Work, Income Support and Crime in the Dutch Welfare State

A Longitudinal Study Following Vulnerable Youths into Adulthood

Running head

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ABSTRACT

Life-course criminological research suggests that employment can reduce criminal behavior. However, it is unclear whether the financial aspects of employment or rather the social control that inheres in employment best explains the relationship between employment and reduced offending. Using longitudinal information on a sample of men and women (N=540) who were institutionalized in a Dutch juvenile justice institution in the 1990's, this study examines effects of employment as well as different types of income support on crime. Random- and fixed-effects models show that for men, both work and income support are associated with a reduction in the rate of offending. For women, however, while employment is correlated with a lower offending rate, receiving income support, and in particular disability benefits, is correlated with a higher offending rate. The findings support both theories that stress the financial motivation for crime as well as theories that emphasize the importance of informal social control for reducing offending.

INTRODUCTION

Life-course criminology argues that making successful transitions to adult social roles facilitates desistance from offending during the young adult years. A successful transition to the labor market seems especially important in this respect, as unemployment has repeatedly been found to be related to adult crime (Lageson and Uggen, 2013). Being employed provides potential offenders with a source of income thereby diminishing their financial motivations for committing offenses. In addition, continued involvement in work may provide potential offenders with a structured daily routine, a social network of conventional colleagues and a sense of meaning and self-worth which they are increasingly unlikely to be willing to jeopardize by engaging in criminal behavior.

Research indeed shows that being employed is associated with increased psychological well-being in adults (Hulin, 2002).

Yet, not all young adults are able to successfully transition into the labor market and some suffer from – sometimes prolonged – periods of unemployment. Individual characteristics, like low educational achievement, may render some youths particularly vulnerable for unemployment, especially during periods of economic downturn. To provide a social safety net for society's most vulnerable members, the Netherlands has developed a relatively generous system of income support that ensures those who are needy of a minimum income (De Gier and Ooijens, 2004). Although the transition to employment is the ultimate goal, the idea is that those who are unable to (find) work should nevertheless be supported. By reducing inequality through the redistribution of income, the Dutch welfare state aims to avoid poverty and social exclusion, thereby preventing people from turning to illegal means to make ends meet (De Mooij, 2006).

One group of young adults for whom the transition to the labor market is particularly precarious, consists of those youths who in their adolescent years displayed serious behavior problems and were consequently institutionalized in a juvenile justice institution (Verbruggen, Blokland, and Van der Geest, 2012).[1] Experiencing problems in multiple life domains, these youths face difficulties in adopting adult roles (Chung, Little and Steinberg, 2005). Firstly, these youths often grow up in adverse family environments, and their parents may be unable or unwilling to support them in their transition to adulthood (Schoeni and Ross, 2005). Secondly, these youths often have little personal capital, as most have acquired little education and many suffer from psychological or psychiatric problems. Thirdly, these youths can experience difficulties due to stigma generated by their involvement in government systems such as child protection service or the juvenile justice system, their stay in a juvenile justice institution, and a criminal record. While,

compared to non-vulnerable youths, previously institutionalized youths need to overcome additional hurdles, they can and sometimes do make a successful transition into adulthood and end up leading normal, conventional lives (Osgood et al., 2005).

Since the Dutch income support system is especially designed to function as a safety net to support vulnerable groups, the question arises to what extent previously institutionalized youths, vulnerable to failure in their transition to adulthood and at risk of developing extended criminal careers, actually profit from receiving benefits. Does governmental support prevent them from turning to illegitimate means to provide for themselves? How does the effect of governmental support compare to the effect of employment, which not only provides income, but also workplace social control and social capital, which are thought pivotal in promoting criminal desistance (Laub and Sampson, 2003)? These questions guide the current study.

REVIEW OF THE LITERATURE

WORK AND CRIME

A steady stream of research investigates the individual-level relationship between employment and crime (for reviews, see Bushway and Reuter, 2002; Uggen and Wakefield, 2008).[2] Studies among (young) adults generally find a negative effect of employment on criminal offending. For example, some studies have demonstrated that young adults committed more crimes during periods of unemployment than when employed (Farrington, et al., 1986; Fergusson, Horwood and Woodward, 2001). Furthermore, research showed that being employed was correlated with reduced recidivism rates in samples of ex-offenders (MacKenzie and De Li, 2002; Uggen, 2000). The limited available research on women suggests that the crime reducing effect of employment

pertains to both male and female offenders (e.g. Griffin and Armstrong, 2003; Uggen and Kruttschnitt, 1998). Yet, it is usually not clear what aspects of work – income or informal social control – yield the most salient crime prevention benefits. A notable exception is a study by Grogger (1998) showing that, for young men, wage growth accounts for a substantial portion of the decline in criminal participation with age.

A smaller body of research examines non-wage features of employment that constitute informal social control. For instance, research by Sampson and Laub (1990) demonstrates that job stability leads to a reduction in adult criminal behavior in a sample of juvenile delinquents followed until age 32. Similarly, Crutchfield and Pitchford (1997) studied the effect of labor market segmentation, and showed that young adults employed in primary sector jobs are more likely to experience job stability, and are therefore less likely to engage in crime than young adults employed in secondary sector jobs. Wadsworth (2006) demonstrated that job quality is associated with less property and violent crime, while job stability and higher wages did not have a significant effect on crime. Furthermore, Uggen (1999) showed that high-quality jobs lowered the chances of both property crime and non-income generating crime in a sample of ex-offenders.

Finally, Savolainen (2009) examined the effect of employment on crime in Finland, and showed employment to reduce recidivism in a sample of offenders. He argued that, since Finland provides generous benefits to the unemployed, the non-monetary aspects of work must make the largest contribution to desistance. An interesting feature of this study is its context: the system of income support in Finland is more comparable to the Dutch regime than the American regime.

INCOME SUPPORT AND CRIME

While previous scholarship has investigated the relationship between government spending on income maintenance programs and crime at a high level of aggregation, there is a stark absence of research on the relationship between income support and criminal behavior at the individual level.[3] The most persuasive strand of research is that on transitional aid for released prisoners. Berk, Lenihan, and Rossi (1980) evaluated the Transitional Aid Research Project (TARP), a randomized study of men and women leaving prisons. The authors found that unemployment benefits during the reentry period significantly reduced arrest frequency (for both property and non-property crimes) during the year following prison release. However, they also discovered that these benefits created a work disincentive, which had the countervailing effect of increasing recidivism risk indirectly through fewer weeks of employment. Thus the net or "reduced-form" effect of TARP on recidivism was null.

