across all eight domains was calculated, with a higher value indicating a higher level of adult life adjustment. Respondents that did not have children were coded as missing on that particular life domain, as not having children does not necessarily means being 'not adjusted'. In those cases, the average value of adult life adjustment was calculated based on the values of the seven remaining life domains. Similarly, for the respondents that were incarcerated or institutionalized at the moment of the interview (N=18), values on life domains that are deemed difficult or impossible to experience while incarcerated/institutionalized were coded as missing (e.g. employment during institutionalization), and the average value of adult life adjustment was calculated based on the remaining life domains. Cronbach's alpha of this scale is 0.62, which is comparable to the measures used by Farrington et al. (2006) and Piquero et al. (2010) (i.e. Cronbach's alpha was 0.65 at follow-up at age 32, and 0.52 at follow-up at age 48).

The measure of adult life adjustment used in this study is based on whether individuals adopted adult roles that are thought to be markers of conventional adult life, such as employment and being in a relationship. When subjects have not attained these adult markers, they are considered to be

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[3] One meets the criteria for alcohol abuse / substance abuse when he or she shows a maladaptive pattern of drinking / substance use, manifested by for example recurrent alcohol-related / substance-related legal problems, or recurrent use of alcohol / substance use resulting in a failure to fulfill major role obligations at work, school, or home (American Psychiatric Association 2000: 199; 214).

'unadjusted'. However, for those people, 'failure' in a certain life domain does not necessarily mean that they are not doing well. For example, an unemployed person might be satisfied with being a homemaker, and someone might be content being single instead of in a relationship. Given that we could not take these subjective perceptions of one's status in adult life domains into account, our measure of adult life adjustment – like that used in prior studies - can be considered 'conservative' in the political rather than the statistical sense of that term.

5.3 Analyses

Descriptive statistics for respondents' personal and childhood characteristics, criminal history, employment history, and different dimensions and level of adult life adjustment are presented for males and females separately. Chi square tests and independent sample t-tests were conducted to tests for statistically significant gender differences.

Similar to Piquero et al. (2010), group-based trajectory modeling (Nagin, 1999; Nagin, 2005) is used to identify developmental pathways of offending in the sample. This technique identifies clusters of individuals following developmental pathways that are relatively similar in both the level and shape of offending with age (Nagin, 1999). Trajectories are estimated using data on convictions for serious offenses from age 18 to age 34, which is the average age at the moment of the interview. For each respondent, conviction data up to one year before the moment of the interview is used, enabling us to examine the relationship between criminal history prior to the interview and adult life adjustment at the moment of the interview. Furthermore, conviction frequency is corrected for incarceration.[4] Because convictions are relatively rare events, a zero-inflated Poisson model is fitted. The Bayesian information criterion (BIC) is used to determine the number of groups that best describes the data. The model estimates probabilities that a sample member belong to each of the trajectory groups (see for more details on group-based trajectory modeling: Nagin, 2004 and Nagin, 2005). A similar procedure is followed to identify different employment groups in the sample. Because the life history calendar provides

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[4] Since offending is less likely to occur when a respondent is incarcerated, time spent incarcerated is corrected for with the following formula: Exposure $ji = 1 - $ (number of days incarcerated/730), where j is the respondent and i is the year of observation (see Van der Geest et al., 2009).

dichotomous data about employment per age year, a logistic model is fitted to distinguish the employment trajectories.

Then, to examine to what extent personal and childhood characteristics, criminal behavior, and employment history are associated with adult life adjustment, three multiple regression models are estimated. The first model estimates effects of subjects' personal and childhood characteristics on adult life adjustment. The second model examines to what extent criminal history is related to adult life adjustment, over and above the effects of subjects' background factors, by estimating the effect of crime in adolescence, namely whether respondents are convicted between ages 12 and 17, as well as by examining to what extent different crime trajectories in adulthood are related to adult life adjustment, by including the probabilities that a sample member belongs to each of the crime trajectory groups, as estimated by the trajectory model, in the regression analysis. Finally, the third model estimates the extent to which employment patterns in adulthood are associated with adult life outcomes, over and above personal and childhood characteristics and criminal history features, by including the probabilities that a sample member belongs to each of the employment trajectory groups in the model.

6. Results

6.1 Descriptive results

Personal and childhood characteristics. As mentioned above, the boys and girls placed in juvenile justice institutions often display behavioral problems and are characterized by vulnerable family backgrounds. Behavioral problems and background characteristics giving rise to placement in the institution are described in detail in the treatment files and are summarized in Table 1. A large proportion of men (74.2%) and women (84.6%) were highly impulsive, and two thirds of the men and women displayed aggressive behavior. In addition, the intelligence of around one third of the respondents was below average.

Furthermore, around two thirds of the boys (61.9%) and girls (61.7%) experienced psychological problems. The prevalence of psychological problems is considerably higher in our sample than what is

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average in the Dutch population (Verhulst, van der Ende, Ferdinand and Kasius 1997). The most common diagnoses for boys were conduct disorder (22.9%), depression (22.9%), and ADHD (11.0%). Girls were most often diagnosed with depression (42.1%). In addition, a sizable share of these girls also displayed externalizing problem behavior, such as serious behavior problems (20.3%) or conduct disorder (14.3%).

In addition, respondents grew up in adverse family environments. Girls were more likely than boys to experience problematic family conditions (χ^2 (1, N=251) = 16.01, p < .001). For example, more girls than boys had at least one parent with mild or severe psychopathology, and girls more often than boys grew up in a family where alcohol abuse, substance abuse, criminal family members, or long-term unemployment were present.

