JUVENILITY AND PUNISHMENT: SENTENCING JUVENILES IN ADULT CRIMINAL COURT*

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The study outlined in this article addressed a key limitation of prior research on the punishment of juveniles transferred to adult court by employing propensity score matching techniques to create more comparable samples of juvenile and young adult offenders. Using recent data from the Maryland State Commission on Criminal Sentencing Policy, it tested competing theoretical propositions about the salience of juvenile status in adult court. Findings indicate that even after rigorous statistical matching procedures, juvenile offenders are punished more severely than their young adult counterparts. We found no evidence that this "juvenile penalty" is exacerbated by an offender's race or gender, but it does vary starkly across offense type and mode of transfer, being driven primarily by drug crimes and discretionary waivers. The import of these findings is discussed as they relate to the future of juvenile justice policy regarding the continued use of juvenile transfer to adult court.

One of the most profound developments in the recent evolution of juvenile justice has been the expansion of legal mechanisms for transferring juvenile offenders to adult court. In the wake of rising juvenile violence in the 1980s and 1990s, virtually every state passed legislative enactments to toughen the prosecution and sentencing of juveniles through their

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increased transfer to adult court (Sickmond, 2003; Torbet et al., 1996). As part of a larger shift toward a "new penology" (Feeley and Simon, 1992) and a "culture of control" (Garland, 2001), these policies have eroded the procedural and institutional distinction between juvenile justice and criminal justice for a growing number of delinquent youth.

Much legal reform surrounding juvenile transfer in the 1990s was driven by a rise in the juvenile crime rate during a period when crime rates for other groups were falling (Feld, 2003). The expansion of juvenile transfer laws occurred amid a swelling of public concern about juvenile "superpredators," who were viewed as distinct from "normal" juveniles and, therefore, worthy of adult punishment (Zimring, 1998). According to Krisberg and Austin (1993), juvenile transfers to adult court increased by 400 percent during the 1980s. Approximately two thirds of juvenile prosecutors' offices transferred at least one juvenile to adult court in the mid-1990s (DeFrances and Strom, 1997), and the number of juveniles judicially waived to adult court increased by more than two thirds, from 7,000 to 11,000, between 1988 and 1992 (Parent et al., 1997). Subsequently, the number of state prison admissions under the age of 18 years more than doubled between 1985 and 1997 (Strom, 2000), and the proportion of adult correctional populations comprising juveniles has increased substantially in recent decades (Puzzanchera, 2003). In fact, one recent estimate suggested that the use of expanded statutory exclusion provisions alone resulted in more than 200,000 juveniles being tried as adults between 1996 and 1999 (Snyder and Sickmund, 1999).

Although the past two decades have witnessed unprecedented numbers of juveniles being sentenced in adult courts, relatively little research focuses on this growing offender population. Numerous important studies described the characteristics of waived youth (e.g., Fagan, Forst, and Vivona, 1987; Klein, 1998; Snyder, Sickmund, and Poe-Yamagata, 2000) or compared juvenile sentences for transferred and nontransferred youth (e.g., Champion, 1989; Fagan, 1991; Hamparian et al., 1982; Rudman et al., 1986). With few exceptions (Kurlychek and Johnson, 2004; Steiner, 2009), however, little work has focused on the sentencing of these youthful offenders in adult court as it compares with other young adult offenders.

The current research addresses this issue, contributing to juvenile waiver research in several important ways. First, it replicates prior work in a new research context, examining juveniles transferred to criminal courts in Maryland. Second, it addresses key methodological limitations of prior work by employing propensity score matching to ensure equivalent samples of juveniles and young adult offenders. And third, it delves into the subtle nuances of how juvenile status is conditioned by other legal and extralegal punishment considerations such as offense type and mode of transfer.

PUNISHING JUVENILES AS ADULTS

Recent decades have witnessed an unprecedented expansion of juvenile transfer provisions. Driven by "get tough" politics and moral panic surrounding juvenile violence, virtually every state has lowered the legal age of juvenile transfer eligibility and has created additional pathways to adult court, such as statutory exclusion, prosecutorial direct file, or mandatory waiver hearings, which remove judicial discretion from the transfer process (Feld, 2000). In response, a growing literature has developed that compares youths processed in adult courts with those retained in the juvenile system. Much of this research has focused on the characteristics of transferred youth, particularly as they relate to potential bias in the transfer decision (e.g., Bishop, 2000; Bishop and Frazier, 1991, 2000; Clement, 1997; D'Angelo, 2007; Fagan, Forst, and Vivona, 1987).

In addition, a sizeable literature has developed that compares punitive outcomes for youths in juvenile and adult courts. Much of this work has suggested that, in adult court, the historical legacy of juvenile leniency remains (Bortner, 1986; Champion, 1989; Clement, 1997; Hamparian et al., 1982; Kupchik, 2006; McNulty, 1996). Bortner (1986), for instance, reported that almost two thirds of juvenile offenders sentenced in adult court received sentences to probation, and as Singer, Fagan, and Liberman (2000) pointed out, specialized youth courts developed in some adult systems that reintroduced juvenile justice principles into the punishment process of transferred youth. Similarly, Kupchik (2006) argued that the sentencing of juveniles in adult court is characterized by "sequential justice" in which juvenile status is unrelated to early case processing but serves as an important mitigating factor in the determination of punishment in adult court. This study comported with Butts and Mitchell's (2000: 201) recent review, which concluded that the weight of the evidence suggested that "[a]s a crime control policy, criminal court transfer may symbolize toughness more than it actually delivers toughness."

However, many studies also have found that significantly harsher punishments are meted out to juveniles in adult court when compared with juveniles in juvenile court, particularly for serious or violent offenses (Barnes and Franze, 1989; Fagan, 1996; Myers, 2005; Rudman et al., 1986). For instance, Myers' (2005) recent examination of Pennsylvania youth reported that after controlling for a broad range of factors, comparable juveniles were significantly more likely to be incarcerated in the adult criminal justice system compared with the juvenile justice system. Prior research findings, however, are likely to reflect important selection effects associated with the comparison of youth in juvenile and adult courts (Butts and Mitchell, 2000). Most studies are descriptive in nature, and virtually all rely on the tenuous assumption that the sentencing options and

punishment processes are comparable and equivalent in juvenile and adult court. As Kurlychek and Johnson (2004) argued, this assumption is likely to be problematic. Juvenile courts are characterized by disposition options that fundamentally differ from adult courts in their symbolic meaning, punitive and treatment alternatives, and punishment goals. One alternative approach, therefore, is to compare transferred juveniles with similar young adult offenders. Such a comparison ensures the equality of sentencing outcomes and provides for a more direct test of the severity of juvenile punishment in adult court.

Only two prior studies have examined this issue. Kurlychek and Johnson (2004) compared a sample of young adults and transferred juveniles in Pennsylvania and found that, even after controlling for a variety of key factors known to influence sentencing decisions, juveniles received a substantial "juvenile penalty"; on average, their sentences were 80 percent more severe than for their young adult counterparts. Moreover, this effect was particularly strong for violent crimes. Steiner (2009) found similar effects comparing transferred juveniles with young adults (age 29 years or younger) using data from a sample of 37 urban counties. His study examined both bail and incarceration (but not sentence length) and found evidence that juveniles were slightly more likely to be held on bail and substantially more likely to be imprisoned compared with young adult offenders. He also found that the effect of juvenile status varied across counties.