Other studies produced more favorable findings about unemployment insurance. Mallar and Thornton (1978) evaluated an experimental program that provided income support and job placement assistance to men leaving prison. The income support element of the program was successful in reducing the probability and frequency of arrest (for robbery, burglary, or larceny) one year after prison release. Furthermore, Berk and Rauma (1983) studied the impact of unemployment benefits on recidivism among released prisoners who participated in prison vocational training programs. They found that receipt of income support significantly reduced the likelihood of post-release recidivism during the first year when measured as parole revocation and/or return to prison. A follow-up study confirmed the significantly lower recidivism risk of program participants out to five years post-release (Rauma and Berk, 1987).

These prior studies however were all carried out in the United States. Given that the US and many Western European countries differ greatly in their labor market and system of social benefits, the extent to which results from these studies generalize to the Dutch context is uncertain.

THE DUTCH WELFARE STATE

Esping-Anderson (1990) developed a typology in which income support regimes are classified by their degree of "decommodification," or the extent to which individuals are protected from the vicissitudes of the market and granted income support and other social services "on the basis of citizenship rather than performance" (1990:21). *Social democratic regimes*, such as those found in Scandinavian countries, have highly decommodified policies providing universal entitlements with generous benefit levels. *Conservative regimes*, which include many countries in continental Western Europe, provide for comparatively strong entitlements but make benefit levels dependent on contributions. *Liberal regimes*, characteristic of Anglo-Saxon nations, have highly commodified policies that impose strict eligibility criteria and provide for minimal benefits. In the foregoing typology, the Netherlands tends to display elements of both conservative and social democratic regimes.

The Dutch income support system consists of two main parts (De Gier and Ooijens, 2004; De Mooij, 2006).[4] The first component consists of social insurance systems, which are compulsory and non-means tested. Employed people are obliged to contribute to these insurances by paying a percentage of their wages, and the benefits are wage-related. Two types of social insurances can be distinguished: *unemployment* insurance and *disability* insurance. The goal of unemployment insurance is to replace the income lost to employees who lose their job. Disability insurance is

meant to deal with the risk of becoming unable to work, either due to physical or mental health problems. The second component consists of public assistance, the most important being *welfare* assistance, which is meant to assure recipients with a minimum income. Such benefits do not require proof of anything other than financial need, nor are they conditional on past contributions. Public assistance is paid from general funds and every resident of the Netherlands is in principle eligible to receive it. The amount of income support under each of these programs is linked to the statutory minimum wage – which is in turn approximates 70% of the modal wage. Unemployment and disability benefits usually comprise between 70-75% of the statutory minimum wage. Eligibility for unemployment benefits currently may last from three to 38 months depending on one's employment history, after which one is transferred to the welfare system. Those on welfare receive between 60-70% of the legal minimum wage, counting additional special benefits and depending on their living conditions. Eligibility for disability benefits depends on whether the individual is totally and durably unfit to work due to a medical condition. Though these medical conditions can pertain to both mental and physical health, in practice most young adults receiving disability benefits suffer from psychiatric or psychological conditions.[5] Unlike eligibility criteria in some other countries, such as in the US, social welfare payments in the Netherlands are never declined because of a criminal history. Only when an individual is being incarcerated, eligibility to social welfare stops temporarily.

The Dutch welfare state took shape in the post-war period when many income support policies were implemented, and developed into a generous system of entitlements. Due to economic crises however, in recent years policies have been implemented to reduce the expenditures of the welfare state, and reform of the income support system is still ongoing in efforts to keep the system affordable in the light of such trends as the aging of the population (De

Gier and Ooijens, 2004; De Mooij, 2006). Despite these reforms, the Netherlands still has an extensive and, compared to other countries, relatively generous social redistribution system. In fact, the Dutch welfare state is regarded as one of the most advanced in the world (Cantillon 2004).

THEORY

In order to understand the possible effects of employment and income support on criminal behavior, this study appeals to theories emphasizing motivations and controls. Theories rooted in motivations begin with the observation that crime is more heavily concentrated among individuals who are unemployed and living in poverty. Merton's strain theory (1938, 1968) explains that, when legitimate opportunities for the acquisition of monetary success are blocked or unavailable, individuals are motivated to "innovate" in the most expedient manner, often through criminal behavior (see also Cloward and Ohlin, 1960). While contemporary versions of Merton's theory rely less heavily on a class-based conception of strain (e.g. Agnew 1985, 1992), crime is nevertheless viewed as a way to alleviate income pressures from unemployment and poverty. Similarly, theories rooted in neoclassical economics explain that individuals faced with financial strain are motivated to substitute or supplement with criminal earnings (Becker, 1968; Ehrlich, 1973).

According to theories emphasizing motivations, then, the loss of legitimate income is determinative for understanding the link between unemployment and crime, and even more specifically, between unemployment and property crime. Yet in a decommodified society, as in the Netherlands, unemployed individuals are entitled to receive fairly generous government benefits. Since employment and income support both provide legitimate sources of income

reducing financial strain, they should both reduce the attractiveness of criminal behavior. However, as income support yields lower monetary benefits than paid employment, income support might not achieve the same level of crime reduction as paid employment. So, despite potential level differences, both employment and income support should yield benefits with respect to the control of crimes of an instrumental nature (i.e. property crime).

Theories rooted in controls point to characteristics of employment other than (or in addition to) earnings. According to Hirschi's social control theory, people who are employed experience supervision and socialization from employers and coworkers, and possess work schedules which limit the amount of time available for criminal involvement (Hirschi, 1969; see also Shover, 1996: 98). Unemployed individuals, on the other hand, lack the structure and routines which correspond to steady labor market participation. In addition to these more or less direct social controls, employment provides a means of informal social control over unlawful behavior (Sampson and Laub, 1993). Attachment to a high-quality, stable job provides people with feelings of responsibility, usefulness, and competence. Over time, this culminates in growth in social capital, suggesting that employed individuals have increasingly more at stake than just the monetary benefits of work (Laub and Sampson, 2003, Sampson and Laub, 1993).

According to theories emphasizing controls, then, erosion in work attachment and loss of social capital are determinative for understanding the link between unemployment and crime. The long-term effects of unemployment include decreased well-being, feelings of inferiority, and hopelessness (Paul and Moser, 2009), which would be expected to increase the risk of serious offending, encompassing both crimes of property and violence. Because of the special character of employment as a source of social control as opposed to strictly income, a theoretical implication

is that receipt of income support should be far less consequential for criminal offending, by comparison.