Moreover, a large part of the sample, almost 85 percent, experienced at least one form of victimization before they entered the institution. Most common was neglect, which was more often experienced by boys (80.5%) than by girls (66.2%) (χ^2 (1, N=251) = 6.51, p < .05). Furthermore, over half of the women were victims of physical abuse, and one third of the women were victims of sexual abuse, while fewer men were physically (30.5%; χ^2 (1, N=251) = 10.95, p < .01) or sexually abused (6.8%; χ^2 (1, N=251) = 26.33, p < .001).

Finally, data from the interviews shows that the majority of boys and girls followed vocational training during their stay at the institution. When they left the institution, a much larger proportion of the boys (57.8%) than girls (8.3%) had a diploma (χ^2 (1, N=248) = 69.95, p < .001), possibly because females were somewhat younger when they were discharged from the institution. Over 70 percent of men and women report that they attended some form of education after their stay in the institution, and more than half of the respondents also received a diploma (Table 1).

In sum, while childhood risk factors and early behavioral problems are more prevalent in the current sample compared to the general population – reflecting the vulnerable nature of the current sample – variation in these factors still remains that might be linked to adult outcomes.

*** Table 1 ***

Criminal history. The majority of boys (89.0%) and girls (97.7%) received treatment in the institution under a civil law measure, the others, 13 boys and three girls, were institutionalized based on a criminal law measure. Boys stayed in the institution for an average of 21 months (SD = 14 months), and were discharged at an average age of 17.3 (SD = 1.4). The girls' stay in the institution was shorter, 13 months (SD = 8 months) on average (t(190.16)=5.64, p < .001), and girls left the institution at a younger age than boys (age 16.6, SD = 1.3) (t(249)=4.58, p < .001) (Table 2).

Prior to age 18, the majority of boys (81.4%) were convicted of at least one offense. Within the convicted group, boys averaged almost six convictions (SD = 5.21). More than half of the girls (52.6%) were convicted of an offense before age 18. Within the group of female offenders, girls were convicted 2.4 times on average (SD = 2.5). Boys were more likely to be convicted prior to age 18 than girls (χ^2 (1, N=251) = 23.03, p < .001), and their average number of juvenile convictions was higher (t(143.86)=5.42, p < .001).

From age 18 onwards, men were more often convicted than women (χ^2 (1, N=251) = 32.83, p < .001) - over 80 percent of the men and almost 50 percent of the women were convicted for an offense at least once (see Table 2). Male offenders were also convicted more frequently (t(122.80)=5.25, p < .001), with male offenders being convicted 13.5 times on average (SD = 16.3), while female offenders were convicted 4.2 times (SD = 5.1). Adjusting for the length of the follow up, this boils down to an average rate of 0.72 (SD = 0.85) convictions per year for the criminally active men in the sample, compared to an average rate of 0.28 (SD = 0.33) for the criminally active women – which again is a significant difference (t(135.32)=4.58, p < .001).

Table 2

When looking at the results from group-based trajectory modeling that was applied to the conviction data, it becomes clear that there are substantial differences in adult criminal involvement in the sample. Based on the BIC-value, and other criteria to assess model fit mentioned by Nagin (2005), a four-group model was found to be the best solution. The mean posterior probabilities of the four-group model range from 0.85 to 0.98, which indicates that subjects have a high probability of being assigned to a particular group (Table 2). The following four groups were identified. The largest group comprises the low-rate desisters (59.0%), who show a conviction rate that is close to zero throughout the observation period,

from ages 18 to 34. A group of high-rate desisters (11.6%) start with a high conviction rate at age 18, peak at age 19 and show a sharp decrease in their early 20s. The low-rate chronics (20.3%) show a steady but slowly decreasing conviction rate from ages 18 to 34. Finally, the high-rate chronics (9.2%) have a high conviction rate from ages 18 to 34 that peaks around age 23. At age 34, their conviction rate is still substantially higher than that of the other groups (Figure 1).

Thus, despite adult criminal behavior being prevalent in our sample, there are substantive differences in both the level and shape of the criminal pathways these vulnerable youths follow during their adult years.

*** Figure 1 ***

Employment history. The majority of men (89.7%) and women (84.0%) were employed at least once after the age of 18. However, among those ever employed, men on average were employed for two thirds of the observation period (M = 0.66, SD = 0.34), while women were employed little over half of the follow-up period (M = 0.58, SD = 0.32) (Table 3).

*** Table 3 ***

Similar to criminal involvement in adulthood, group-based trajectory modeling demonstrated that within the sample substantial differences exist in employment patterns. Four employment trajectories were identified. The mean posterior probabilities of the four-group model range from 0.91 to 0.97, indicating that subjects have a very high probability of being assigned to the group (Table 3). A substantial group (27.1%) is chronically unemployed between ages 18 and 34. A second group (23.9%) starts with a high employment rate at age 18 but shows a decreasing employment rate with age. A third group (18.3%) shows an opposite development with a low employment rate at age 18 that increases with age. The fourth group (30.7%) is continuously employed throughout the observation period (Figure 2).

Figure 2

Adult life adjustment. Descriptives for the different dimensions of adult life adjustment are presented in Table 4. These dimensions were measured at the time of the interview, when the male respondents

were on average 36.8 years old (SD = 2.4) and the females 32.9 years old (SD = 2.5). When describing how the respondents are doing on the different life domains below, comparisons will be made with general population studies. These comparisons serve to shed some light on the differences in adult outcomes between the general population and the vulnerable group under study as a whole, as well as to provide a yardstick by which to compare differences between subgroups based on developmental trajectories. However, it should be noted that it is difficult to make any claims based on these comparisons, as it was impossible to compare the sample under study with general population samples using statistical analyses.

