COMMUNITY DISADVANTAGE AND RACE-SPECIFIC RATES OF VIOLENT CRIME:
AN INVESTIGATION INTO THE 'RACIAL INVARIANCE' HYPOTHESIS IN THE U.K.

Author:

James Laurence, PhD
Cathie Marsh Institute for Social Research, University of Manchester, UK

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ABSTRACT

At present, macrolevel research into the effects of structural disadvantage on violent crime among different racial groups has produced mixed results. A key source of methodological difficulty is the fact that in the U.S. black and white community-level disadvantage distributions only partially overlap, precluding critical empirical tests of the 'racial invariance' hypothesis. McNulty (2001) identifies this problem in the U.S. as one of 'restricted distributions'. This paper aims to address this problem by examining the relationship between race, violent crime and disadvantage in the U.K., where disadvantage distributions for black, white and South Asian communities have greater comparability. Using borough level data for London, U.K., the results show that at comparably low and high levels of community disadvantage the effect of disadvantage on rates of violent crime is racially invariant. However, at equal levels of extreme disadvantage the effect increases significantly for black communities but not for white or South Asian. These results conflict with previous studies demonstrating either racial invariance or weaker structural effects on violent crime among blacks.

KEY WORDS: violent crime, racial invariance, subculture of violence, neighbourhood disadvantage

INTRODUCTION

Rates of violent crime vary tremendously between cities, neighbourhoods and ethnic groups. In the U.S. the association between African-Americans and violent crime has led to the image of *thecriminalblackman* where "blacks are the repository for the fear of crime" (Russell 1998: 4). However, in the U.S., blacks were 7.6 times more likely to be convicted for homicide in 2000 than whites (Maguire and Pastor, 2004). Such data is also quoted in the U.K. where "Afro-Caribbean men are around ten times more likely to be convicted for violent street crimes than white men" (*quoted from* The Home Office *in* Civitas 2005). However, these statistics examine only one side of the story. The relationship between disadvantage and violent crime is strong and well documented (Peterson and Krivo 2005). In the U.S., neighbourhoods with high violent crime rates tend to have pronounced levels of socio-economic disadvantage as well as having high concentrations of African-Americans (Hannon and Defina 2005). Some researchers suggest that the significantly higher violent crime rates in African American communities are a reflection of exposure to greater levels of disadvantage relative to whites, and it is the difference in the distribution of disadvantage between races that is responsible for the higher incidence of black violent crime (Sampson and Wilson 1995). Other researchers believe that although the relationship between disadvantage and violent crime is strong, its effect may differ between racial groups and that disadvantage alone may not be the only factor contributing to higher rates of violent crime in black communities. However, investigations into this debate have been hindered by methodological problems and obstacles in the data available in the U.S., primarily the issue of 'restricted distributions' (Peterson and Krivo 2005). This paper aims to circumvent these problems by exploring the 'racial invariance' debate in the U.K., allowing for a more robust

comparison of the effects of disadvantage on different racial groups across the disadvantage spectrum, while simultaneously acting to remedy the methodological issues present in earlier studies.

In this paper we will use race-specific data on police reported violent crime rates for 2001, and community-level socio-economic variables from the 2001 U.K. Census for London boroughs, to analyse the differences and similarities in the effects of structural disadvantage on race-group violent crime rates. We aim to test the various tenets of the 'racial invariance' hypothesis to help explain differences in the violent crime rates of the main ethnic groups in the U.K., and also, in doing so, contribute to the wider discussion of race, crime and disadvantage.

RACE, CRIME AND POVERTY: A THEORETICAL FRAMEWORK

UNDERSTANDING VARIATION IN RACE-SPECIFIC VIOLENT CRIME RATES

The relationship between race and crime has undergone numerous formulations. Most current literature concentrates on the relationship between the significantly higher violent crime found in African American communities and the extent to which this is a reflection of their higher levels of socio-economic disadvantage, or alternatively, the extent to which it is the result of a peculiar subculture of violence. Structuralists (rooted in theories of social disorganisation) argue that the greater levels of black violent crime are a reflection of greater levels of disadvantage amongst the black community, that race has no inherent criminogenic qualities, and therefore that blacks commit more crime because they are more disadvantaged (Wilson 1987). Cultural arguments suggest that higher violent crime rates are a product of a

'black subculture of violence', where blacks commit more crime because of a peculiar set of subcultural values and beliefs (Wolfgang and Ferracuti 1967). Under these conditions, the effects of disadvantage on black rates of violence would be weaker than for whites as higher rates of black violent crime are a product of certain subcultural values and not of relative levels of deprivation (Ousey 1999).