GENDER DIFFERENCES IN MOTIVATIONS AND CONTROLS

Important for the current study is the realization that employment, income support, and crime are highly gendered. A gendered analysis has implications for the salience of social institutions in adulthood, and consequently for the dominant forms of government entitlements. While rates of employment do not differ substantially for contemporary cohorts of young men and women, experiences in the labor market are nevertheless highly gendered, whereby men receive higher wages and are more often employed full time than women. Employment also remains central to masculine identity, especially for those living on the lower rungs of the social ladder (Messerschmidt, 1993; Willott and Griffin, 1999). If men feel more pressure to be breadwinners, then unemployment may be more criminogenic for them. In as far income support provides an adequate monetary substitute to employment for men to meet their financial obligations, income support may have a crime reducing impact for men. Yet, if men perceive a job as more than just a source of income, unemployed men may turn to criminal behavior even when they receive income support as an alternative route to assert their masculinity. So, while unemployment itself may be more criminogenic for men compared to women, unemployment benefits may work less well for men than for women, because men, who derive a stronger sense of identity from being employed, may seek for ways to escape stress, boredom or low self-esteem when they are unemployed. Feminine identity, on the other hand, remains family centered and prioritizes marriage and child rearing, both of which constitute additional forms of social control over behavior. As a result, effects of unemployment on crime may be less outspoken for women compared to men. These

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gendered priorities are formalized in the two-tiered system of income redistribution (Haney, 2000; Orloff, 1996; Sainsbury, 1996). Namely, income support for men is employment focused, whereas it is family or health focused for women.

THE CURRENT STUDY

In the current study, a group of previously institutionalized youths, at high risk of developing persistent criminal careers, is followed as they transition into adulthood. Using longitudinal data collected up to age 32, we examine the effects of employment and different sources of income support on these vulnerable youths' overall offending, as well as property and violent offending. The following research questions and hypotheses guide the analysis.

What are the effects of employment and income support on offending? Based on theories that emphasize the financial motivation for crime, both employment and income support, because they provide a legitimate income source, should reduce offending. On the other hand, following theories which emphasize the informal social control that inheres in employment, employment should reduce offending more so than income support.

Are there different effects of income support on offending, depending on the source of support? Unemployment insurance, public assistance, and disability benefits will be distinguished. Given that public assistance yields the lowest monetary benefits, the effects of unemployment insurance and disability benefits on crime should be the most pronounced, by comparison.

Do the effects of employment and income support differ for property crime versus violent crime? In addition to an analysis of total offending, property and violent crime will be considered separately. Support for motivational theories will be provided by results which suggest stronger

effects of employment and income support on property offending than on violent offending. On the other hand, support for control theories will be provided by equally strong effects of employment and income support on both property and violent offending, as well as stronger effects of employment compared to income support.

Do the effects of employment and income support differ for vulnerable young men versus vulnerable young women? Vulnerability, employment, income support, and crime are gendered, even in a highly egalitarian society such as the Netherlands. Unfortunately, clear predictions about whether or how gender modifies the effects of employment and income support on crime are not easily made, and often produce contrary expectations.

Although there is a substantial body of research on the employment-crime relationship, individual-level research on the relationship between income support and crime is surprisingly scarce, and the existing research was carried out decades ago. In addition to filling this gap, the current study seeks to make several other contributions to scholarship. First, the study of vulnerable groups, like the institutionalized youths in the current sample, is much needed. Previous research shows that vulnerable youths face serious challenges on the road to adulthood as a result of their high-risk background, institutionalization, and criminal record (e.g. Caspi et al., 1998; Osgood et al., 2005; Verbruggen et al., 2012).

Second, it is important to study such a vulnerable group in an international context. Most research on employment, income support, and crime comes from the United States, where the income support regime is vastly different from that of many European countries. Since the Dutch welfare state specifically aims to prevent crime by redistributing income, an important unanswered question is to what extent the relatively strong entitlements in the Netherlands are successful in supporting vulnerable young people and preventing them from turning to crime.

Third, this study examines effects of income support and employment on crime in a contemporary sample of men and women. Most previous longitudinal research looks at older cohorts who came of age in a very different socio-historical context (e.g. Sampson and Laub, 1990), and it routinely excludes vulnerable women (for exceptions, see Giordano et al., 2002; Griffin and Armstrong, 2003; Uggen and Kruttschnitt, 1998). Furthermore, labor market participation, wage schedules, and income support are highly gendered, and have undergone substantial changes in recent decades. This study is thus capable of shedding light on the effects of employment and income support on crime under present-day conditions.

METHODS

SAMPLE

The study relies on data from the 17up study, a longitudinal study following institutionalized youths into adulthood.[6] The sample of the study comprises 270 boys and 270 girls who were institutionalized in a juvenile justice institution in the Netherlands between 1989 and 1999. At the time of sampling, juveniles could be institutionalized in a juvenile justice institution on either a criminal law measure, or under a civil law measure, yet research shows that these populations do not tend to differ in terms of their background characteristics (Boendermaker, 1999; Wijkman, Van der Geest & Bijleveld, 2006). In this sample, 56 boys (19.6%) and 7 girls (2.6%) received treatment in the institution based on a criminal law measure; all others were treated under a civil law measure. After they had been discharged, the boys and girls were observed from ages 18 to 32, or if this occurred sooner until emigration (n=6) or death (n=20).

CRIMINAL CAREER

Information on offending is based on convictions registered in the judicial documentation abstracts of the Netherlands Ministry of Security and Justice. These abstracts contain information on every case that is registered with the public prosecutor's office, the type of offense, the date of commission of the offense, and the ensuing verdict. As with all studies using official data, the analyses presented here pertain to offenses that came to the attention of the public prosecutor and most likely underestimate the actual number of crimes committed.

For this study, we estimate the effects of employment and income support on three different dependent variables. First, the dependent variable is the frequency of convictions. 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). Minor offenses such as vandalism and traffic violations are excluded from the analyses. In addition, motivated by theoretical considerations, we separately examine the effects of employment and income support on two subsets of offending: property crime and violent crime.[7]

EMPLOYMENT AND INCOME SUPPORT

Employment and income support data were collected from the national database of the Ministry of Social Affairs and Employment. This database contains information about periods of employment and income support at the individual level. In this database, the start date and end dates of employment contracts, as well as all types of income support received during different periods, are registered. In addition, the trade register managed by the Netherlands Chamber of Commerce was accessed. This trade register contains information about business ownership, and allows us to identify subjects who are self-employed.

In this study, for every given year, we examine two sources of income an individual could have had. *Employment* is the proportion of each person-year that subjects were employed on a work contract. *Income Support* is the proportion of each person-year that subjects received some kind of cash transfer. The latter is further classified into whether the income support was for unemployment, public assistance, or disability. Note that employment and income support are not mutually exclusive states in a given person-year: individuals could both be employed and receive benefits during the same year.