Although both studies made valuable contributions, each had its limitations; each relied on simple matching techniques that are unlikely to produce comparable samples of young adult and juvenile offenders. Kurlychek and Johnson (2004) used a matched sample design that selected adult offenders based only on their age and type of offense, whereas Steiner (2009) selected an adult sample based solely on age categories. Both studies, therefore, likely suffered from selection bias inherent in comparisons of nonequivalent samples of juveniles and adults. As Smith and Paternoster (1990) pointed out, this type of selection bias can have profound consequences on research conclusions. Although a strength of Steiner's (2009) study was the use of data from multiple jurisdictions, his data also precluded detailed controls for offense severity and prior criminal history—two of the most important predictors of adult court punishments. As he recognized, this might have "biased the findings in favor of finding an effect for being transferred to criminal court" (2009: 100).

Although prior work provides provocative evidence of a "juvenile penalty" for transferred youth, a more sophisticated approach is needed to address preexisting differences in the types of juveniles and young adults who are sentenced in criminal court. There are reasons to believe that the

juvenile penalty might vary according to the type of offense or the mechanism through which the offender reaches adult court. To address these issues, the current study applies more rigorous propensity score matching techniques to create equivalent samples of juvenile and young adult offenders and examines disaggregated models to investigate heterogeneity in the effect of juvenile status across offense and different transfer mechanisms. In the following sections, we first outline our theoretical expectations before describing our analytical approach in detail.

JUVENILE STATUS AS AN AGGRAVATING OR MITIGATING FACTOR

As the previous discussion suggests, many unanswered questions remain surrounding criminal punishments for the growing population of American youth processed as adults. If, as campaign slogans of the 1990s suggested, youth who "do adult crime" should "do adult time," then the effectiveness of transfer policies should be judged fundamentally on a comparison of criminal justice sanctions for transferred juveniles and similar young "adult" offenders. Theoretically, a distinction exists between the juvenile justice model, which emphasizes individual rehabilitation, and the criminal justice model, which emphasizes the goals of proportionate punishment and crime control (Kupchik, 2006). To the extent that transferred juveniles are viewed as adults, the criminal justice model should dominate their sentences, resulting in similar punishments for comparable juvenile and young adult offenders. This supposition is at the heart of the "just desserts" adult court philosophy of punishment.

JUVENILITY AS A MITIGATING FACTOR

Despite the fact that contemporary adult courts emphasize proportionality in punishment, traditional penal rationales have long emphasized youthfulness as a mitigating factor in punishment. Franklin Zimring (2005: 31), for instance, argued that "young law violators are less culpable, and thus deserve less punishment—no matter what kind of court might try and sentence them." Juveniles are perceived to be less responsible for their actions because they have yet to develop the full moral capacity to judge right from wrong. Kupchik (2006: 15), for instance, argued that "[c]ourt decision makers are unable to ignore adolescents' immaturity, or to hold adolescent defendants fully culpable for their actions." This conclusion was made because adolescents are at psychosocial disadvantages in terms of responsibility, peer influence, temperance, and perspective; they are less able to foresee future consequences of their actions and are less likely to comprehend fully the legal ramifications of their behavior (Fried and

Repucci, 2001; Modecki, 2008; Steinberg and Cauffman, 1996). As such, they deserve special solicitude in sentencing.

Recent empirical evidence supports this argument, finding that juveniles differ substantially from adults in their inherent decision-making capabilities (Grisso and Schwartz, 2000; Steinberg and Cauffman, 1996). The U.S. Supreme Court reaffirmed the notion of reduced culpability of juvenile offenders when they ruled that the death penalty was "cruel and unusual" punishment when applied to juvenile offenders (*Roper v. Simmons*). Moreover, the transitory state of juvenility suggests delinquent behaviors might be part of a temporary, rather than a permanent, developmental stage in adolescence (Sampson and Laub, 1993). Juvenile offenders therefore might benefit from jurisprudential precedents to provide "second chances" to young offenders in the hopes of achieving the long-term benefits of desistence in adulthood.

Punitive sentences also might be eschewed on purpose by adult court judges in attempts to avoid the detriment of adult incarceration. According to "focal concerns" theory, judges are cognizant of practical concerns surrounding their decisions, such as the negative effects of harsh adult prison conditions on juvenile offenders (Steffensmeier, Ulmer, and Kramer, 1998). Practical concern surrounding a juvenile's ability to do hard time is supported by research that found that juveniles are more likely to be victimized sexually and physically in adult prison (Fagan, 1991, 1996; Reddington and Sapp, 1997). For all these reasons, then, one might expect transferred juveniles to receive substantially reduced sentences relative to young adult offenders convicted of comparable offenses.

JUVENILITY AS AN AGGRAVATING FACTOR

Criminal court judges are faced with additional sentencing concerns, though, that might counterbalance or even outweigh reduced culpability for juvenile offenders. Research on adult court sentencing has suggested that because judges do not have complete information regarding future offending or offender dangerousness, they are likely to invoke patterned responses and causal attributions in determining who poses the greatest risk to society (Albonetti, 1991, 1997). Steffensmeier, Ulmer, and Kramer (1998) argued that judges are primarily concerned with offender culpability, dangerousness, and practical constraints. For juveniles, cognitive dissonance might characterize these diverse sentencing criteria. Although juvenile status is likely to reduce the culpability of the offender as noted, it also might increase attributions of dangerousness and community risk. For example, offending behavior peaks in late adolescence and declines thereafter (Blumstein et al., 1986). Thus, young offenders have more years immediately in front of them in which they remain at high risk of future

offending. Incapacitation during this stage therefore might serve an elevated public safety function.

Moreover, the same rationales for reduced culpability of juveniles might lead to increased perceptions of their risk of recidivism. Reflecting on whether juvenile status should be considered in pretrial detention decisions, the New York Supreme Court argued that "[f]or the same reasons that our society does not hold juveniles to an adult standard of responsibility for their conduct, our society may also conclude that there is a greater likelihood that a juvenile charged with delinquency, if released, will commit another criminal act" (quoted in Miller and Guggenheim, 1990: 350). In some states, youthfulness is used explicitly as an aggravating factor in formal punishment decisions. The decision-making calculus of the Virginia state sentencing guidelines, for example, assigns young offenders (age 19 years or younger) additional "points" toward the guidelines score, which is used to determine presumptive prison sentences (Tonry, 2004: 152).

Importantly, transfer to adult court itself might serve as a key process indicator of "serious youthful offenders." Adult court judges might use the transfer decision itself as an important decision-making cue for identifying the most dangerous, most culpable, or most intractable young offenders, singling out this class of youthful offender for increased punishment at sentencing. This supposition is consistent with prior research on courtroom decision making that argues that an important carryover effect is found among sequential punishment decisions. As one example, research indicated that pretrial detainment is a strong correlate of later incarceration (Lizotte, 1978; McCord, Widom, and Crowell, 2001; Steiner, 2009; Zatz, 1985). Thaler's (1978: 455–6) early review of the empirical evidence on pretrial detention argued that "[t]here seems to exist a self-fulfilling quality to pretrial detention" such that "those who are in jail prior to trial are much more likely to be convicted . . . and severely sentenced." The same type of self-fulfilling prophesy might occur with juvenile transfer based on the mere fact that a juvenile offender is being processed in adult court serving as an indicator of increased dangerousness.