(1) Regular accommodation. At the time of the interview, 80.5 percent of the male respondents and 91 percent of the female respondents had a satisfactory housing situation, which means living in a regular house, as opposed to being homeless, staying with relatives or friends, or living in an institution or detention center. Twelve percent of the men and 3 percent of the women were institutionalized at the time of the interview. Compared to women, men were less likely to be in regular accommodation (χ^2 (1, N=251) = 5.71, p < .05) and more likely to be institutionalized (χ^2 (1, N=251) = 7.36, p < .01). Of those institutionalized, seven men and one woman were imprisoned, four men and two women were treated in a forensic clinic, and three men and one woman were institutionalized in a psychiatric institution. Another seven percent of the respondents was either homeless (2 men, no women) or lived with family or friends (7 men and 8 women). The institutionalization rate in the sample is relatively high compared to the general Dutch population. To illustrate, in 2009, 0.25% of men and 0.14% of women in the general population were institutionalised in a mental health facility (Gijsen and Poos, 2013), while it is estimated that 0.32 percent of the population experienced incarceration in 2010 (CBS Statline 2013; Linckens and De Looff, 2013).

(2) Employment. Men were more likely to be employed (χ^2 (1, N=234) = 4.34, p < .05) than women, and were also more often employed fulltime (χ^2 (1, N=246) = 6.59, p < .05). At the time of the interview, 46.6 percent of the men (N = 55) was employed, and 38.1 percent was employed fulltime. Of the women, 37.6 percent (N = 50) was employed, and 24.1 percent was employed fulltime. Still, while being in their thirties over half of the sample is unemployed, making employment participation in our sample considerably lower than in the general Dutch population (CBS Statline 2013). To illustrate, in 2011

employment participation in the Netherlands for men aged 25 to 35 was 86 percent, and 90 percent for men aged 35 to 45. That same year employment participation for Dutch women was 78 percent for those aged 25 to 35, and 74 percent for those aged 35 to 45.

(3) Intimate relationship. At the moment of the interview, almost 60 percent of the men and two thirds (66.7%) of the women were in a romantic relationship. Of those in a relationship, 45 men (38.8%) and 57 women (43.2%) cohabit while not being married, and a small proportion of the respondents is married (14.7% of the men, and 9.1% of the women). Although it is difficult to determine how the number of subjects who are in a relationship relates to the figure in the Dutch population, the percentage of subjects in our sample cohabiting or being married appears to be lower (Latten, 2004).

(4) Regular contact with children. Women were more likely than men to have children (χ^2 (1, N=250) = 14.95, p < .001). Almost four out of five women (78.8%) had one or more children compared to three out of five men (55.9%). The average age at birth of the first child is lower than in the general population, especially for women (Van der Geest et al., 2013). Among those who had children, 75.4 percent of all fathers and 89.2 percent of all mothers reported that they have regular contact with their child(ren) – a significant difference (χ^2 (1, N=163) = 5.42, p < .05). In the total sample, over half of the respondents (54.6%) are classified as having children with whom they have regular (daily or weekly) contact. When asked about the reason for not having regular contact with their children, parents in our sample report conflicts with their ex-partner about custody, or that children were placed under care of the Child Protection Board.

(5) Satisfactory health. About half of the men (50%) and women (47.6%) were considered to be in satisfactory health, meaning that they have not had, or only once have had, contact with a health care professional or took medication prescribed by a doctor in the twelve months preceding the interview. 42 men (41.6%) and 63 women (52.1%) had contact with a medical specialist and about one third of the respondents (30.4% of men, N=31, and 35.6% of women, N=42) had contact with one or more mental health care professionals (mental health service, a psychologist or a psychiatrist) in the past year. Furthermore, 45 men (42.9%) and 50 women (40.7%) reported that they took prescription medication in the past twelve months. In comparison, in 2010, 32.9% of Dutch citizens between ages 30 and 40 had contact with a medical specialist (CBS Statline 2013). In the general population, 6.2 percent of those

aged between 18 and 64 had contact with a mental health care professional in the past twelve months (De Graaf, Ten Have and Van Dorsselaer 2010). Finally, of all Dutch people between ages 20 and 45, 26.8 percent takes medication prescribed by a doctor (CBS Statline 2013). Both physical and mental health problems thus appear to be more common among previously institutionalized men and women as compared to the Dutch population as a whole.

(6) Alcohol abuse. In our sample, 45 percent of the men meet the criteria for alcohol abuse in the twelve months prior to the interview, compared to 22 percent of the women. This difference is again statistically significant (χ^2 (1, N=226) = 13.88, p < .001). Alcohol abuse is considerably higher than in the general Dutch population, where among men aged 25 to 34 8.7 percent, and among men aged 35 to 44 5.6 percent meet the criteria for alcohol abuse in the past year. Among Dutch women aged 25 to 34 and women aged 35 to 44, percentages are even lower, respectively 2.6 and 1.2 percent (De Graaf et al. 2010).