The 'black subculture of violence' theories posit that the unique historical experiences of African Americans (slavery, devaluation of African culture, racism and discrimination) have led certain segments of society to adopt a distinctively violent set of subcultural values. This value system provides its members with normative support for their violent behaviour, thereby increasing the likelihood that hostile impulses will lead to violent action (Wolfgang and Ferracuti 1967). Amongst black communities in the U.S. it is argued there exists a subculture of violence in which there runs "a potent theme of violence current in the cluster of values that make up the life-style, the socialization process, [and] the interpersonal relationships of individuals living in similar conditions" (Wolfgang and Ferracuti 1967: 140).

Cultural perspectives assert that value systems for particular groups, typically the poor or African Americans, are qualitatively different from the upper classes or whites (Bruce 2000). The disintegration of local institutions (family, religion, schools, etc.) denies disadvantaged group members the opportunity to learn conventional norms and values, including those condemning illegitimate forms of behaviour. Instead, a delinquent subculture emerges and exists as part of an alternative normative structure for disadvantaged group members. Therefore, while black violent crime may be linked to historical disadvantaged structural conditions, these "previous adverse conditions have led to resilient normative traditions;

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traditions that dictate the use of violence irrespective of changes in structural circumstances"
(Hannon and Defina 2005: 4).

In contrast to this, 'racial invariance' theories are rooted in classical structuralist theories of
crime and attempt to show that group differences in crime and violence stem from inequality
in socioeconomic conditions such as poverty or unemployment. As such, they reject 'black
subculture of violence' interpretations, specifying that race (as linked to a specific subculture)
is not a contributor to greater levels of violent crime, and instead prioritise theories of
structural criminogenic factors.

'Racial Invariance' is rooted in early structural criminological theories of Shaw and McKay
(1942) and the 'social disorganisation' theory of the causes of crime. Structuralists believe
that, although correlations of race and crime at the individual level are important, they are
systematically confounded with important differences in community contexts. Therefore,
regardless of whether, for example, an individual is from a single-parent household, the
average level of family stability of a community will undoubtedly influence an individual's
socialisation (Sampson and Bean 2006). Shaw and McKay (1942) categorised the most
disadvantaged communities as 'socially disorganised' where the conventional institutions of
social control (e.g. schools, churches, voluntary community organisations) were weak and
unable to regulate the behaviour of the neighbourhood's youth.

Shaw and McKay (1942) specified that these community-level disadvantage variables
operated indirectly on crime rates by undermining important community organisation control
structures. Merton's (1938) work complements this theory, arguing that inherent to such
disadvantage is the disjuncture between cultural goals (economic success) and structural

arrangements (socioeconomic resources), which leads to frustration and alienation, manifesting itself as deviant behavior (Peterson and Krivo 2005). Therefore, without the structural arrangements necessary to achieve status via legitimate means, or the necessary structures of social control, this frustration becomes expressed as crime.

Recent research has attempted to elucidate intervening mechanisms between traditional social disorganisation variables and crime rates. Sampson (1986) proposed that family structure and stability are key variables in regulating social control and that "joblessness and poverty appear to exert much of their influence indirectly through family disruption" (Sampson and Wilson 1995: 40). As well as being low on social control, high levels of disadvantage are also believed to undermine "collective efficacy", defined as "the willingness of local residents to intervene for the common good" (Sampson et al. 1997: 919), further undermining efforts to prevent the rise of violent crime.

More recently, research has attempted to apply these structuralist theories to the puzzle of differential rates of violent crime between racial groups. Sampson and Wilson (1995) believe that concentrated disadvantage leads to structural barriers and also to cultural adaptations, which, in turn, undermine social organisation and ultimately the control of crime. Importantly, therefore, 'racial invariance' theorists do not negate the idea of a subculture of violence. They do however believe that it is not a peculiarly 'black subculture of violence' as cultural theorists do, and instead that these subcultures of violence "vary systematically with structural features of the urban environment" (Sampson and Wilson 1995: 41). As such, race itself is not a cause of violence, "rather it is a marker for the constellation of social contexts that are differentially allocated by social status" (Sampson and Bean 2006: 1).