HETEROGENEITY IN THE JUVENILITY EFFECT

There are also reasons to believe that the direct effects of juvenile status might be conditioned by specific offense and case-processing characteristics. First, given public outcry over the increased threat posed by a new breed of violent juvenile offender, youth who fit the "juvenile superpredator stereotype" and commit violent offenses might be singled out for particularly harsh punishments in adult court. Alternatively, prior research has suggested extralegal disparities often are most pronounced for drug offenses (Steffensmeier and Demuth, 2000), which recently have been singled out for increasingly harsh punishments and might involve a greater

degree of individual sentencing discretion than serious violent crimes (Spohn and Cederbloom, 1991). Prior research has offered some tentative support for the expectation that the juvenile penalty might vary by offense types (Barnes and Franze, 1989; Kurlychek and Johnson, 2004). Second, prior research has suggested that the mode of transfer represents an important consideration in judicial attributions of juvenile culpability and dangerousness (Steiner, 2005). We anticipate that juvenile status might have more pronounced effects for those offenders who reach adult court through a discretionary waiver hearing, as this mechanism clearly sends a message from the juvenile court that this particular youth is beyond the rehabilitative capacities of the juvenile system.[1] We, therefore, also examine these two potential sources of heterogeneity in the effects of juvenile status in adult court.[2]

THE CURRENT STUDY

Persuasive competing theoretical rationales seem to argue for both increased leniency and increased punitiveness for juveniles who are transferred to adult court. Existing literature has yet to provide definitive support for either perspective, producing conclusions that vary across time and place. The current research extends extant work by Fagan (1991), Kurlychek and Johnson (2004), Kupchik (2007), Steiner (2009), and others by applying more sophisticated methods to address important issues of selection bias and by examining potential heterogeneity in the effect of juvenility on adult court punishments. Specifically, we investigate the following research questions:

1. Are transferred juvenile offenders punished less harshly, more harshly, or the same as comparable young adults in criminal court?

2. To what extent does the type of offense condition the effect of juvenile status on final sentencing outcomes for transferred youth?

3. To what extent does the mode of transfer condition the effect of juvenile status on final sentencing outcomes for transferred youth?

1. We thank an anonymous reviewer for this useful suggestion.

2. In an earlier version of the article, we also examined interactions between juvenile status and offender race and gender. We found no evidence that juvenility interacted with these characteristics, but this null finding might reflect the limited distributions of these variables in our data (the final matched sample was 96 percent male and 77 percent African American). Ultimately, these analyses were removed in the interest of space, but they are available from the authors by request.

RESEARCH CONTEXT

The state of Maryland was selected for the current project for several reasons. First, the state maintains several mechanisms by which juveniles can be tried in adult courts. Juveniles can reach adult court in Maryland through either a judicial waiver hearing or statutory exclusion provisions. Judicial waiver can apply to any offender age 15 years and older, unless a capital offense has been committed; in which case, no age restriction is enforced. Statutory exclusions apply to specific age/crime combinations, including capital offenses if the offender is age 14 years or older and a host of personal and weapons offenses if the offender is age 16 years or older.[3]

Second, Maryland is one of approximately two dozen states that currently maintain a guidelines system for the sentencing of adult criminal offenders, but its sentencing guidelines are in many ways unique from states where most prior research has been conducted.[4] Adopted in July 1983, Maryland's sentencing guidelines are voluntary rather than presumptive, which means that judges are not legally mandated to sentence within the recommended guidelines ranges. They also are descriptive rather than prescriptive, based explicitly on past sentencing practices of Maryland judges. The guidelines were adopted voluntarily by the Maryland Judicial Conference (the statewide body of Maryland judges) without legislative mandate. The sentencing guidelines were motivated by similar goals as other jurisdictions, including 1) reducing disparity among similarly situated offenders, 2) establishing clear sentencing policies, 3) creating an informational platform for incoming judges, and 4) increasing transparency in sentencing (see Bushway and Piehl, 2001).

3. Examples of eligible person offenses include noncapital murder, kidnapping, first-degree assault, armed robbery, rape, attempted rape, and carjacking among others. Examples of eligible weapons offenses include several firearms violations, such as knowingly possessing, selling, or transferring stolen firearms and using, wearing, carrying, or transporting firearms in relation to a drug trafficking crime among others. Maryland also provides for the possibility of "reverse waivers" in which a transferred juvenile can be sent back to juvenile court if it is "in the interests of the child or society" and if they meet specific criteria, such as no prior convictions for statutorily excluded offenses, no prior reverse waiver in which they were adjudicated delinquent, and no current charge involving first-degree murder if they are older than age 16 years.

4. Most contemporary research on guidelines sentencing has been limited to only a few states, with research on Pennsylvania (e.g., Johnson, 2006; Steffensmeier, Ulmer, and Kramer, 1998; Ulmer and Johnson, 2004), Minnesota (e.g., Frase, 1993; Miethe and Moore, 1985; Stolzenberg and D'Allessio, 1994), and Washington State (e.g., Engen et al., 2003; Steen, Engen, and Gainey, 2005) overrepresented in the literature. For prior studies of adult court sentencing in Maryland, see Souryal and Wellford (1999) and Bushway and Piehl (2001, 2007).

Several aspects of Maryland's guidelines contributed to their usefulness for the current study. They include separate guidelines matrices for person, property, and drug offenses. This policy provides for more detailed offense-specific analyses; for instance, victim injury and weapon usage are factored into person crimes, whereas drug type and amount explicitly are considered for drug offenses. They also incorporate separate measures of prior juvenile and adult offending, making it possible to match juveniles and adults better with similar offending histories. Finally, they do not identify specific mitigating and aggravating factors, allowing judges to weigh individual considerations, including juvenile status, carte blanche.

DATA AND SAMPLE

The data for this research were provided by the Maryland State Commission on Criminal Sentencing Policy and included all offenders sentenced in Maryland criminal courts from January 1999 through May 2006. The original data contained information on the sentencing of more than 90,000 offenders. Because our interest was in comparing transferred juveniles with similar young adult offenders, we began by limiting the sample to individuals between the ages of 10 and 20 years at the time of their offense.[5] This restriction resulted in a sample of 20,535 offenders. We continued to constrain the sample by removing probation revocations to limit the sample to sentencing outcomes for new criminal offenses. Finally, the sample was restricted to individuals with available information on our key dependent variable of interest—sentence type and length. This limit produced a final sample of 18,579 offenders, including 2,387 juveniles and 16,192 young adults.

Propensity Score Matching

A core concern in research examining transferred juveniles is that selection effects are likely to produce a pool of juvenile offenders that are systematically different from a random sample of young adult offenders (Smith and Paternoster, 1990). It is therefore necessary to create comparable samples of juveniles and adults before investigating the effect of juvenile status on punishment. Because juvenile status is not assigned randomly, sophisticated matching techniques are required to create equivalency. The current study employed Rosenbaum and Rubin's (1983) propensity score matching approach to create comparable samples of juvenile and young adult offenders (see Smith, 1997; Winship and Morgan, 1999). Propensity score matching is an econometric technique that uses

5. Age at offense was determined by subtracting date of birth from date of offense. We included a lower age limit of 10 years to remove a few nonsensical age values that were a result of data entry errors in date of birth or age at offense.

observed covariates to estimate the individual likelihood of experiencing a treatment effect. In this case, the treatment is "juvenile status" and the propensity model is used to create balanced samples for the "treated" and "untreated" groups of juvenile and young adult offenders. This allows the researcher to rule out numerous confounding differences that might otherwise exist in the two samples. The goal is to assess the counterfactual, "What would the sentence have been had the offender been a young adult instead of a transferred juvenile?" The propensity model, representing the conditional probability of being a transferred juvenile, is calculated using extensive covariates relevant to sentencing and is summarized by Equation 1:

$$\log\left(\frac{j}{1-j}\right) = \alpha + \beta_1 X_1 + ... + \beta_i X_i \quad (1)$$

In the propensity model, j stands for the treatment condition, juvenile status, and the log of the odds of juvenile status is predicted with a vector of covariates (X_1 to X_i) and their associated coefficients (β_1 to β_i). These included a broad range of offender, offense, and process characteristics, including the race (White, Black, and other) and gender (male and female) of the offender, the mode of conviction (negotiated plea, non-negotiated plea, and trial), statutory offense level (felony and misdemeanor), type of offense (person, property, and drug), prior juvenile record (none, minor, and major record), prior adult record (none, minor, moderate, and major record) and the overall guidelines severity of the current offense. To account for any nonlinearity, offense severity was modeled using a series of dummy variables for each offense level.