(7) Drug abuse. While over half of the respondents (56.1%) report that they did not use any drugs in the past twelve months, over a quarter of the sample (27.9%, 40 men, 30 women) reports daily or weekly drugs use. Drug abuse in our sample was more prevalent among men than among women (χ^2 (1, N=223) = 7.18, p < .01). Over one third of the men (37.6%) meet the criteria for drugs abuse in the twelve months prior to the interview, compared to one in five women (21.3%). Similar as with alcohol abuse, the figures reported by our sample are substantially higher than those among similarly aged men and women in the general Dutch population. Among Dutch men aged 25 to 34 2.0 percent is considered to have a drug abuse problem, while this is 1.4 percent among men aged 35 to 44. Among women 1.0 percent of Dutch women aged 25 to 34, and 0.3 percent of Dutch women aged 35 to 44 meet the criteria for drug abuse (De Graaf et al. 2010).

(8) Self-reported crime. The majority of respondents report that they did not engage in criminal behavior in the past twelve months. Among men and women who report that they did commit one or more offenses in the past twelve months (34 men, 34.0% and 27 women, 25.2%), the offenses that are most reported are threatening/assault (N=36), drugs dealing (N=20) and theft (N=18). Self-reported criminal behavior in this sample appears to be higher than among Dutch men and women. To illustrate, a study by Donker (2004) found that among young adults aged 18 to 32 (average age of 24.5), nearly

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one in four respondents reported to have engaged in criminal behavior over the past year. Wittebrood, Michon and ter Voert (1997) showed that in a sample of men and women aged 15 and older (with an average age of 37), less than one in five of the respondents reported committing a crime in the previous year. These studies combined suggest that for the Dutch general population, the prevalence of self-reported crime in (young) adulthood is somewhere between 17-24%. Given that the prevalence of offending declines with age, population estimates based on more age-homogeneous samples are expected to be even lower.

*** Table 4 ***

Taken together, previously institutionalized men and women experience considerable difficulties in multiple adult life domains. Not surprisingly, the average level of adult life adjustment can considered to be quite low (Table 3). Moreover, men have a significantly lower average level of adult life adjustment (M = 0.61, SD = 0.28) than women (M = 0.69, SD = 0.22) (t(224.98)= -2.82, p < 0.01).

When making a distinction between the different offender groups, the two desisting offender groups show the highest level of adult life adjustment, whereas the two chronic groups show the lowest level of adult life adjustment. An analysis of variance test showed that there is a significant difference in the average levels of adult life adjustment between the groups (F(3, 247)=15.44, p < .001), and the post-hoc test showed that average levels of adult life adjustment are significantly lower in the two chronic groups compared to the desisting groups. Furthermore, when looking at the different employment trajectories average levels of adult life adjustment are significantly different between these employment groups as well (F(3, 247)=7.84, p < .001). Post-hoc tests indicate that the two groups that show an increasing or continuous employment rate with age have significantly higher levels of adult life adjustment than the chronically unemployed group and the group with a decreasing employment rate (Table 4).

6.2 The relationship between personal and childhood characteristics, criminal history, employment history, and adult life adjustment

To examine to what extent subjects' gender, personal and childhood characteristics, their criminal behavior and employment history are associated with outcomes in adulthood, three multiple regression

models are estimated (Table 5).[56] The first model, which includes subjects' gender, personal and childhood characteristics, and education, shows that these variables accounted for a significant amount of the variability in adult life adjustment ($R^2 = .12$, $F(9, 203) = 3.09$, p <0.01). Gender has a significant effect on adult life adjustment, indicating that over a decade after leaving the institution girls are doing better in conventional adult life domains than their male counterparts. Furthermore, subjects that did not finish an education after their stay in the institution have lower levels of adult life adjustment. The other personal and childhood risk factors have no significant effect on the level of adult life success.

In Model 2 we examined to what extent criminal history is related to adult life adjustment, while controlling for gender, personal and childhood characteristics, and education. In the second model, adding the variables for criminal history significantly improved prediction of adult life adjustment, over and above the personal and childhood characteristics (R^2 change = .11, $F(4, 199) = 6.72$, p < 0.001). Being convicted for a serious offense between ages 12 and 17 has no significant effect on the level of adult life adjustment. However, the model shows that the two groups that have the highest level of criminal behavior in adulthood, the low-rate chronics and the high-rate chronics, show significantly lower levels of adjustment in adult life domains.[7] Gender no longer predicts adult life adjustment when criminal history indicators are added to the model, but not finishing an education remains predictive of having more negative life outcomes in adulthood (p=0.05).

The third model shows that when employment patterns are also taken into account, prediction of adult life adjustment is again significantly improved (R^2 change = .05, $F(3, 196) = 4.42$, p < 0.01). Results show that the two chronic offending groups have a significantly lower level of adult life adjustment, whereas the two employment groups that have the highest employment rate show

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[5] It must be noted that the variable for adult life adjustment is slightly skewed. To test for robustness of the results, bootstrapping was used. In the bootstrapping procedure, the parameters are calculated using 1000 different subsamples that were randomly sampled from the total sample (Field, 2013). The results of the regression analysis using bootstrapping are very similar to the original regression analysis. We are therefore confident that the results are robust.

[6] Post hoc power analyses demonstrated that our sample of 251 respondents is large enough to detect differences, as the power to detect effects at the 0.05 level was 0.99 in regression models 1 and 2, and 0.88 in regression model 3.

[7] Some caution is warranted when interpreting the effects of the conviction trajectories though, as two groups, the high-rate desisters (11.6%, N=29) and the high-rate chronics (9.2%, N=23) are relatively small.

significantly higher levels of adjustment in adult life domains. The effect of education on adult outcomes is no longer significant in Model 3 suggesting that much of the effect of education on adult life adjustment materializes through having more stable employment careers. Still, the percentage explained variance in Model 3 is still quite low ($R^2 = .27$), indicating that adult life adjustment is only modestly explained by personal and childhood characteristics, criminal history and employment history.