Some cautionary notes apply to using these data in the manner described. First, the employment database does not provide information about the number of days worked per week, the type of job, or the actual wages earned. An unknown amount of contracts may therefore refer to part-time jobs yielding low wages. However, given that the number of person-years in which respondents were both under an employment contract *and* received unemployment benefits or public assistance was low (9% and 8% respectively), in the current data, this situation seems largely hypothetical. Second, although the database distinguishes between different types of income support, it lacks information on the exact amount of money received. This means that we are unable to test to what extent the amount of pay/benefits received is related to changes in offending. Third, although all official employment contracts are registered in the employment database, we lack information about undeclared work. Estimates based on population surveys show are that around 10% of the Dutch population engages in undeclared work and that that percentage is lower (2-7%) among those receiving benefits – possibly due to differences in the perceived likelihood of getting caught (CBS, 2012). Finally, as the database used became only fully computerized from 1998 onwards, employment participation rates before that time may underestimate actual employment levels. Given the possible underestimation of employment prior

to 1998, the effects of employment on crime reported in this study should be interpreted as conservative estimates.

CONTROL VARIABLES

Time-stable and time-varying regressors pertaining to sociodemographic measures, personal characteristics, and criminal history are included in the analyses to control for possible selection effects. The sociodemographic indicators include time-varying indicators for age, marriage, and children, as these have been related to the likelihood of offending (e.g. Blokland and Nieuwbeerta, 2005). Information about marriage and parenthood was collected from the Dutch Municipal Population Register.

Personal characteristics were extracted from subjects' treatment files, which were compiled during their stay in the juvenile justice institution. These treatment files contain for example psychological and psychiatric reports, and reports from the Dutch Child Protection Board. Prior studies link low intelligence and academic achievement to delinquency (e.g. Hawkins et al., 1998; Loeber et al., 2012). We therefore included binary measures of intelligence (low intelligence versus average or above average intelligence) and the level of education before institutional treatment (special education or elementary education only versus average education or above average education). Research also indicates that, for boys, childhood aggression is linked to adult crime (e.g. Babinski, Hartsough and Lambert, 1999; Piquero et al., 2012). A measure of childhood aggression (yes/no) was therefore added. Indicators of the individual ever being a victim of sexual abuse (yes/no) or physical abuse history (yes/no) were included as research finds victimization of these types is associated with increased delinquency (e.g. McGrath, Abbott Nilsen, and Kerley, 2011; Mersky, Topitzes, and Reynolds, 2012). Furthermore, a number of family risk factors have

been repeatedly related to delinquency and crime (Murray and Farrington, 2010), therefore a measure indicating to what extent respondents were exposed to alcohol abuse, substance abuse, family members with a criminal history, or unemployment in the family was included. This measure ranges from 0 to 4.

The criminal history measures include time-invariant variables for the number of convictions prior to age 18 (as registered in the judicial documentation), the age at which subjects entered the juvenile justice institution, and the length of their confinement in the institution. The time-varying criminal history measures, constructed annually from ages 18 to 32, include dummy variables for having been convicted or incarcerated in the previous year, in addition to the total accumulated convictions and time spent incarcerated (in years) as of two years ago. These are included to distinguish the short-term, state-dependent effects of recent criminal conviction and incarceration from any long-term, cumulating effects.

EMPIRICAL MODEL

The effects of employment and income support on criminal conviction are estimated from ages 18 to 32. The dependent variable, Y_{it}, is a count of the number of convictions received by individual i ($i = 1,…,N$) at time (age) t ($t = 1,…,T_i$). It is distributed negative binomial with the rate parameter (lambda) specified in familiar log-linear form:

In this model, Age_{it} is modeled as a quadratic, $Employment_{it}$ is the proportion of the year employed on a work contract, $Support_{it}$ is the proportion of the year receiving income support, W_i includes time-invariant control variables (e.g., length of stay at the institution, personality characteristics), and X_{it} includes time-varying control variables (e.g., marriage, children, prior convictions). The

model makes an exposure adjustment in order to control for "street time," meaning it accounts for the proportion of each person-year that a subject is not incarcerated (or deceased) and thus has the opportunity to commit crime.

The individual effect in the equation above, u_i, represents so-called "unobserved heterogeneity" across individuals, referring to unmeasured differences in conviction risk that are stable over time. In this analysis, u_i is treated both as random and as fixed. The random-effects (RE) estimator assumes that u_i varies continuously in the population, which makes it comparatively efficient but assumes the individual effect to be orthogonal to the regressors. Violation of the latter assumption renders RE inconsistent because of selection bias due to time-invariant unobservables. The fixed-effects (FE) estimator is based solely on within-individual variation, and relaxes the distributional and orthogonality assumptions concerning the unobserved heterogeneity.[8] The main advantage of performing a within-person analysis is the possibility to eliminate potential sources of bias by controlling for stable (observed and unobserved) personal characteristics.

While it has comparative advantages under certain circumstances, FE is not necessarily a panacea. It is inconsistent if there is selection bias due to time-varying unobservables. For this reason, rigorous controls for prior conviction and incarceration are included in the model. Also, the model does not allow one to control for simultaneity bias resulting from possible reverse causality between crime, work and income support. Causal inferences should thus be made with caution. The FE estimator also sacrifices efficiency, not to mention that it is incapable of estimating parameters for time-invariant regressors (W_i). A test known as the Hausman test formalizes this tradeoff (Hausman, 1978), with large values indicative of favoring a FE over a RE model.[9]

Note that all models are estimated separately for men and women, and tests of coefficient equality for the measures of employment and income support will be conducted (see Brame et al.,

1998). Furthermore, separate models will be estimated for property and violent offending. For these, RE and FE logistic regression models are estimated. In order to facilitate comparisons of employment and income support for property and violent outcomes, the models are jointly estimated by way of "seemingly unrelated regression" (Zellner, 1962, 1963). In this approach, the two dependent variables are "stacked" into a single model, with a dummy indicator for each outcome (except one, which serves as the reference outcome) interacted with all of the regressors.

RESULTS

DESCRIPTIVES

Descriptive statistics on the variables used in the empirical models are provided in Table 1.

Table 1

Personal Characteristics and Retrospective Criminal Careers

As described elsewhere (Verbruggen et al., 2012), the sample is characterized by a vulnerable background. Information from respondents' treatment files indicates that intelligence of about one-third of the men and women is below average, and that almost one-third of the men and one-quarter of the women attained a level of education that was below average. Almost two-thirds of men and women displayed aggressive behavior. Women were more often than men victim of abuse when they were young. Finally, more girls (65.6%) than boys (37.8%) grew up in a problematic family environment, and the families of girls were characterized by twice as many adverse conditions, on average.

For the men in our sample, the average age of entry into the juvenile justice institution was 15.6 (SD = 1.7), and the average stay in the institution was 20.8 months (SD = 12.2). The average woman was slightly younger when she entered the institution (M = 15.4, SD = 1.2), and her stay was about six months shorter (M = 13.4 months, SD = 7.8). The majority of men (80.7%) and women (55.6%) were convicted of at least one offense prior to age 18, and the men had a more extensive criminal history than did the women.