Once the propensity score is created for each individual, a matching algorithm is used to create a matched sample of juvenile and young adult offenders. We applied nearest neighbor matching using the PSMATCH2 command in STATA 10 with nonreplacement and a caliper of .02, so that each juvenile is matched to one unique adult with a similar propensity score.[6] For some pre-specified caliper $\delta > 0$, where a treated unit i is matched to a nontreated unit j, the procedure takes the general form:

6. By setting a caliper function in nearest neighbor matching, matches are obtained only when individuals can be paired within the given caliper range. Thus, in selecting a caliper, one is balancing the need to retain sample members against the need to obtain the closest possible comparability between subjects in the treatment and control groups. We also examined calipers of .05 and .01, but the caliper of .02 was preferred because it allowed us to maintain more than 95% of our original juvenile sample while still creating matched samples that did not differ significantly on any of our independent variables.

$$\delta > \left| e_i - e_j \right| = \min_{k \in \{Z=0\}} \{ \left| e_i - e_j \right| \} \quad (2)$$

The formula minimizes the value of e_i–e_j or the difference in propensity scores for similar juvenile and adult offenders. If no match can be made at the selected caliper, the case is rejected.

For each transferred juvenile then, the nearest neighbor matching algorithm identifies a comparable young adult offender with a similar propensity score. The nonreplacement option ensures that this pairing is unique, and the resulting matched sample is homogenous with regard to the covariates included in the model. Juvenile status, then, can be treated as though it were randomly assigned under the model assumptions. Of course, the effectiveness of the propensity approach depends on the quality of available covariates. In our case, we were able to incorporate all of the usual predictors of adult sentencing, although additional factors like family background and socioeconomic status might have further improved the model. Unfortunately, these measures are routinely absent from the vast majority of sentencing research (Spohn, 2000).

Age-Graded Samples

To ensure that our results were not a product of the age ranges examined, we created three distinct samples by limiting systematically the age ranges in the analysis. Our first and largest sample consisted of 2,272 juveniles ages 10–17 years matched to 2,272 adults ages 18–20 years. We then restricted the age ranges to 16–19 years and repeated the matching procedure to produce a second independently matched sample of 2,092 juveniles ages 16 and 17 years and 2,092 young adults ages 18 and 19 years. Finally, we restricted the age range to 17- and 18-year olds only and performed the matching procedure a third time to examine a third independent sample of 1,438 juveniles, who were 17 years old, matched to 1,438 offenders, who were 18 years old.[7] This last comparison provided a particularly strict test of the effect of "juvenile status" by removing any larger age–punishment trends that might characterize the data.[8] Because we recreated three distinct independently matched samples, results that are robust across all samples increase our confidence that significant findings are indicative of true differences rather than mere sampling bias.

7. Because state transfer laws focus on the age of the offender at the time of offense, not at the time of sentencing, all references to age in sample creation are based on the youth's age at the time of the offense.

8. This approach was taken rather than including a continuous measure of age in the models as, in the restricted age range of these samples, age was collinear (r = .89) with our key independent variable of interest—juvenile status.

MEASURES

Our dependent variable of interest reflected the length of incarceration ordered by the adult court judge, ranging from 0 months of incarceration up to 720 months or 60 years of incarceration.[9] Because of the skewed and limited nature of the dependent variable, we employed a natural log transformation (Osgood, Finken, and McMorris, 2002), which made the distribution approximately normal and provided for the useful interpretation of regression coefficients as the proportional change in sentence length associated with a 1-unit change in an independent variable.[10] This approach turned out to be valuable because additive models assume that each additional 1-month increase in punishment carries the same meaning for each sentence, which is unlikely to be the case (Sellin and Wolfgang, 1964). Adding 1 month to a very short sentence results in a greater proportional increase than adding 1 month to a very long sentence.

Our primary independent variable was juvenile status, defined by the age of the offender at the time of their offense. Offenders younger than age 18 years were identified as juveniles and were coded 1, and offenders age 18 years and older were identified as adults and were coded 0. Although the matching process ensured that the two samples were equal with regard to our covariates, we included several of the measures in the model to investigate the relative impact of juvenile status compared with other relevant sentencing factors. Race and gender were captured with a dummy variable for males and a series of dummy variables for White, Black, and other race offenders (with White used as the reference).[11] Similarly, the type of crime was incorporated with dummy variables for person, drug, and property crime (with property used as the reference).

Legally relevant offense characteristics were included using several variables. The presumptive sentence, equal to the midpoint of the recommended sentencing range, was included to capture the overall severity of sentences under the Maryland guidelines. It represented the intersection of the guidelines severity score and the total prior record score for each

9. In the original sample, sentencing values went up to 3,270 months of incarceration. To avoid results being skewed by select outliers, we capped sentence lengths at 60 years, which was the longest sentence length for which multiple offenders were found. Supplemental analyses using the full range of original sentence lengths produced identical results.

10. Because the natural log of 0 is undefined, we first added .25 to the measure of sentence severity before performing the transformation.

11. Because of the small number of Hispanics in the data (ten or less in each sample), it was necessary to include Hispanics in the Other/unknown race categories, which also included Asian, Pacific Islander, and American Indian.

offender. This approach is consistent with recent analyses of adult sentencing (Engen and Gainey, 2000) and is particularly useful given that Maryland's guidelines comprise three separate sentencing matrices with different ranges of offense severity.

Prior offending was controlled using separate measures of juvenile and adult offending histories, both of which were calculated by the Maryland Sentencing Commission. Prior juvenile offending consisted of three categories in which the reference category, no/minor delinquency, included offenders who had less than two prior delinquency findings; moderate delinquency included offenders with two or more prior delinquency findings or one prior juvenile commitment; and major delinquency consisted of two or more prior juvenile commitments. Adult prior record included separate categories for no record (used as the reference), minor, moderate, and major prior criminal records. The Maryland Sentencing Commission computed these categories using a separate Prior Adult Record Matrix that took into account both the number and the severity of prior adult convictions.[12] The mode of conviction was included with variables for negotiated guilty pleas and trial convictions, with nonnegotiated guilty pleas as the reference.

Separate analyses of person and drug offenses included additional offense-specific controls. Models examining person offenses included controls for use of a weapon, vulnerable victims, and victim injury. Weapon use was captured with two dummy variables for cases involving any weapon other than a firearm and for cases involving a firearm. No weapon use is the reference. Vulnerable victim was coded 1 for cases involving a victim younger than age 11 years, older than age 65 years, or the physically or mentally handicapped and was coded 0 otherwise. Victim injury separated cases involving nonpermanent injury from those involving permanent injury or death, with no victim injury as the reference. Models examining drug offenses also included controls for the most serious type of drug, including dummy variables for marijuana (used as the reference), cocaine, heroin, and other/unidentified drug type.