*** Table 5 ***

7. Discussion

Building on previous work examining the adult outcomes of offending behavior earlier in life (Farrington et al. 2006; Jennings et al., 2015; Moffitt et al., 2002; Nilsson and Estrada, 2009; Piquero et al. 2010), this study examined levels of adult life adjustment at an average age of 34 of previously institutionalized men and women (N=251) who were treated for serious problem behavior in a Dutch juvenile justice institution in the 1990s. Data on personal and childhood characteristics, officially registered data on criminal convictions, in addition to retrospective self-report data on employment history (collected using a life history calendar) and several important adult life domains enabled us to study effects of a vulnerable background, criminal history, and employment history on adult life adjustment.

Results showed that the backgrounds of previously institutionalized youths are characterized by serious problem behavior, psychological problems, victimization, an adverse family situation and academic failure. In young adulthood, over 80 percent of the men and almost 50 percent of the women were convicted of an offense. Using group-based trajectory modeling, four distinct offender groups were identified: low-rate desisters, high-rate desisters, low-rate chronics and high-rate chronics. Although the majority of men and women find a job at some point during the observation period, their work histories are unstable and they are employed for only little over half of the observation period on average. Group-based trajectory modeling revealed the existence of four different employment groups in the sample: a chronically unemployed group, a group with decreasing employment rates, one with increasing employment rates, and a continuously employed group.

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Moreover, this study showed that a large part of the men and women experienced difficulties in conventional life domains when they are well into their thirties. Compared to the general Dutch population, they fare worse on all measured life domains: the number of sample members institutionalized is higher, employment participation is lower, there is less family formation, a higher rate of contact with (physical and mental) health care professionals, more alcohol and drug abuse, and more (self-reported) criminal behavior. All in all, the average level of overall adult life adjustment is considered to be low in this sample. Furthermore, outcomes for previously institutionalized men are significantly worse than for women.

While taken together, this sample of previously institutionalized youths thus represents a specifically vulnerable group, with many of the men and women under study having experienced considerable difficulties in both their childhoods and adult lives, meaningful subgroups still may be present. Regression models were therefore used to examine the relationship between gender, personal and childhood characteristics, criminal history, employment history, and adult life adjustment in this group. The models showed that most of the individual and childhood characteristics, except for academic failure, are not significantly related to adult life adjustment. Criminal behavior does impact adult life outcomes, as the two chronic offender groups show more difficulties in conventional adult life domains. Employment on the other hand, is associated with better adult outcomes, as the two employment groups that have an increasing or high employment rate in adulthood show a higher level of adult life adjustment. Although the variance explained by the models is quite low, adult life adjustment appears to be mainly explained by events during adulthood, and not so much by childhood risk factors, at least within this institutionalized sample. This suggests that it is difficult to identify those vulnerable youths who are most at risk of failing to adopt adult roles based on childhood characteristics. The results therefore do not lend much support for the static view that adult life outcomes can be explained solely by stable individual characteristics (Gottfredson and Hirschi 1990). However, it is important to note that childhood risk factors averaged high in this sample, meaning that childhood risk factors may have predictive value in lower-risk samples (compare Piquero et al 2010). For this sample of vulnerable youths, the results indicate that behavioral patterns in adulthood matter most for later life outcomes. On the one hand, the findings indicate that criminal behavior later in life can negatively influence adult

outcomes, which is in line with the assumption that deviant labeling can diminish or block conventional opportunities in adulthood (e.g., Becker 1963) and that disadvantage can accumulate over the life course (Sampson and Laub 1997). These results are comparable to those of Piquero et al. (2010), who also found that chronic offenders were least successful in conventional adult domains at age 48. Findings with regard to employment patterns seem in line with the work of Sampson and Laub (1993), who argue that ties to social institutions such as employment can bring about positive change in the life course. For those youths how are able to find employment, work appears to facilitate transitions in other life domains, thereby promoting life success in adulthood.

In the current study, vulnerable girls showed more childhood risk factors than did boys, which corroborates previous research suggesting that delinquent girls are characterized by a more problematic background than are criminal boys (Eme 1992). However, the adult outcomes of vulnerable women are better than those of their male counterparts. Despite girls having more troubled backgrounds, boys more often grow up to develop a (persistent) criminal career in adulthood, a result also found in the Nilsson and Estrada study (2009). Because of their higher level of criminal behavior, men might be more likely to become trapped in a downward spiral of cumulative disadvantage, making it increasingly difficult to adapt to adult roles (Sampson and Laub 1997). Since research on the long-term outcomes of vulnerable youths, and particularly females, is scarce, future research is needed to test for the mechanisms underlying these gender differences.

The strengths of this study lie in the contemporary sample of both men and women, and the attention paid to non-crime outcomes when subjects are well into their thirties. Some limitations of the study must be noted as well. To begin with, it is important to keep in mind that the sample under study represents a very specific and vulnerable group that exhibited problem behavior deemed so serious that they were institutionalized. Despite the sample as a whole stemming from the tail of the risk factor distribution however, we still find ample variation in both childhood factors, developmental trajectories as well as adult outcomes. Childhood risk factors averaging high in this sample may influence the generalizability of our findings. While in the current sample childhood risk factors were not significantly related to lower levels of adult life adjustment, this might be different in lower-risk or general population samples (e.g., Piquero et al. 2010). Moreover, for this study, personal and childhood factors were extracted from

treatment files, and several variables were dichotomized for the analyses. A more sophisticated measurement of background variables in future research might produce more nuanced findings on the relationship between childhood risk factors and adult outcomes among vulnerable youths.