Prospective Criminal Careers

During the observation period, from ages 18 to 32, over 75 percent of men and over 40 percent of women were convicted of at least one offense. Among these offenders, the average number of convictions for males is almost three times as high as for females. With regard to convictions for property and violent crimes, a similar picture emerges: more men than women are convicted, and the average number of convictions is higher for men. The age distribution of criminal conviction follows the typical age crime curve, showing a peak in conviction likelihood in the middle teens (at 45% for males, 21% for females), after which there is a steady decline with age.

Employment and Income Support

From ages 18 to 32, the overwhelming majority of men (85.6%) and women (83.7%) are employed at least once. However, the work careers are highly unstable, as indicated by the fact that men are employed for only 0.26 of each person-year (SD = 0.40), and women for 0.22 (SD = 0.37), on average. A large part of the sample (64.4% of men, 83.3% of women) receives income support at some point during the observation period as well. Men more often receive income support due to unemployment, while women more often receive public assistance and disability benefits. The

gender differences with respect to specific forms of income support are quite large, corroborating the notion that support is primarily employment focused for men, and family or health focused for women. Furthermore, gender differences in income support in a given year are substantial – income support is received in 0.29 of each person-year among women (SD = 0.43), but only 0.09 among men (SD = 0.25).

It is noteworthy that there is also a considerable period of time, especially early on in the observation period, in which subjects are neither employed nor receiving income support. Though given the limitations of our data we can only speculate, it seems unlikely that many of the men and women enroll in full-time schooling after leaving the institution and therefore do not work or apply for support. A more plausible scenario is that during this time they temporarily are supported by parents, family members or romantic partners until they find their way in the system and are able to secure more permanent sources of income (Verbruggen, Van der Geest, and Blokland, 2014).[10]

EFFECTS OF EMPLOYMENT AND INCOME SUPPORT ON OFFENDING

The results showing the effects of employment and income support on offending are provided in Table 2. Random-effects models are estimated in the top panel, while fixed-effects models are estimated in the bottom panel. In Model A, the effects of employment and income support are estimated, with controls for marriage and parenthood, personal characteristics, and criminal history. In Model B, the three types of income support (unemployment insurance, public assistance, and disability benefits) are distinguished.

Table 2

Before turning to the coefficients for employment and income support, the control variables are discussed. Men with more convictions prior to age 18, and who were convicted or incarcerated

in the previous year, have a significantly higher post-age 18 conviction rate. With regard to personal characteristics, men with low intelligence were convicted more frequently in any given year. Women with a longer criminal history prior to age 18 and a conviction in the previous year have a significantly higher conviction rate. In addition, the models show that women who were older when they entered the juvenile justice institution, and who stayed longer in the institution, have a significantly higher conviction rate.

With regard to the effects of employment and income support, the results in Model A show that for men, both sources of income are associated with a significant decrease in the rate of offending. A test of the equality of the coefficients for employment and income support shows that employment is significantly more strongly correlated with offending than income support (z-test of the difference is -2.31). When we consider the type of income support (Model B), the results show that public assistance and disability benefits are both associated with a decrease in the number of convictions, whereas receipt of unemployment insurance benefits is uncorrelated with offending. While some of the Hausman tests favor the fixed-effects coefficients over their random-effects counterparts, the same conclusions are reached across the random- and fixed-effects models.

For women, Model A suggests that employment is also associated with a significant reduction in the rate of offending. In contrast to men, however, income support is positively but insignificantly correlated with women's conviction rate. Similar to men, a test of the equality of the coefficients for employment and income support shows that employment is significantly more strongly correlated with offending than income support (z-test of the difference is -5.07). Model B reveals that the positive association between income support and offending for women is driven entirely by disability benefits. Results are similar in the random- and fixed-effects models, and

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most of the Hausman tests favor the random-effects coefficients. Interestingly, comparing the coefficients for men and women demonstrated that the effects of employment on offending are statistically indistinguishable for men and women, while the effects of income support, and public assistance and disability benefits in particular, do differ significantly for men and women.

COMPARISON OF PROPERTY AND VIOLENT OFFENDING

The effects of employment and income support on property crime appear to be similar to the effects on overall offending (Table 3). Model A for men shows that employment and income support are both associated with a lower probability of a property crime conviction. When distinguishing between different types of income support in Model B, the results of the random-effects model indicate that public assistance and disability benefits are negatively and significantly correlated with property offending. However, the Hausman test favors the disability coefficient from the fixed-effects model, which is not statistically significant.

Table 3

For women, Model A shows that the probability of a property crime conviction is significantly lower for those who are employed, while income support is unrelated to conviction. In Model B, disability benefits are associated with a higher likelihood of a property crime conviction, but only at 10 percent significance. These results are further supported by the fixed-effects models. Again, employment effects on property offending are not significantly different for men and women, whereas income support effects, and specifically the effects of disability benefits, differ for men and women.

Finally, with regard to violent crime, Table 4 indicates that employment is associated with a significant reduction in the likelihood of conviction for a violent crime among both men and

women, while income support is uncorrelated with conviction for both samples. It is also notable that the coefficients in the male property crime model are substantially larger than their counterparts in the male violent crime model. The "seemingly unrelated regression" results indicate that for men, both employment and income support are more strongly correlated with property offending than violent offending. For women, no significant differences in the effects of employment and income support on property and violent offending were found. Finally, for violent offending, no gender differences in the effects of employment and income support were found.

Table 4

DISCUSSION

This study used individual-level, longitudinal information on a sample of vulnerable youths (N=540) who were treated in a Dutch juvenile justice institution in the 1990s and who, because of a multi-problem background, were at increased risk of experiencing difficulties in the transition to adulthood. Officially registered data were collected on convictions, employment contracts, and government benefits from ages 18 to 32. The question driving the analysis concerned the differential effects of employment and types of income support on offending by high-risk men and women. In doing so, this study aimed to shed light on the extent to which theories that stress the financial motivation for crime and social control theories are able to explain reductions in individual offending rates.

Results show that a large part of the sample engages in criminal behavior in adulthood. Men outnumber women with regard to participation and frequency of offending. Furthermore, for both men and women, convictions for property crimes are more common than for violent crimes.

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In addition, the vast majority of the sample is employed at some point during the observation period, however, there is also a high percentage of benefit recipients, especially among women. Women more often than men receive public assistance and disability benefits, while men more often receive income support due to unemployment.

Random- and fixed-effects models were used to estimate effects of employment and income support on crime. This analytic strategy enabled us to control for possible selection effects in the relationship between employment, income support and crime. Both static and dynamic control variables were included in the random-effects models, and the findings from these models were largely supported by the results of the fixed-effects models – models that strictly control for selection effects by focusing only on within-individual change.