It was not possible to include a control variable for mode of transfer in our models because, by definition, it would be perfectly collinear with juvenile status (i.e., it only would apply to juveniles in the data). Therefore, to investigate mode of transfer effects, we divided the juvenile sample and their matched adult counterparts according to whether the juvenile was transferred to adult court through a discretionary waiver or through statutory exclusion. This division was accomplished using the

12. A detailed discussion of these calculations along with the adult criminal record matrix is available on pages 24–7 of the Maryland Guidelines Sentencing Manual at http://www.msccsp.org/guidelinesmanual.pdf.

Maryland Code to identify the specific age and offense combinations that triggered the automatic exclusion of a juvenile from the juvenile court's jurisdiction.

Finally, because prior sentencing research indicated that significant contextual effects could emerge for county courtroom workgroups (e.g., Britt, 2000; Johnson, 2005; Ulmer and Johnson, 2004), we estimated all our analyses using fixed-effects models that incorporated dummy variables for all of Maryland's 32 counties (Allegheny was used as the reference). These fixed effects removed any between-county variation that might have existed in our sentencing outcomes, and they accounted for any potentially problematic error correlation resulting from the clustering of cases within counties.

ANALYTIC APPROACH

We began the analysis by examining descriptive statistics for our matched and unmatched samples to demonstrate that the matching procedures achieved a balanced sample design. We then turned to our multivariate analyses, which examined both the main and interactive effects of juvenile status. Because observations on our dependent variable were limited and left-censored, we employed Tobit regression to estimate the effect of juvenile status on sentence severity (Tobin, 1958).

Like all statistical models, Tobit regression has some restrictive assumptions, the most important being that it assumes the effects of independent variables are constant for the censoring process and the substantive equation of interest.[13] However, it also has several advantages. It allows all cases to be retained in the statistical model by censoring those observations that fall above or below a numerical threshold (in this application, a sentence of 0 months incarceration). The resulting coefficient provides an assessment of the effects of the vectors of covariates on a latent variable that captures both the probability and the length of incarceration. To ease interpretation of this coefficient, we "decomposed" the Tobit estimates into their constituent parts, including estimates of the probability of falling above the threshold (i.e., being incarcerated) and the magnitude of the distance from the threshold (i.e., sentence length).[14]

13. As a robustness check of this restrictive assumption, we replicated all our analysis using the two-step model alternative, with incarceration effects estimated in a logistic regression and sentence length effects separately estimated with ordinary least-squares regression. Conclusions regarding the importance of juvenile status in adult court were unaltered by this alternative specification. These alternative model results are available by request.

14. The formula for this calculation is as follows: $P\ (Y = c) = \Phi(c - \acute{y}_i / \sigma)$, where Φ indicates the standard normal cumulative distribution, c equals the censoring value, $\acute{y}_i$ equals the predicted value, and σ equals the standard error of the model.

FINDINGS

MATCHING RESULTS

Table 1 provides the comparison of our matched and unmatched samples of juveniles and young adults. We report here *t* tests comparing juvenile and young adult offenders in the full unmatched sample and in the matched sample of 10–20 year olds. The full unmatched sample clearly demonstrates important differences between juveniles and young adults that systematically bias the sample toward more punitive sentencing for juvenile offenders. That is, juveniles transferred to adult court represent a more serious class of offender, on average, than young adult offenders. The purpose of propensity score matching is to address these differences by accounting for sample variation associated with the treatment (i.e., juvenile status). The last three columns of table 1 demonstrate that after propensity score matching, the matched samples do not differ significantly on any measures except for the dependent variable sentence severity. These results indicate that the propensity matching procedure was effective in creating a balanced sample. Even after matching, though, juveniles had significantly longer sentences, providing preliminary evidence of increased sentence severity for transferred juveniles. Although we report only the comparison for 10–20 year olds in table 1, identical results were obtained for all three samples (see appendix A).

THE JUVENILE PENALTY

Table 2 provides the results for Tobit regressions examining the main effects of juvenile status on sentencing severity for our three different age ranges. Because the age of the offender is highly correlated with juvenile status ($r = .82$), it is not included in any models. It is, however, important to distinguish the effect of juvenile status from a more general age trend that might affect sentencing. We therefore restricted the age range of our samples to isolate systematically the effect of juvenile status. Model 1 estimates the effect of juvenile status for the full matched sample of 10–20 year olds, and models 2 and 3 replicate these findings for offenders aged 16–19 years and aged 17–18 years, respectively. We report the findings in table 2 for both a base model that includes only juvenile status and for a full model that includes additional controls such as fixed effects for counties. In the bivariate models, the odds ratios range from 1.65 to 1.84, and in the full multivariate models, they range from 1.62 to 1.75.[15] Regardless of

The average sentence length for juveniles and adults was calculated as follows: $E(y_i \mid y_i > c, x_i) = \acute{y}_i + \sigma \times \phi((\acute{y}_i - c) / \sigma) / \Phi((\acute{y}_i - c) / \sigma)$, where ϕ indicates the standardized normal density function (see Osgood, Finken, and Morris, 2002, for a useful elaboration).

15. The sample sizes reported in table 2 represent the base models with no additional

Table 1. Comparison of Transferred Juveniles and Young Adults, Aged 10–20 Years, Matched and Unmatched Samples

	Unmatched Sample					Matched Sample				
	Juveniles (n = 2,387)		Adults (n = 16,192)			Juveniles (n = 2,272)		Adults (n = 2,272)		
	Mean/%	SD	Mean/%	SD	p	Mean/%	SD	Mean/%	SD	p
Dependent variable										
Sentence length	52.00	101.32	22.80	59.22	***	50.00	98.40	42.00	96.90	**
Incarcerated	.71	.45	.55	.50	***	.70	.46	.65	.47	***
Independent variables										
Presumptive sentence	63.45	93.47	41.62	385.19	***	61.12	92.54	59.05	92.61	
Juvenile criminal history										
No/minor delinquency	.60	.49	.81	.40	***	.63	.49	.64	.48	
Moderate delinquency	.25	.43	.13	.34	***	.23	.42	.22	.42	
Major delinquency	.14	.35	.05	.22	***	.14	.34	.14	.15	
Adult criminal history										
No prior	.87	.34	.56	.50	***	.86	.34	.86	.35	
Minor prior	.06	.24	.26	.44	***	.07	.25	.07	.25	
Moderate prior	.04	.20	.14	.34	***	.04	.20	.04	.21	
Major prior	.01	.12	.04	.19	***	.01	.12	.02	.13	
Other/unknown	.02	.12	.00	.11		.02	.11	.01	.10	
Offense seriousness score	3.72	1.31	3.93	1.31	***	3.75	1.32	3.74	1 .30	
Gender										
Male	.94	.23	.92	.28	***	.94	.23	.94	.23	
Female	.06	.22	.08	.27	***	.06	.23	.06	.23	
Race										
Black	.78	.41	.71	.45	***	.77	.42	.78	.42	
White	.17	.24	.24	.37	***	.18	.38	.18	.39	
Hispanic/other	.05	.22	.05	.22		.05	.22	.04	.20	
Offense type										
Property	.09	.29	.16	.37	***	.10	.30	.09	.29	
Person	.71	.45	.30	.46	***	.70	.46	.71	.46	
Drug	.18	.39	.53	.50	***	.19	.39	.19	.40	
Other/unknown	.02	.12	.01	.01		.01	.12	.01	.11	
Mode of conviction										
Plea agreement	.71	.45	.71	.46		.72	.45	.72	.45	
Plea no agreement	.06	.24	.09	.28		.06	.24	.06	.24	
Trial	.04	.20	.03	.17		.04	.20	.03	.18	
Other/unknown	.18	.39	.18	.39		.18	.39	.19	.39	

NOTE: Significance level determined by t test for equality of means.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$ (two-tailed).

the sample analyzed or the additional controls included, juvenile status remains a strong and robust predictor of adult court punishment. Because

controls. Because of small amounts of missing data on the presumptive sentence in the full models, the sample sizes for these analyzes are slightly smaller (model 1, n = 4,482; model 2, n = 4,131; and model 3, n = 2,840). As a robustness check, we reran the full models using the entire sample with all control variables except the presumptive sentence, and we obtained very similar results for the juvenile effect (model 1, b = .52, standard error [SE] = .10; model 2, b = .55, SE = .11; model 3, b = .58, SE = .13). Notably, the slight difference between the base and full model estimates for 17-18-year-olds was reduced when estimated on the full sample.

all our findings remained consistent across samples, we report subsequent results only for the full model using 17- and 18-year olds, which arguably represents the most conservative test of the juvenile effect.