PRIOR RESEARCH: 'RESTRICTED DISTRIBUTIONS' AND METHODOLOGICAL LIMITATIONS

Studies have attempted to empirically test the validity of the structuralist versus culturalist propositions. The core of this debate is to what extent disadvantage can explain differences in race-specific violent crime rates. The 'racial invariance' hypothesis has two main propositions: firstly, disadvantage has the same effect on rates of violent crime for blacks and whites. Therefore, race is not a cause of crime, and 'subcultures of violence' do not cause greater levels of violent crime outside of their specific relation to the level of community disadvantage. Secondly, segregation by race exposes blacks to greater structural criminogenic factors, and therefore "differences in homicide rates between racial groups…stem from the considerable divergence in levels of crime generating social conditions" (Krivo and Peterson, 2000: 547). Cultural theorists, on the other hand, argue that, while there is a strong relationship between deprivation and crime, socio-economic indicators are a weaker predictor of black crime than white crime (Messner and Rosenfeld 1999), and that evidence of weaker effects of structural disadvantage suggests the problem is one of "moral poverty" not deprivation (Bennett et al. 1996).

Empirical investigations into the 'racial invariance' debate have produced mixed results. Some research has found disadvantage indicators having a similar violence-promoting effect on both blacks and whites (Morenoff et al. 2001; Peterson and Krivo 1993; Woodridge and Thistlethwaite 2003), inferring from this the two key propositions of 'racial invariance': firstly, that the similar effects of disadvantage negates the idea of a black subculture of violence and secondly, that blacks being relatively more disadvantaged can explain greater

levels of black crime. However, other studies have found weaker effects of disadvantage on black homicide rates (Smith 1992), suggesting that the historically high levels of disadvantage experienced by African Americans may have "resulted in cultural and normative adaptations that have removed important constraints on violence" (Ousey 1999: 421).

The cause of these mixed results may, however, be a product of methodological and data problems (Peterson and Krivo 2005). One of the potential causes is the possibility of non-linearity within the disadvantage/violent crime relationship (Hannon and Knapp 2003). While the bulk of research on disadvantage and violent crime has assumed a linear relationship between them, various studies have suggested the existence of a non-linear relationship (Krivo and Peterson 1996; 2000; Lauristen and White 2001; McNulty 2001). Krivo and Peterson (1996), in studying the effect of disadvantage on majority black and white neighbourhood violent crime rates, found that the relationship between disadvantage and violent crime was non-linear and accelerating i.e. disadvantage had a positive, exponential effect on violent crime. Basing their analysis on Wilson's (1987) concepts of 'social isolation' and 'concentration effects', they hypothesised that at extreme levels of community disadvantage, institutional barriers to deviant behaviour break down causing disadvantages to rapidly multiply, resulting in significantly higher violent crime rates than in low or high disadvantaged communities (Krivo and Peterson 1996). Conversely, later research by Krivo and Peterson (2000) and also McNulty (2001) found a weaker effect of disadvantage on the level of violent crime for blacks than whites (a violation of the principles of 'racial invariance'), but that this result was in fact caused by non-linearity. Testing for non-linearity by including a quadratic term for the disadvantage index, they found disadvantage had a significant but decelerating affect on black but not on white violent crime rates, proposing

that as blacks are exposed to much greater levels of disadvantage, the situation reaches a threshold of 'disadvantage saturation', under which, institutions important for social control essentially collapse and cannot be damaged further, resulting in disadvantage having a weaker effect on violent crime rates. Therefore, although the average effect of disadvantage on violent crime rates may differ between white and black communities, disadvantage's effect may be approximately racially invariant below the threshold of saturation. The difficulty, however, is attempting to observe whether the effect of disadvantage is racially invariant at every level of disadvantage because of the small number of comparably disadvantaged black and white communities. This results in a significant data problem in the U.S. of 'restricted distributions' (McNulty 2001) where "[r]acial differences in disadvantage are so great that it is impossible to assess what the effects for whites would be if they were as disadvantaged as the average African American" (Krivo and Peterson 2000: 557).