The findings show that, even when rigorously controlling for selection effects, employment and income support are significantly related to offending. Employment was found to be inversely correlated with offending in general, and with both property and violent offending in particular. This was consistently observed among both high-risk men and women. Receipt of income support, on the other hand, was inversely correlated with offending among high-risk men, and only with respect to property offending. While receipt of income support was largely uncorrelated with offending among high-risk women, this masked a positive correlation between the receipt of disability benefits and offending.

What do these findings mean for theories about employment, income support and crime? To begin with, the finding that for both men and women, employment is associated with lower levels of offending, could be interpreted as evidence for theories that stress the financial motivation for crime, as employment provides a legitimate source of income (Agnew, 1992; Becker, 1968; Ehrlich, 1973; Merton, 1968). Moreover, when distinguishing between property and violent

offending, employment was found to have a significantly stronger relation with property offending than with violent offending, which suggests that crime is (at least partly) financially motivated.

Furthermore, for men, income support was found to be related to a significantly lower rate of overall offending as well as property offending, strengthening the financial motivation explanation. There were however differences with regard to different types of income support. Public assistance and disability benefits in particular were associated with a reduction in overall and property offending, which, especially with regard to public assistance, is contrary to what was expected given that in most cases income from these other types of support will be lower compared to those from unemployment benefits.

However, although reduced financial motivation might explain the lower offending rates, in particular among the men in our sample, the finding that employment is associated with lower levels of offending is also in line with theories that argue that employment provides social control and changes in routine activities which can help reduce offending (Laub and Sampson, 2003, Sampson and Laub, 1993). Furthermore, employment is more strongly associated with offending than income support, indicating that next to merely receiving an income, the non-monetary aspects of work, such as social control or reduced opportunity to engage in crime due to changes in daily routine activities, are important in reducing criminal behavior. Moreover, employment is not only associated with lower levels of overall offending, but also with property and violent crime separately. This too points to the importance of social control and structured routines in refraining from criminal behavior, as violent crimes are generally not committed for financial gain.

The findings thus suggest that the informal social control that inheres in employment is important in explaining the reduced offending rates for both men and women, even though women are more likely to work part-time and might attach less value to work than men (De Beer 2005;

Harding and Sewel 1992; Rossi 1998). This might be due to the fact that over the past decades, the gap in employment participation between men and women has become smaller, and therefore, work as a source of informal social control might also have become more important for women. Strengthening attachment to the labor market therefore has the potential to alter the long-term risk of crime among both vulnerable young men and women.

However, the findings indicate that it is difficult to draw general conclusions about the role of income in reducing offending, as the results with regard to the effects of income support on crime differ importantly for men and women. Whereas for men receiving income support was found to be correlated with lower offending rates, thereby providing support for theories that emphasize the financial motivation for crime (e.g. Agnew, 1992; Becker, 1968; Ehrlich, 1973; Merton, 1968), the effects of income support on crime are less clear for women. Receiving income support has a (non-significant) positive relationship with offending for women, which is driven by the positive effect of receiving disability benefits. There is evidence from the sample that women who receive disability benefits are eligible for them on the basis of psychiatric problems. For example, information from the treatment files shows that women possess a more problematic personal and family background. This points to the so-called gender paradox in crime: while women are less likely than men to engage in crime, those women who do engage in crime often show more severe socio-psychological problems than criminal men (Eme, 1992). Prior research, for example, has demonstrated that female offenders have greater mental health problems than male offenders, and that these mental health problems are related to criminal behavior (Palmer, Jinks and Hatcher 2010). It is therefore plausible that eligibility for, and receipt of, disability benefits serves as an indicator of a highly sensitive period in the lives of vulnerable women, when psychiatric problems are likely to have peaked and the risk for crime is greatest. This is not to say

that these women do not profit from receiving financial benefits, but indicates that they need other forms of support as well.

STUDY LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

This study is the first in the Netherlands, and one of the few worldwide, which examines effects of employment as well as income support on criminal behavior at the individual level. However, some limitations must be noted.

First, the analyses compare being employed to receiving benefits. These conditions differ both in terms of the earnings yielded as well as in terms of the social control generated. However, the data used in this study provide only information about the duration of job contracts and the type of benefits received, and not about the number of days per week worked or the amount of income actually received, thereby limiting our ability to contrast motivational and control theories of offending. Given that being employed usually generates both a higher level of social control and better earnings compared to receiving benefits, it remains difficult to disentangle competing explanations on the effects of employment on crime based on the data available for the current study. Yet, the finding that employment but not income support is associated with reduced violent offending suggests that at least part of the added value of employment is non-monetary. Directly comparing earnings would have allowed for a more stringent test of these competing explanations.

Second, while all formal employment contracts and income support benefits are registered in official databases, information about undeclared work and unofficial (e.g., familial) financial support is regrettably unavailable. With respect to undeclared work, vulnerable youths can end up working on the informal labor market, for instance, because their criminal record limits opportunities for conventional employment (Pager, 2003). In addition, some young people may

live with someone who is capable of supporting them financially. The existence of undeclared work and unofficial financial support might partly explain why there is a considerable amount of time in which subjects receive no income from either work or government benefits (Verbruggen et al., 2014).

Third, the fixed-effects models used in this study control for time-stable differences, but not for time-varying processes. Although marriage and parenthood, which besides employment represent two important institutions of social control, are included in the analyses as dynamic control variables, we lack information about other dynamic measures, such as alcohol and substance abuse problems and (mental) health issues, that might have influenced the relationship between employment, income support and offending. Moreover, the analyses have not taken the possibility of simultaneity bias into account. The current study was concerned with examining effects of employment and income support on crime, however, it is not unlikely that criminal convictions also influence employment and safety net use.

Fourth, we used a calendar-year reference window as the temporal unit in this study, which might not be sufficiently fine-grained to study transitions among states of employment, income support, and crime, as high-risk individuals often have erratic work histories. It would thus be desirable in future research to collect information on a monthly rather than yearly level.

Finally, it is worth considering the extent to which the findings from this Dutch study can be generalized to other societal contexts. In the typology of Esping-Andersen (1990), welfare regimes in Anglo-Saxon countries, such as the US and the UK, can be classified as liberal regimes in which eligibility criteria are stricter and benefit levels are lower. In light of differences in the social safety net, it could be that income support in these countries is differentially related to criminal offending because, for example, the benefit levels might be insufficient to relieve

financial strain to lessen the attractiveness of crime. Moreover, it is important to consider that income support can be denied due to criminal history in some US states and other countries.