Table 2. The Effect of Juvenile Status on Adult Court Punishment for Matched Samples Across Three Age Groups

	Model 1: Age 10–20			Model 2: Age 16–19			Model 3: Age 17–18		
	b	SE	Odds	*b*	SE	Odds	*b*	SE	Odds
Base model									
Constant	.89	.08		.69	.08		.57	.10	
Juvenile status	.50	.11	1.65***	.54	.11	1.72***	.61	.14	1.84***
Full model									
Constant	–1.15	.67		–1.10	.74		–1.20	.74	
Juvenile status	.48	.09	1.62***	.56	.11	1.75***	.52	.12	1.68***
Presumptive sentence	.01	.00	1.01***	.01	.00	1.01***	.01	.00	1.01***
Juvenile criminal history									
Minor delinquency	.71	.11	2.03***	.63	.13	1.87***	.77	.14	2.16***
Major delinquency	1.05	.14	2.85***	1.10	.16	3.00***	1.23	.17	3.42***
Adult criminal history									
Minor prior	.73	.18	2.07***	.72	.21	2.05***	.77	.23	2.16***
Moderate prior	1.42	.22	4.12***	1.23	.25	3.42***	1.67	.26	5.32***
Major prior	.40	.37	1.49	.30	.55	1.35	–.08	.59	.92
Gender									
Male	.86	.20	2.37***	.86	.24	2.36***	1.08	.26	2.93***
Race									
Black	.60	.13	1.82*	.56	.16	1.74***	.44	.17	1.54*
Hispanic/other race	.67	.24	1.94	.61	.29	1.84*	.72	.31	2.05*
Offense type									
Person	1.16	.17	3.18***	1.08	.11	2.94***	1.05	.20	2.87***
Drug	.15	.19	1.16	.09	.23	1.10	–.03	.23	.97
Mode of conviction									
Plea agreement	–.25	.11	.78	–.11	.13	.90	.09	.13	1.10
Trial	.48	.25	1.61	.85	.31	2.34**	1.18	.31	3.26***
County fixed effects	—	—	—	—	—	—	—	—	—
Sigma	2.88			2.92			2.90		
Log likelihood	–8,835.17			–8,055.13			–5,476.41		
Sample size	*n* = 4,544			*n* = 4,184			*n* = 2,876		

*p ≤ .05; **p ≤ .01; ***$p \leq .001$.

Because our Tobit coefficients represent the underlying latent construct of "sentence severity" rather than the more intuitive notion of incarceration or sentence length, we decomposed the Tobit coefficients to examine separately the effect of juvenile status on the probability of incarceration (i.e., falling above the censoring value) and sentence length (for values above the censoring value). Table 3 provides an example of how predicted sentences differ for juveniles and young adults with regard to both incarceration and sentence length. In scenario 1, we began with a White, male offender who had committed a property offense, had no juvenile or adult prior record, and who agreed to a plea bargain. For this type of offender, we observed that the primary difference was not in sentence length but in the use of incarceration. Specifically, the probability of a 17-year-old being

incarcerated is approximately 7 percent greater (70.1 – 63.6 = 6.5), and the predicted sentence is approximately 1 month longer (4.9 – 3.8 = 1.1), which represents a relative difference of 29 percent.

Table 3. Tobit Decomposition for the Probability and Length of Incarceration Match Sample, 17–18 Year Olds

	Juveniles		Adults	
	Odds of Incarceration	Predicted Sentence Length	Odds of Incarceration	Predicted Sentence Length
Scenario 1: White, male, property offense, plea bargain, no prior juvenile or adult record	70.1%	4.9 months	63.6%	3.8 months
Scenario 2: All predictors set to their means	88.5%	15.5 months	84.7%	11.0 months
Scenario 3: Black, male, person offense, plea bargain, minor juvenile and no adult record	97.1%	73.4 months	95.6%	47.5 months

As the descriptive statistics demonstrate, though, this behavior is not the typical offender in our sample. In scenario 2, all variables were set to their means before decomposing the juvenile status effect. For the "average" offender in the data, juveniles are approximately 4 percent more likely to be incarcerated (88.5 – 84.7 = 3.8), but they receive sentences that are approximately 5 months longer (15.5 – 11.0 = 4.5). This means that the sentence for the average 17-year-old in our sample is 41 percent longer than that allotted to the average 18-year-old. Finally, scenario 3 examined sentencing differences for a relatively serious offender—a Black male offender who agreed to plea bargain for a person offense and had a minor juvenile record but no adult record. For this offender, the juvenile effect translates into only a 2 percent greater chance of incarceration (because almost all receive incarceration), but it is associated with a term of incarceration that is more than 2 full years longer (73.4 – 47.5 = 25.9), which represents a relative difference of 55 percent.

JUVENILE STATUS ACROSS OFFENSE TYPE AND MODE OF TRANSFER

Our final two research questions involved the extent to which juvenile status is conditioned by the offense type and the mode of transfer. We estimated offense-type and mode-of-transfer-specific models to investigate these issues. For offense type, separate models were estimated because they allowed for the incorporation of additional offense-specific controls,

such as weapon use and victim injury for person offenses and type of drug for drug crimes.[16] We estimated offense-specific models separately for person, drug, and property offenses, but we focused on person and drug offenses because property offenders were rare in our data, comprising less than 10 percent of our sample with fewer than 300 observations.[17] For mode of transfer, separate models were necessitated by the fact that transfer status was only observable for juvenile offenders. The sample, therefore, was disaggregated according to the juvenile offender's method of transfer, and then their matched adult counterparts subsequently were included in the split models. Comparisons of drug and person offenses are presented in models 1 and 2 of table 4, with modes of transfer compared in models 3 and 4.

Somewhat surprisingly, the effect of juvenile status on adult court punishments is dramatically more pronounced for drug crimes. Juveniles convicted of drug offenses receive sentences that are more than six times as severe as comparable young adults.[18] Although the effect of juvenile status for person crimes is also positive, it fails to reach statistical significance. The z test for the difference in the effect of juvenile status across offense types (Paternoster, Brame, and Piquero, 1998) is highly significant (z = 5.09; p = .000), supporting the conclusion that the juvenile penalty is conditioned by offense type. Of some interest, the additional offense-specific controls also prove to be important predictors for person offenses. Use of a weapon, particularly a firearm, substantially increases the severity of punishment, suggesting it might be beneficial to conduct more fully specified offense-specific models of criminal sentencing. The type of drug, however, does not prove to be a significant independent predictor of punishment severity. This result might reflect the fact that type of drug already is accounted for partially by the presumptive sentencing recommendation of the guidelines. To continue investigating this unexpected drug finding, we also researched additional interactions between drug type and juvenile status but found no significant effects.