<Figure 1 about here>

Figure 1 shows McNulty's (2001) demonstration of 'restricted distributions' and the small cross over in levels of disadvantage, which leads to being unable to tell whether under similarly extreme levels of disadvantage the effect of disadvantage on white rates of violent crime would also become weaker. This poses two problems in substantiating the 'racial invariance' hypothesis in the U.S. The first tenet of the hypothesis is that there will be no difference in the effect of disadvantage on blacks and whites. However, weaker or stronger black coefficients may be the product of some extremely disadvantaged black communities experiencing 'disadvantage saturation' (McNulty 2001) or 'social isolation' (Peterson and Krivo 1996), and therefore this is not an indication of a 'subculture of violence' but of non-linearity as a result of extreme structural disadvantage. We have difficulty stating whether

these effects are racially invariant because of the lack of comparably extremely disadvantaged white communities. Secondly, whether the differences in black/white crime rates can be explained by differences in exposure to deprivation is hindered because, to validate the 'racial invariance' hypothesis "the 'critical test' is whether black and white crime rates are similar when blacks and whites are exposed to similar levels of structural disadvantage in the communities in which they reside" (McNulty 2001: 468). This is a key point: "if similar conditions prevailed in white neighbourhoods would they too exhibit very high levels of crime" (Krivo and Peterson 1996: 623). However, the problem of 'restricted distributions' prevents this from being measured in the context of the U.S. due to the small number of comparable communities.

CONTRIBUTION OF RESEARCH

This research aims to contribute to the debate on why black communities have higher violent crime rates through a 'racial invariance' versus 'black subculture of violence' framework by analysing data from the U.K. Studying 'racial invariance' in the U.K., as opposed to the U.S., provides a critical insight into the 'racial invariance' debate. Key similarities and differences exist between these two societies, which will allow us to more fully explore the dynamics of race, crime and disadvantage.

Firstly, the U.K. and U.S. share similar cultural goals (predominantly economic success and consumption), and therefore Merton's (1938) theory of deviance arising from the disjuncture between cultural goals and structural arrangements applies equally to both societies. Secondly, the experience of blacks in the U.K. has many similarities to that of U.S. blacks (Model and Ladipo 1996). With their initial large-scale immigration in the 1950s, U.K.

blacks faced discrimination in attaining employment and private housing, leading to the emergence of black enclaves and concentrated disadvantage (Daniel 1968). Also, racist attacks from white gangs, oppressive policing, poverty, and social exclusion led to the eventual eruption of race riots in the 1970s and 1980s in major metropolitan areas (Scarman 1981). Similar to African Americans, Blacks in the U.K. also come from generations which lived under enslavement in the Caribbean. As such, U.K. blacks share many of the structural antecedents for the possible emergence of a 'black subculture of violence'.

However, important differences exist between U.K. and U.S. black populations (Patterson 2004). Although blacks remain disproportionately disadvantaged compared to whites, the nature of black ethnicity in the U.K. is different from the nature of black ethnicity in the U.S. U.K. black communities are less segregated from whites with "Caribbean average levels of segregation in British cities…about half the level for African Americans in the United States" (Peach 1996: 226). Also, the rates of black-white interracial marriage are considerably higher in the U.K. Whilst 11.94% of native-born Caribbean men and 8.58% of native-born Caribbean women have white partners in the U.S., in the U.K., 35.1% of men and 24% of women do respectively. This is also in contrast to 3.87% of African American men and 1.14% of African American women (the majority black population in the U.S.), who have white partners (Model and Fisher 2002). The result of these similarities and differences is that while blacks in the U.K. have a history of disadvantage and discrimination and are also, on average, more disadvantaged than whites, at the same time they suffer less exclusion and isolation, and as such, the distribution of black communities across the disadvantage spectrum is much more similar to white communities than in the U.S.