Within the limits of the caveats mentioned above, the results of the current study attest to the success of the Dutch welfare system to prevent those unable to make a successful transition to the labor market from engaging in crime (De Mooij, 2006). The relatively high degree of decommodification characteristic for the Dutch system seems to be especially important in this respect, given that especially public assistance and disability benefits were related to decreased criminal behavior. When evaluating both the accessibility and level of public assistance in light of reforms towards a more liberal regime, the Dutch government - as well as those of other countries - , would do best to include the crime reducing effect of these types of income support in the equation.

To close, this study provides a first step in understanding how the Dutch welfare state impinges on individual criminal behavior. Even though the study pertains to a sample of young people from troubled backgrounds, whose labor market participation is below average, whose employment careers are highly unstable, and who are more highly dependent on the Dutch welfare state, employment was still strongly and consistently correlated with reduced crime risk among both men and women. Yet this study points to an additional change agent in the criminal careers of vulnerable men. Namely, some forms of government transfer have the capacity to substantially alter the risk of crime. Since this is a relatively unexplored field of inquiry in criminology, future research using more detailed data and including other welfare regimes will be necessary to shed light on why and how the criminal behavior of vulnerable citizens is jointly affected by employment and income support.

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Table 1. Descriptive Statistics

	Males (N=270)		Females (N=270)	
	% / Mean	s.d.	% / Mean	s.d.
Sociodemographic Indicators				
Married	22.96%		20.00%	
Child(ren)	35.93%		70.37%	
Personal Characteristics				
Low Intelligence	26.66%		34.44%	
Low School Attainment	31.85%		22.96%	
Aggression	64.07%		65.93%	
Sexual Abuse	6.66%		38.15%	
Physical Abuse	32.22%		63.70%	
Problematic Family Environment	37.77%		65.56%	
No. Problems in Family	0.54	0.81	1.13	1.09
Criminal History prior to Age 18				
Convicted Prior to Age 18	80.74%		55.56%	
No. Convictions Prior to Age 18	5.62	4.73	2.36	2.24
Age Entered Institution	15.61	1.69	15.43	1.20
Length of Institution Confinement (in months)	20.76	12.20	13.42	7.83
Criminal Offending from Age 18 to 32				
Ever Convicted of a Crime	76.30%		42.75%	
Total Convictions	12.06	14.26	4.29	4.75
No. Convictions per Year °	0.90	1.47	0.17	0.36
Ever Convicted of Property Crime	64.81%		30.86%	
Total Convictions for Property Crimes	10.15	13.28	3.96	4.40
No. Convictions per Year for Property Offenses °	0.63	1.21	0.11	0.29
Ever Convicted of Violent Crime	49.63%		23.79%	
Total Convictions for Violent Crimes	3.71	3.20	1.94	1.57
No. Convictions per Year for Violent Offenses °	0.19	0.41	0.04	0.11
Ever Incarcerated	57.41%		18.21%	
Total Length of Incarceration (in months)	15.22	22.09	3.66	8.17
Employment & Income Support				
Ever Employed or Received Income Support	94.07%		94.81%	
Ever Employed	85.56%		83.70%	
Ever Received Income Support	64.44%		83.27%	
Ever Received Unemployment Insurance	35.56%		18.96%	
Ever Received Public Assistance	31.11%		47.96%	
Ever Received Disability Benefits	21.11%		46.47%	
Employed or Received Income Support	0.40	0.44	0.59	0.54
Employed‡	0.26	0.40	0.22	0.37
Received Income Support‡	0.09	0.25	0.29	0.43
Received Unemployment Insurance ‡	0.02	0.10	0.02	0.12
Received Public Assistance ‡	0.03	0.17	0.15	0.34
Received Disability Benefits ‡	0.03	0.17	0.13	0.32

† Based on NT = 7,102
‡ Based on NT = 7,983
° Corrected for Time Incarcerated

Table 2. Effects of Employment and Income Support on Offending for Men and Women (Negative Binomial Models)

	Males (N=270)						Females (N=267)					
	Model A			Model B			Model A			Model B		
	β	s.e.		β	s.e.		β	s.e.		β	s.e.	
Sociodemographic Indicators												
Age‡	−1.06	1.06		−1.14	1.07		−0.54	2.23		−0.31	2.23	
Age²‡	0.14	0.22		0.16	0.22		0.02	0.47		−0.01	0.47	
Marriage	−0.36	0.22	†	−0.37	0.22	†	−0.04	0.28		−0.05	0.28	
Child(ren)	−0.01	0.10		−0.00	0.10		−0.02	0.09		−0.01	0.09	
Personal Characteristics												
Low intelligence	0.25	0.11	*	0.24	0.11	*	0.25	0.19		0.30	0.20	
Low school attainment	0.09	0.11		0.09	0.11		0.12	0.21		0.12	0.21	
Aggression	0.04	0.10		0.04	0.10		0.27	0.20		0.25	0.20	
Sexual abuse	0.06	0.18		0.05	0.18		−0.09	0.19		−0.10	0.19	
Physical abuse	0.05	0.11		0.05	0.11		−0.01	0.18		−0.03	0.18	
Problems in family	0.01	0.06		0.01	0.06		0.06	0.09		0.05	0.09	
Criminal History												
Convicted prior to Age 18	0.06	0.01	***	0.06	0.01	***	0.14	0.06	*	0.15	0.06	**
Age Entered Institution	−0.01	0.04		−0.01	0.04		0.23	0.09	**	0.22	0.09	*
Length of Institution Confinement	−0.01	0.01		−0.01	0.01		0.02	0.01	*	0.02	0.01	†
Convicted, t − 1	0.74	0.09	***	0.74	0.09	***	0.89	0.19	***	0.86	0.19	***
Imprisoned, t − 1	0.16	0.08	†	0.17	0.08	*	0.14	0.22		0.13	0.22	
Accumulated Convictions, t − 2	−0.00	0.01		−0.00	0.01		0.00	0.03		−0.00	0.03	
Accumulated Prison Time, t − 2	0.01	0.04		0.01	0.04		−0.25	0.24		−0.27	0.24	
Employment & Income Support												
Employment	−1.05	0.14	***				−1.40	0.27	***			
Income support	−0.54	0.17	***				0.22	0.17				
Employment				−1.05	0.14	***				−1.09	0.27	***
Unemployment Insurance				0.00	0.37					−1.73	1.35	
Public Assistance				−0.65	0.23	**				−0.00	0.23	
Disability Benefits				−0.64	0.28	*				0.42	0.20	*
Fixed Effects Coefficients°												
Employment	−0.97	0.15	***				−0.98	0.30	***			
Income support	**−0.43**	**0.18**	*				0.13	0.19				
Employment				−0.98	0.15	***				−0.99	0.30	***
Unemployment Insurance				**0.33**	**0.41**					**−0.98**	**1.39**	
Public Assistance				−0.60	0.24	*				−0.12	0.26	
Disability Benefits				−0.48	0.30					0.42	0.24	†

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

‡ Age/10.