In line with expectations, we found an interactive influence for mode of transfer. Specifically, the overall juvenile effect largely is driven by discretionary waivers to adult court rather than by statutory exclusions, with the effect of juvenile status in the discretionary waiver model being almost twice the size of the effect in the statutory exclusion model. However,

16. Attempts also were made to incorporate measures of the amount of drugs into the drug-specific model, but unfortunately, this variable was missing more than 50 percent of the time, precluding its inclusion.
17. The effect of juvenile status on sentence severity for property crimes was positive but not statistically significant in our small sample (b = .21; SE = .38).
18. As with all our findings, the magnitude of this effect was consistent regardless of which age sample we examined.

Table 4. Offense-Specific and Mode of Transfer Models, Matched Samples 17–18 Years

	Model 1: Drug Offenses			Model 2: Person Offenses			Model 3: Excluded			Model 4: Waived		
	b	SE	Odds	*b*	SE	Odds	*b*	SE	Odds	*b*	SE	Odds
Constant	–2.80	2.06		–.74	.76		.63	1.48		–1.54	1.00	
Juvenile status	1.82	.31	6.15***	.10	.13	1.11	.33	.16	1.39*	.64	.16	1.90***
Presumptive sentence	.05	.01	1.05***	.01	.00	1.01***	.01	.00	1.01***	.02	.00	1.02***
Juvenile criminal history												
Minor delinquency	.83	.38	2.30*	.65	.16	1.92***	.36	.20	1.43	1.16	.19	3.19***
Major delinquency	1.06	.45	2.88*	.94	.21	2.55***	.42	.23	1.52	1.72	.24	5.58***
Adult criminal history												
Minor prior	.55	.55	1.73	.80	.29	2.22**	.54	.38	1.72	1.08	.29	2.94***
Moderate prior	1.34	.92	3.80*	1.31	.31	3.69***	.61	.39	1.84	2.27	.34	9.68***
Major prior	–5.32	2.64	.00*	–.16	.68	.85	–.61	.80	.54	.56	.81	1.75
Gender												
Male	.96	.68	2.60	1.26	.28	3.53***	.44	.39	1.55	1.13	.34	3.10***
Race												
Black	–.48	.60	.62	.52	.19	1.69**	.44	.23	1.55	.32	.22	1.38
Hispanic/other race	.02	1.02	1.02	.97	.34	2.65**	.48	.40	1.62	.71	.44	2.03
Mode of conviction												
Plea agreement	.18	.39	1.20	.16	.16	1.17	.25	.19	1.28	.05	.20	1.05
Trial	3.56	1.05	35.13***	.88	.34	2.42**	.68	.38	1.97	1.93	.55	6.89***
Weapon use												
Firearm	—	—	—	1.29	.17	3.64***						
Other weapon	—	—	—	.86	.17	2.36***						
Victim												
Vulnerable victim	—	—	—	.22	.35	1.24						
Victim permanent injury	—	—	—	.39	.27	1.48						
Victim nonpermanent injury	—	—	—	.24	.15	1.26						
Drug type												
Cocaine	.28	.53	1.32	—	—	—						
Heroin	–.19	.68	.83	—	—	—						
Other drug	.63	.73	1.87	—	—	—						
Offense type												
Drug							—	—	—	.13	.25	1.14
Person							—	—	—	.52	.23	1.68*
Sigma		3.21			2.67			2.51			3.07	
Log likelihood		–990.44			–3,737.34			–2,253.13			–3,142.70	
Sample size		*n* = 592			*n* = 1,880			*n* = 1,086			*n* = 1,790	

*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$.

although the z test for the difference of coefficients across models fails to reach significance at a $p = .05$ level ($z = 1.37$) in this sample, we would note that, in the larger sample of 16–19 year olds, the difference was statistically significant. Moreover, for waived youth, many legal and extralegal characteristics, such as prior delinquency and gender, have a heightened influence at sentencing compared with cases involving statutory exclusion. In general, these effects support the notion that the discretionary decision to "waive" a juvenile to adult court might carry with it special significance serving as an attributional indicator of increased culpability and dangerousness.[19]

DISCUSSION

Our findings clearly indicate that, in the current research context, juveniles processed in adult court, on average, receive an additional sentencing penalty related to their juvenile status. Although some earlier work was consistent with this finding (e.g., Fagan, 1996; Kurlychek and Johnson, 2004; Myers, 2005; Steiner, 2009), the results of this study are the first to provide evidence of a juvenile penalty after accounting for important selection effects inherent in the comparison of waived juveniles and young adult offenders. Contrary to theoretical arguments that juvenile offenders will be treated with leniency, we found compelling evidence that they receive more severe sentencing outcomes than comparable young adults. Even after establishing comparable samples through propensity score matching, controlling for numerous factors associated with adult court sentencing decisions, and restricting our age comparisons to 17- and 18-year-olds, we still found a substantial positive effect for juvenility on punishment. The magnitude of this effect suggests that, on average, sentences are between 62 percent and 75 percent more severe than those meted out to similar young adult offenders.

Prior research also emphasized the potential importance of heterogeneity in the effects of transfer decisions for juvenile offenders (Bishop, 2000; Zimring, 1998). In this study, we found evidence of important variation in the "juvenile penalty." Contrary to our expectations that juveniles committing violent offenses would experience increased sentence severity, however, our analyses show that the strong effect of juvenility on punishment was driven primarily by drug offenses. It is important to realize that this result does not mean that the harshest punishments were meted out for drug offenses but rather that the *disparity* between juveniles and young

19. The offense type control was omitted from the model for statutory exclusion because the excluded offenses consist largely of specific types of violent crimes. The only drug crime that qualifies for statutory exclusion is drug trafficking involving the possession or use of a firearm, which was rare in the data.

adults was most pronounced in drug cases. Juveniles transferred to adult court for drug crimes received sentences that were more than six times as severe as similar young adults in adult court. Using the Tobit decomposition process described earlier, this finding translates into a typical 17-year-old drug offender in our sample being approximately 10 percent more likely than an 18-year-old drug offender to receive a sentence of incarceration and to be incarcerated for approximately 1 year longer after all other factors are held constant.

This result indicates that not only are the "get tough" transfer policies leading to substantially disproportionate punishments for juvenile offenders on average but also that the brunt of this disparity is manifest among nonviolent offenders for whom these policies initially were not designed to target. This finding might reflect the fact that "[d]rug crimes, especially since the mid-1980s, have become a particularly salient symbolic threat to mainstream America," cultivating "the widespread perception that drug use and distribution [are] associated with other serious crimes, especially violence" (Mitchell, 2005: 443). The political rhetoric and media attention of the War on Drugs might have resulted in judicial attributions of dangerousness increasingly centering on juvenile drug offenders. Alternatively, it is possible that these cases simply involve a higher degree of individual court actor discretion, providing greater opportunity for sentencing disparity to emerge between juvenile and young adult offenders (Spohn and Cederbloom, 1991), or that additional unaccounted-for differences exist between juvenile and adult drug offenders. Clearly, additional research is needed to continue to investigate the unique causal mechanisms underlying the substantial juvenile disparity in adult court sentencing of drug offenders.