Furthermore, our findings indicate that both offending and employment patterns in adulthood are related to adult outcomes. It must be noted, however, that, like in the study by Piquero and colleagues on the Cambridge data (Piquero et al., 2010), our measure of adult life adjustment includes the domains of employment and (self-reported) criminal involvement. To avoid overlap between the independent and dependent variables employment and crime trajectories were estimated up to one year before the interview, while adult life adjustment was measured at the time of the interview. Still, continuity in employment and offending patterns is likely and this might to some extent explain the observed relationship between employment and offending patterns and adult outcomes. Based on theoretical (employment is one of the most important adult life domains) and methodological reasons (excluding these domains from our outcome variable resulted in a less reliable scale of adult life adjustment), we have chosen to report results from analyses including these variables in our outcome measure. Additional analyses excluding both self-reported crime and employment from our adult life adjustment scale were however largely comparable, the only difference being that, while being in the same direction, the effects of the employment trajectories are slightly smaller in magnitude and no longer reach significance.[8]

Importantly, data on a comparison group was regrettably unavailable, making it difficult to determine which factors are causing the generally poor adult outcomes observed in the sample. In future research for instance, inclusion of a comparison group characterized by a vulnerable background but without having experienced institutionalisation, would help shed light on the extent to which institutionalization significantly contributes to poorer adult outcomes (e.g., Gilman et al. 2015).

In addition, as mentioned in the Methods section, those that were without an officially registered home address and could not be traced via shelters in the municipality of last known residence and those that had died after leaving the juvenile justice institution, could not be included in the subsample under

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[8] Results for these additional analyses are available from the authors.

study. Given that being homeless (and the conditions usually surrounding homelessness) rank near the bottom of our life adjustment scale, and that premature death can be viewed as the worst possible adult outcome, our findings on the levels of adult life adjustment in previously institutionalized youths may to some extent be positively biased.

Furthermore, while our measure of adult life adjustment may be regarded as 'conservative', as no information on subjective appraisals was taken into account, dichotomous indicators of adult outcomes may also overestimate the true level of adult life adjustment. For one, respondents may live in a run-down rental apartment in a notoriously bad neighborhood, work a low-paying dead-end job, and be involved in a conflict ridden relationship, and still be considered 'well adjusted'. Second, for many of the indicators used, longitudinal measures of stability are lacking: respondents may (be forced to) move house every six months, or engage in numerous short-lived relationships. Whereas the data used in this study enabled us to examine adult outcomes in a certain year, just as in the Nilsson and Estrada (2009) study, Farrington et al. (2006) measured life success in the last five years to take possible instability in adult outcomes into account. Finally, the subjective experience of the level of adjustment in different adult life domains might differ between people, as they might have different expectations of attaining certain adult roles and different definitions of when they consider themselves as doing well in adult life domains. This indicates that it is difficult to compose an 'objective' measure of adult life adjustment (Crosnoe and Elder 2002; Pulkkinen, Nygren and Kokko 2002). Future research therefore might employ relative measures, like those used in health research, asking respondents about their perceived life success relative to the level of success achieved by others whom they perceive as their peers (e.g. McDowell 2006).

Moreover, for this study, education was treated as an independent variable, and results showed that academic failure is related to poorer adult outcomes. However, academic achievement might be considered an outcome and thus part of the adult life adjustment measure, given that childhood risk factors and delinquency in adolescence can be related to academic failure (e.g. Hinshaw 1992). Nevertheless, since this study focuses on adult outcomes when previously institutionalized youths are in their thirties, and academic attainment generally takes place earlier in life, we decided to include educational attainment as a predictor of later adult outcomes. Finally, in this study we relied on officially

registered data on criminal convictions to reconstruct respondents' juvenile and adult criminal histories, which means the actual number of offenses committed is likely to be underestimated.

To close, this study showed that a substantial part of previously institutionalized youths continue to experience difficulties in multiple adult life domains. This indicates that, although the Dutch welfare state is characterized by a strong social safety net, vulnerable youths in the Netherlands are in need of additional support to help them make a successful transition into adulthood. While interventions during institutionalization are the most obvious as they are relatively easy to implement, the current results suggest that vulnerable youths can especially benefit from intensive support after institutionalization, continuing into young adulthood, to help them establish themselves as adults. Interventions aimed at strengthening the position of vulnerable young adults on the labor market, for example through investment in education and vocational skills, seem especially important. A qualitative study carried out on the same sample of previously institutionalized youths suggests that after they had been discharged from the institution, these youths hardly received any aftercare. Respondents reported that in their opinion they would have benefitted from education and support to find work and accommodation (Van der Geest et al. 2013). Providing vulnerable youths with the right support to improve their adult outcomes is desirable to promote these youths' quality of life, as well as to reduce the high costs they impose on society, in terms of their criminal behavior, unemployment, welfare dependency and extensive use of health care (Moffitt 1994; Piquero et al. 2013).

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Figure 1. Conviction trajectories from ages 18 to 34.