These features provide a unique and important case study under which we can examine the 'racial invariance' debate. Firstly, the 'racial invariance' hypothesis posits that the effect of disadvantage on rates of violent crime does not differ across racial groups. Therefore, we would expect this theory to be universal, especially in two societies as similar as the U.K. and the U.S. By studying the relationship between race, crime and disadvantage in the U.K., we can observe to what extent disadvantage affects all racial groups equally. However, most importantly, the problem of 'restricted distributions' in the U.S., which acts as a significant obstacle (and a key source of mixed results) to substantiating both the first and second propositions of the 'racial invariance hypothesis', is not present in the U.K. In the U.K. there is much greater crossover of levels of community disadvantage and a much more comparable distribution across all levels of disadvantage between white and black communities allowing us to compare the effect of structural disadvantage on black and white rates of violent crime at all levels of disadvantage, and apply McNulty's (2001) 'critical test' of the extent to which whites and blacks, at similar levels of disadvantage, exhibit similar rates of violent crime.

Consistent with the 'racial invariance' hypothesis, we would expect the effect of disadvantage on violent crime rates to be equal in strength for all racial groups, thus refuting the idea of a subculture of violence. However, as previous literature in the U.S. has shown, differences in the strength of the disadvantage coefficient may be caused by non-linearity in the disadvantage/violent crime relationship caused by racially restricted exposure to different degrees of disadvantage. If non-linearity is present, the less 'restricted distributions' in the U.K. will allow us to test whether all racial groups experience either 'disadvantage saturation' or 'social isolation' when exposed to similarly extreme levels of disadvantage, or whether the effect is racially variant. Furthermore, our conditions of less 'restricted distributions' will allow us to test the second proposition of the 'racial invariance'

hypothesis: that greater levels of black violent crime can be explained by higher exposure of blacks to disadvantage, examining whether at similar levels of disadvantage all racial groups share similar levels of violent crime.

DATA AND METHODS

SAMPLE AND DATA

This analysis will examine race-specific white, black and South Asian[i] violent crime rates for 31 London boroughs, excluding the City of London because of its small residential population. Unlike the U.S., race-specific violent crime rates in the U.K. are not widely available outside of the national scale, and are notoriously difficult to find. The result has been a significant gap in the race, crime and disadvantage literature in the U.K. and an important missing comparative case study for U.S. studies on the relative effects of disadvantage on different racial groups. However, since 2000, the Freedom of Information Act has allowed public access to police data. Under this act, it has been possible to retrieve (thus far unexplored) violent crime rate data by race for London boroughs from the Metropolitan Police, and although the sample size may be relatively small sensitivity testing and robustness checks demonstrated consistent findings[ii].

To accurately measure the relationship between race, crime and disadvantage, firstly the unit area of analysis is important in being able to increase the probability that the level of disadvantage being measured is directly applicable to the offenders in the area. Previously, only police force area (approximately U.K. county-level) data on race-specific crime rates have been available. However, the large size of this aggregation reduces the accuracy with

which we can claim a certain level of disadvantage is having an effect on a certain rate of race-specific violent crime, and reducing the amount of variation in the key variables of our study: racial composition, violent crime rates, and levels of disadvantage. London boroughs provide the closest estimate for community boundaries for which race-specific violent crime rates are available in the U.K. Secondly, the use of race-specific crime and race-specific disadvantage data allows us to measure the effect of each race group's level of disadvantage on that race group's rate of violent crime. This avoids the possibility of inaccuracies in past works, which use the violent crime rates of majority white and majority black neighbourhoods as a method of measuring rates of white crime and black crime, where it is unclear if a minority population in each area could be significantly contributing to the area's violent crime rate (Peterson and Krivo 2005). Both these measures therefore reduce the possibility of inaccuracies associated with ecological fallacy.

DEPENDENT VARIABLE

The first dependent variable is violent crime. Data on race-specific violent crime rates (including homicide, GBH, ABH, common assault, assault with an offensive weapon, harassment, and other violence) represents the number of arrests per 1,000 of the race-specific population by London borough in 2001.

We must acknowledge certain problems within the data, and try and minimise their effect on the analysis. Firstly, race categories provided by the Metropolitan Police for race-specific crime rates are white, black and Asian. Homogenising white (British white, Irish white etc.) and black (black Caribbean, black African etc.) subgroups into single white and black groups will not, for the most part, have an appreciable difference on their aggregate scores due to the

general homogeneity in socio-economic statuses amongst their subgroups[iii]. Asians however include Pakistanis and Bangladeshis whose socio-economic statuses and cultural backgrounds are often quite different from those of Indians.