° N$_{males}$=204, N$_{females}$=113. The number of respondents in the fixed-effects models is smaller than in the random-effects models, because subjects who are never convicted from ages 18-32 are omitted. The fixed-effects coefficients in bold indicate those that are favored over their random-effects counterparts based on Hausman tests. Otherwise, the tests favor the random-effects coefficients.

Table 3. Effects of Employment and Income Support on Property Offending for Men and Women (Logit Models)

	Males (N=270)				Females (N=267)			
	Model A		Model B		Model A		Model B	
	β	s.e.	β	s.e.	β	s.e.	β	s.e.
Random Effects Coefficients								
Employment	−1.42	0.23 ***			−1.21	0.40 **		
Income support	−0.89	0.30 **			0 .29	0.25		
Employment			−1.42	0.23 ***			−1.19	0.40 **
Unemployment Insurance			−0.62	0.68			−0.35	1.26
Public Assistance			−0.88	0.41 *			−0.01	0.33
Disability Benefits			−1.04	0.51 *			0.50	0.30 †
Fixed Effects Coefficients°								
Employment	−1.32	0.25 ***			−1.06	0.48 *		
Income support	**−0.58**	**0.31** †			0 .33	0.31		
Employment			−1.32	0.25 ***			−1.10	0.48 *
Unemployment Insurance			−0.18	0.72			−0.09	1.50
Public Assistance			−0.66	0.40			−0.11	0.38
Disability Benefits			**−0.65**	**0.54**			0.85	0.43 *

Note: All control variables are included but are not shown to conserve space. The fixed-effects coefficients in bold indicate those that are favored over their random-effects counterparts based on Hausman tests. Otherwise, the tests favor the random-effects coefficients.

† $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.
° $N_{males}=173$, $N_{females}=80$.

Table 4. Effects of Employment and Income Support on Violent Offending for Men and Women (Logit Models)

	Males (N=270)						Females (N=267)					
	Model A			Model B			Model A			Model B		
	β	s.e.		β	s.e.		β	s.e.		β	s.e.	
Random Effects Coefficients												
Employment	−0.53	0.24	*				−0.82	0.42	*			
Income support	−0.02	0.28					0.26	0.28				
Employment				−0.53	0.24	*				−0.79	0.42	†
Unemployment Insurance °°				0.56	0.61					---	---	
Public Assistance				−0.08	0.38					0.10	0.37	
Disability Benefits				−0.22	0.46					0.48	0.31	
Fixed Effects Coefficients°												
Employment	−0.29	0.27					−0.60	0.53				
Income support	0.04	0.30					**−0.42**	**0.37**				
Employment				−0.30	0.27					−0.60	0.53	
Unemployment Insurance °°				0.95	0.67					---	---	
Public Assistance				−0.18	0.40					−0.55	0.52	
Disability Benefits				−0.07	0.51					−0.03	0.47	

Note: All control variables are included but are not shown to conserve space. The fixed-effects coefficients in bold indicate those that are favored over their random-effects counterparts based on Hausman tests. Otherwise, the tests favor the random-effects coefficients.

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

° N_{males}=132, $N_{females}$=64.

°° Because there are no women that were convicted of a violent offense and received unemployment benefits in the same year, income support due to unemployment was excluded from Model B for women.

Notes

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[1] Similar to the current study, the study by Verbruggen, Blokland and Van der Geest (2012) used data from the 17up study, and examined effects of employment, employment duration, and unemployment duration on offending. Verbruggen et al. (2012) found a significant negative effect of employment on offending for both men and women. The current study builds upon the study by Verbruggen et al. (2012) by comparing the effects of employment to the effects of receiving income support on offending.

[2] Another research tradition studies the macro-level relationship between economic conditions and crime rates. These studies show that crime rates are higher in areas suffering poverty and high unemployment, although the correlation tends to be stronger between unemployment and property crimes (e.g. Chiricos, 1987; Cook and Zarkin, 1985; Raphael and Winter-Ebmer, 2001).

[3] The existing research concerns the relationship between government spending on income support programs and crime in cities or metropolitan areas (e.g. Baumer and Gustafson, 2007; DeFronzo, 1997); in counties (e.g. Burek, 2006; Worrall, 2005); and in nations (e.g. Savolainen, 2000). With a few exceptions (Burek, 2006; Worrall, 2005), these studies fairly uniformly conclude that localities with more generous income support policies, particularly public assistance programs, have lower crime rates.

[4] The Dutch system of income support also includes pensions and health care insurance, but given the scope of the current study, these are not discussed here.

[5] Research among Dutch young adults (mean age 21) receiving disability benefits indicated that many were (very) mildly intellectually disabled (37%) or had psychiatric problems (19%). Comorbidity of psychiatric problems was high (54%) and many also suffered from additional adversities, like problems in the family context (18%). Relatively few (4%) were diagnosed as addicted to alcohol or drugs (Holwerda, 2012).

[6] See for more information about the sample of the 17up study the article by Verbruggen, Blokland and Van der Geest (2012), that also relied on data from the 17up study.

[7] Offenses are classified according to the standard classification for offenses in the Netherlands (Statistics Netherlands, 2010). Property offending consists of theft, robbery, auto theft and carjacking, burglary, embezzlement, fraud, forgery and counterfeiting, and handling of stolen goods.

Violent offending consists of (aggravated) assault, intimidation, stalking, kidnapping, (attempted) rape, and homicide.

[8] The fixed-effects negative binomial estimator proceeds by maximizing the conditional likelihood, where conditioning is achieved by summing across each individual's T_i observations on the dependent variable. This technically makes it a conditional fixed-effects model. It necessarily excludes subjects whose observations (here, total number of convictions) sum to zero from age 18 onward, resulting in the loss of degrees of freedom.

[9] The Hausman test $\overline{\qquad\qquad}$ for a single regressor is distributed as a standard normal random variable (i.e., it is a z-test). A "large" statistic (e.g., exceeding ±1.96) constitutes a rejection of RE in favor of FE on consistency grounds, while a "small" statistic means either that RE is consistent or that FE is so inefficient that its consistency advantage is undermined.

[10] The Verbruggen et al. (2014) study examined effects of formal and informal work, as well as official and unofficial (e.g. from family or partners) financial support on offending, and relied on self-report data that was collected from a sub-sample of the 17up study (N=236). Formal employment was associated with a reduced likelihood of offending. Furthermore, unofficial financial support was related to a lower probability of offending for men. However, self-reported receipt of benefits was associated with an increased likelihood of offending.