Legend:
- Group 1: low-rate desisters (59,0%)
- Group 2: high-rate desisters (11.6%)
- Group 3: low-rate chronics (20.3%)
- Group 4: high-rate chronics (9.2%)

X-axis: Age (18 to 34)
Y-axis: Nr. of convictions (0 to 3)
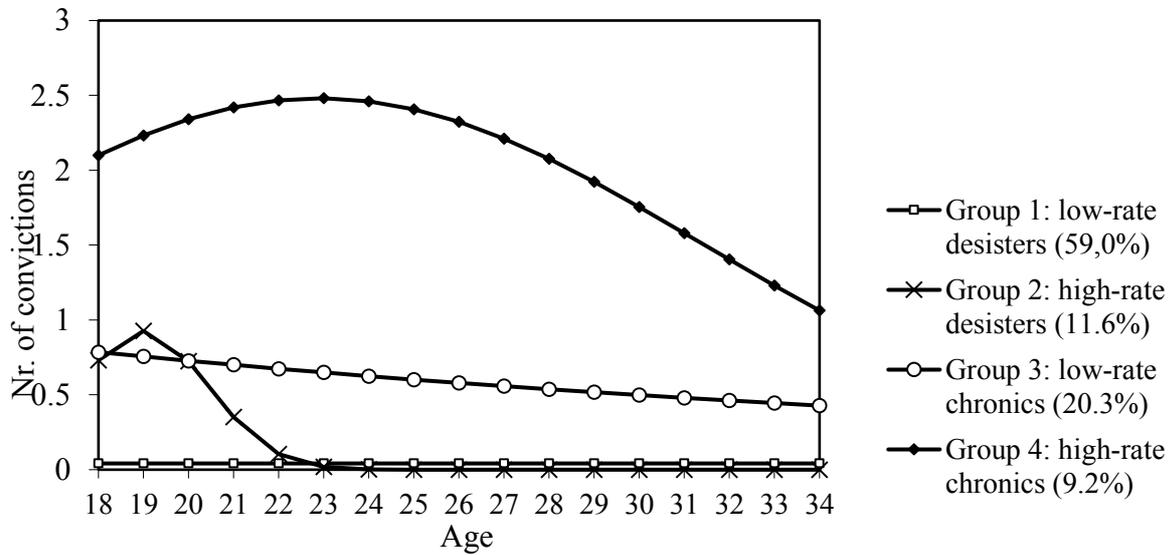
Figure 2. Employment trajectories from ages 18 to 34

Legend:
- Group 1: chronically unemployed (27.1%)
- Group 2: decreasing employed (23.9%)
- Group 3: increasing employed (18.3%)
- Group 4: continuously employed (30.7%)

X-axis: Age (18 to 34)
Y-axis: Prob. of being employed (0 to 1)
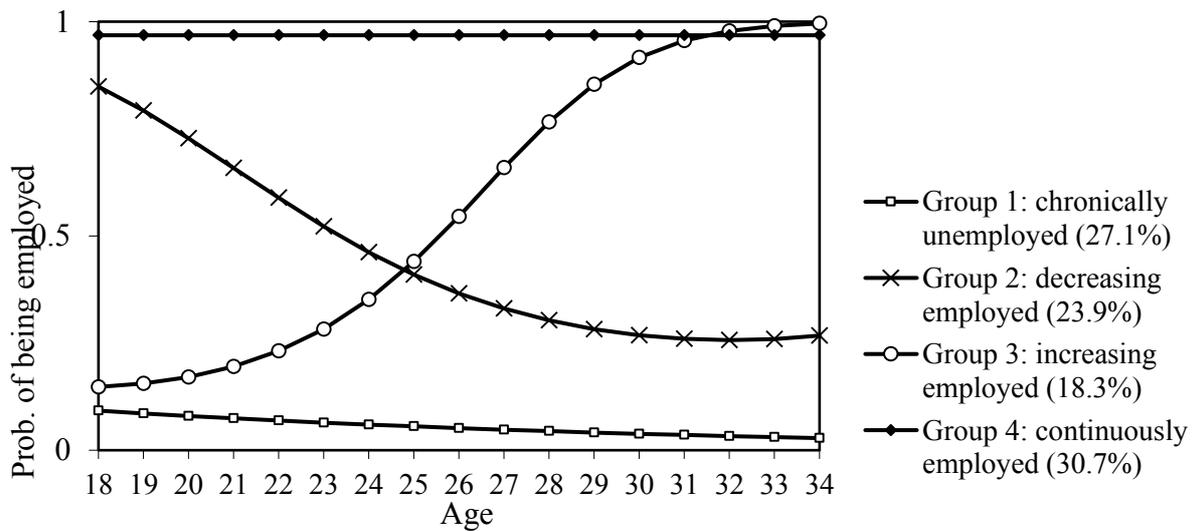
Table 1. Descriptive statistics for personal and childhood characteristics and education

	Men (N=118)		Women (N=133)	
	N	%	N	%
Low intelligence	29	30.5	45	34.9
Aggression	77	65.8	90	67.7
Impulsiveness	72	74.2	77	84.6
Psychological problems	73	61.9	82	61.7
Problematic family environment***	59	50.0	99	74.4
Alcohol abuse in family†	27	22.9	44	33.1
Substance abuse in family†	8	6.8	19	14.3
Psychopathology parent**	33	28.0	62	46.6
Criminal family members*	19	16.1	38	28.6
Unemployment in family***	16	15.7	31	23.3
Victimization	100	84.7	112	84.2
Neglect*	95	80.5	88	66.2
Physical abuse**	36	30.5	68	51.1
Sexual abuse***	8	6.8	44	33.1
Finished an education during stay in the institution***	67	57.8	11	8.3
Finished an education after stay in institution	58	51.3	67	52.3

† p < 0.10, *p<0.05; **p<0.01; ***p<0.001

Table 2. Descriptive statistics for criminal history and information on conviction trajectories from ages 18 to 34