In addition, our results suggest that the juvenile penalty is particularly pronounced for youth who reach adult court through discretionary judicial waivers rather than through legislatively determined statutory exclusions. This finding is also consistent with the idea that increased court actor discretion is associated with increased disparity. To some extent, though, overlap occurs between the waiver decision and the type of crime. All but a few drug offenses reach adult court through judicial waiver, and most statutory exclusions occur for select violent offenses. Future research, therefore, is needed to delve deeper into the interrelationships between offense type and the different mechanisms by which juveniles arrive in adult court. Ultimately, qualitative research might be required to unearth the underlying causes of these observed sentencing differences, but the current findings are consistent with the theoretical notion that discretionary waivers stigmatize transferred youth by signaling increased culpability, dangerousness, and incorrigibility to adult court judges, which translates into increased punishment at sentencing.

Although this study contributed significantly to the limited research on juvenile punishments in adult court, it was not without its limitations. The propensity score matching technique represents a notable advance over prior work that examined nonequivalent samples of juveniles and adults, but any matching procedure is only as good as the selection criteria on which it is based. Although we used an expansive variety of offense, offender, and case-processing measures to create comparable samples, it is likely that other unobserved factors also affect judicial sentencing decisions. These factors might include unavailable offender characteristics (like socioeconomic status), measures of courtroom workgroup relationships (like the familiarity or stability of the work group [Eisenstein and Jacob, 1977]), or individual court actor characteristics (like the sentencing philosophies of particular judges [Johnson, 2006]). To the extent that future research can incorporate these and additional factors in the matching process, it only would improve our estimates of the juvenile penalty.

One additional limitation of the propensity scoring method is that it typically relies on only a subset of available data. In our case, relatively few juvenile offenders (less than 5 percent) had no suitable adult matches, but to the extent that these offenders are unique, it could affect our ability to generalize from our matched samples to the entire population of transferred youth in adult court. Larger samples taken from additional years might offer a useful remedy for this potential pitfall in future work. Finally, this study also was limited to an examination of final sentence severity. It did not have information on other consequential punishment decisions, such as earlier charging outcomes, pretrial detainment decisions, or judicial decisions to sentence outside of prescribed sentencing guidelines ranges. All these decisions represent additional outcomes in the punishment process that should be the focus of future work.

CONCLUSION

The transfer of a juvenile to adult court is arguably the most significant punishment afforded a youthful offender. The range of punishments available in adult court is considerably more severe than sentencing options in juvenile court. Although the juvenile system maintains a focus on rehabilitation and treatment, the adult system asserts a more punitive philosophy, emphasizing retribution and incapacitation.

Beyond the simple possibility of more severe punishments being allotted in adult court, the current findings raise important social-justice issues regarding the fair and equal treatment of juvenile offenders in adult court. As Bishop et al. (1996: 184) argued, juvenile transfer embodies a core "status transformation from 'redeemable youth' to 'unsalvageable adult'." As an unsalvageable adult, these youth face not only increased severity of

punishment in relation to juveniles processed in the juvenile system but also myriad other social consequences, both real and symbolic, which are not associated with a juvenile record or juvenile punishment (Cauffman and Steinberg, 2000; Mauer and Chesney-Lind, 2002; Smith and Paternoster, 1990). Juvenile transfer, particularly when it results from a discretionary waiver, carries with it a stigma that can translate into increased criminal punishment and result in a seldom recognized but important locus of extralegal disparity in sentencing.

Adult incarceration also might have long-term consequences for youth transferred to adult court. For instance, several studies have reported a greater probability of recidivism for juveniles processed in the adult justice system compared with similar offenders retained in the juvenile justice system (Bishop et al., 1996; Fagan, 1996; Podkopacz and Feld, 1995; Singer and McDowall, 1988; Steiner and Wright, 2006; Winner et al., 1997). Moreover, the fact that most youthful offenders receive relatively short incarceration terms (less than 2 years) in our data suggests that existing transfer policies do not remove systematically a new breed of murderous juvenile superpredator from society. Rather they capture a wide variety of offenders, including nonviolent drug offenders and offenders with little or no prior record. Future discussions of the efficacy of broad juvenile transfer laws, therefore, need to consider the full range of individual and societal impacts, including the social stigma, labeling, and criminogenic effects of adult prison experiences in addition to individual punishment disparities for the growing number of youth being processed in adult court.

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Appendix A. Comparison of Juvenile and Adult Offenders for Three Matched Sample Age Groupings

Sample	Age 10–20 n = 4,544					Age 16–19 n = 4,184					Age 17–18 n = 2,876				
	Juvenile		Adult			Juvenile		Adult			Juvenile		Adult		
	Mean	SD	Mean	SD	p	Mean	SD	Mean	SD	p	Mean	SD	Mean	SD	p
Dependent variable															
Sentence length	50.00	98.40	42.00	96.00	**	43.10	85.77	38.32	89.84		45.69	95.07	35.79	85.41	**
Incarcerated	.70	.46	.65	.47	***	.69	.46	.63	.48	***	.68	.47	.62	.49	***
Independent variables															
Presumptive sentence	61.12	92.54	59.05	92.61		53.08	75.20	54.89	89.75		54.98	82.56	52.05	82.22	
Juvenile criminal history															
No/minor delinquency	.63	.49	.64	.48		.61	.49	.63	.48		.59	.49	.61	.48	
Moderate delinquency	.23	.42	.22	.42		.23	.42	.23	.42		.24	.43	.24	.43	
Major delinquency	.14	.34	.14	.15		.15	.35	.14	.35		.15	.36	.15	.35	
Adult criminal history															
No prior	.86	.34	.86	.35		.86	.34	.87	.34		.86	.35	.87	.34	
Minor prior	.07	.25	.07	.25		.07	.25	.07	.25		.07	.26	.06	.24	
Moderate prior	.04	.20	.04	.21		.04	.20	.05	.21		.05	.21	.05	.22	
Major prior	.01	.12	.02	.13		.01	.11	.01	.10		.01	.11	.01	.09	
Other/unknown	.02	.11	.01	.10		.02		.00							
Offense seriousness score	3.75	1.32	3.74	1.30		3.84	1.30	3.78	1.28		3.79	1.29	3.78	1.27	
Gender															
Male	.94	.23	.94	.23		.94	.23	.94	.25		.94	.24	.94	.24	
Female	.06	.23	.06	.23		.06	.23	.06	.24		.06	.23	.06	.23	
Race															
Black	.77	.42	.78	.42		.77	.42	.77	.42		.76	.43	.76	.43	
White	.18	.38	.18	.39		.18	.38	.18	.39		.19	.39	.20	.40	
Hispanic/other	.05	.22	.04	.20		.05	.22	.05	.20		.05	.22	.04	.19	
Offense type															
Property	.10	.30	.09	.29		.10	.30	.10	.30		.10	.31	.10	.30	
Person	.70	.46	.71	.46		.69	.46	.70	.46		.68	.47	.67	.47	
Drug	.19	.39	.19	.40		.20	.40	.20	.40		.21	.41	.21	.41	
Other/unknown	.01	.12	.01	.11		.01	.12	.00	.11		.01	.11	.01	.12	
Mode of conviction															
Plea agreement	.72	.45	.72	.45		.72	.45	.71	.45		.70	.46	.70	.46	
Plea no agreement	.06	.24	.06	.24		.06	.24	.06	.24		.06	.24	.06	.24	
Trial	.04	.20	.03	.18		.03	.18	.03	.18		.04	.20	.03	.17	
Other/unknown	.18	.39	.19	.39		.19	.39	.19	.39		.20	.40	.21	.41	

NOTE: Significance level determined by t test for equality of means.
*$p \leq .05$; **$p \leq .01$; ***$p \leq .001$ (two-tailed).