	Men (N=118)		Women (N=133)	
	N (%)	M (SD)	N (%)	M (SD)
Institutionalized based on civil law measure**	105 (89.0)		130 (97.7)	
Length of stay in institution (in months)***		21.4 (13.5)		13.3 (8.3)
Age left institution***		17.3 (1.4)		16.6 (1.3)
Convicted < age 18***	96 (81.4)		70 (52.6)	
Average number of convictions < age 18***		5.69 (5.21)		2.39 (2.47)
Convicted > age 18***	97 (82.2)		63 (47.4)	
Average number of convictions > age 18***		13.48 (16.27)		4.19 (5.11)
Convictions in adulthood (lambda)***		0.72 (0.85)		0.28 (0.33)

Conviction trajectories from ages 18 to 34

	Group 1: low-rate desisters	Group 2: high-rate desisters	Group 3: low-rate chronics	Group 4: high-rate chronics
N	148	29	51	23
% of the sample	59.0	11.6	20.3	9.2
Mean posterior probability	0.89	0.85	0.92	0.98
BIC value	-2482.72			

† p < 0.10, *p<0.05; **p<0.01; ***p<0.001

Table 3. Descriptive statistics for employment history and information on employment trajectories from ages 18 to 34

	Men (N=118)		Women (N=133)	
	N (%)	**M (SD)**	**N (%)**	**M (SD)**
Employed in adulthood	104 (89.7)		110 (84.0)	
Employment in adulthood (yearly)		0.66 (0.34)		0.58 (0.32)

Employment trajectories from ages 18 to 34

	Group 1: chronically unemployed	Group 2: decreasing employed	Group 3: increasing employed	Group 4: continuously employed
N	68	60	46	77
% of the sample	27.1	23.9	18.3	30.7
Mean posterior probability	0.97	0.91	0.95	0.96
BIC value	-1480.92			

Table 4. Descriptive statistics for adult life adjustment

	Men (N=118)		Women (N=133)	
	N	%	N	%
(1) Regular accommodation*	95	80.5	121	91.0
Incarcerated or institutionalized**	14	11.9	4	3.0
Homeless	2	1.7	0	0.0
Other (e.g. staying at family/friends)	7	5.9	8	6.0
(2) Employed*	55	46.6	50	37.6
Fulltime employed*	45	38.1	32	24.1
(3) In a relationship	68	58.6	88	66.7
Cohabitating	45	38.8	57	43.2
Married	17	14.7	12	9.1
(4) Regular contact with child(ren)*	46	39.0	91	68.4
Child(ren)***	66	55.9	104	78.8
(5) Satisfactory health	54	50.0	60	47.6
(6) Alcohol abuse***	48	45.7	27	22.3
(7) Drug abuse**	38	37.6	26	21.3
(8) Self-reported crime	34	34.0	27	25.2
Average adult life adjustment**	M=0.61	SD=0.28	M=0.69	SD=0.22

Conviction trajectories	Group 1: low-rate desisters	Group 2: high-rate desisters	Group 3: low-rate chronics	Group 4: high-rate chronics
Average adult life adjustment***	M=0.71 (SD=0.21)	M=0.73 (SD=0.22)	M=0.51 (SD=0.28)	M=0.49 (SD=0.21)

Employment trajectories	Group 1: chronically unemployed	Group 2: decreasing employed	Group 3: increasing employed	Group 4: continuously employed
Average adult life adjustment***	M=0.60 (SD=0.23)	M=0.57 (SD=0.26)	M=0.73 (SD=0.23)	M=0.72 (SD=0.23)

† $p < 0.10$, *$p<0.05$; **$p<0.01$; ***$p<0.001$

Note: A Games-Howell post-hoc test showed that the average level of adult life adjustment differs between conviction groups: Group 1 > groups 3, 4; group 2 > groups 3, 4; group 3 < groups 1, 2; group 4 < groups 1, 2.

A Tukey's post-hoc test showed that the average level of adult life adjustment differs between employment groups: Group 1 < groups 3, 4; group 2 < groups 3, 4; group 3 > groups 1, 2; group 4 > groups 1, 2.

Table 5. The relationship between personal and childhood characteristics, criminal history, employment history and adult life adjustment

	Model 1		Model 2		Model 3	
	B	SE	B	SE	B	SE
Intercept	.68***	.05	.75***	.06	.66***	.07
Gender	.16***	.04	.07	.05	.07	.04
Low intelligence	-.001	.04	.03	.03	.04	.03
Aggression	-.006	.04	-.01	.04	-.002	.04
Impulsiveness	-.001	.04	.00	.03	.001	.03
Psychological problems	-.01	.04	-.01	.04	-.01	.03
Problems in the family	-.02	.02	-.01	.01	-.01	.01
Victimization	-.003	.02	.004	.02	.01	.02
No diploma during institutionalization	-.05	.04	-.03	.04	-.001	.04
No diploma after institutionalization	-.09**	.03	-.06†	.03	-.04	.03
Convicted < age 18			-.03	.04	-.04	.04
Crime trajectories > 18						
Group 2: high-rate desisters			.05	.07	.01	.07
Group 3: low-rate chronics			-.18**	.05	-.16**	.05
Group 4: high-rate chronics			-.20**	.07	-.18*	.07
Employment trajectories > 18						
Group 2: decreasing employed					-.04	.05
Group 3: increasing employed					.11*	.05
Group 4: continuously employed					.10*	.05
R²	.12		.23		.27	

† p < 0.10, *p<0.05; **p<0.01; ***p<0.001