Secondly, a 'black' racial classification as recorded by the police does not correspond to more detailed census categories of black and mixed black. However, the Home Office reports that a classification as a 'black' offender encompasses all individuals perceived to have black heritage (The Home Office 2000). Therefore, we integrate black and mixed black disadvantage data from the 2001 Census into one population[iv]. Also, although it is the best available measure at London borough-level, police recorded crime data are open to biases in terms of the lack of data on unreported crimes (which may be higher for certain communities) and also racial biases in the arrest records.

INDEPENDENT VARIABLES

The independent variables represent different socio-economic factors whose concentration in certain areas increases the likelihood of violent crime through affecting community social control and collective efficacy, and the engendering of social and economic frustration, based on Shaw and McKay's (1942) and Merton's (1938) original structural arguments.

Sampson and Wilson (1995) argued that greater levels of crime are associated with a lack of social control, observed through widespread family disruption, high unemployment and a dearth of middle class role models. These factors can be operationalised through measuring race-specific rates of: the percent of lone female-headed households; the percent of civilian, non-institutionalised, economically active male individuals age 16 and older who are either

unemployed or not in the labour force; and the percent of persons who are 16 and older who are employed in professional and managerial occupations. Patterson (1991) argued that community instability undermined the mobilisation of collective efficacy, which increases violent crime rates. This factor is examined through analysing: race-specific percentage of housing units that are owner occupied; and race-specific percentage of housing units socially rented. Data for all disadvantage variables comes from the 2001 UK Census, which provides race-specific London borough-level data.

Two control variables were included in all our models. The race-specific percent of males aged 15-24 was included to control for greater numbers of crime prone individuals. The percent black and percent Asian are included as control variables to try control for racial make-up of a borough and partial out variance in violent crime rates due to differences in reporting and policing practices between areas with greater white, black or Asian constituents (Wooldredge and Thistlethwaite 2003).

DISADVANTAGE INDEX

Amongst disadvantage variables there is a strong possibility of multi-collinearity. Using principal component analysis, a strong relationship emerged between percent in social housing, percent lone female-headed households, percent of home ownership, and percent of individuals 16 and over who are economically active but unemployed. These variables are underpinned by their theoretical shared effect on the collective efficacy and level of social control in a community, justifying their combination into a single, standardised index of disadvantage (table 1).

<Table 1 about here>

ILLUSTRATION OF THE RESOLUTION OF RESTRICTED DISTRIBUTIONS

Table 2 shows the community-level disadvantage distribution for white, black and Asian communities in London, where positive values of the disadvantage index represent greater levels of disadvantage. Each London borough contains white, black and Asian communities living at different average levels of disadvantage. This table shows how many communities are living at each level of disadvantage for our race-groups under study. Unlike the U.S., table 2 shows there is a sufficient distribution of borough communities across different levels of disadvantage for each race group to provide meaningful comparisons between them. It is therefore possible to compare black, white and Asian violent crime rates at each level of disadvantage, thus eliminating the possibility that differences in the disadvantage coefficients may be caused by one group experiencing 'disadvantage saturation' or 'concentration effects' over another, as observed in U.S. studies.

<Table 2 about here>

STATISTICAL ANALYSIS

To analyse the relative effects of disadvantage on rates of violent crime for different ethnic groups race-specific least-squares regression models are used. Violent crime, however, is a rare event and tests for heteroskedasticity proved that the error terms of our race-specific violent crime rates for whites, blacks and Asians were not normally distributed. There are therefore potential problems of estimation of nonconstant error variance and influential

outliers. A common method used to overcome these problems is to log the violent crime rates. However, Hannon and Knapp (2003) have shown how the use of log transformation can obstruct meaningful interpretation of resulting coefficients, especially when dealing with the possibility of curvilinear relationships, encouraging recent neighbourhood studies to begin moving away from using logarithmically transformed dependent variables (Chamlin and Cochran 2006; Hannon 2005; Hannon and Defina 2005; Hannon et al. 2005; Renauer et al. 2006)

Specifically, with the log transformation of dependent variables, the coefficients can no longer be interpreted as additive affects, representing instead "proportional change to a fitted mean crime rate" (Hannon and Knapp 2003: 1443). As cited by Hannon and Defina (2003: 1440), considering the large differences in race-specific mean violent crime rates, the race-specific propotional estimates are no longer comparable across models, as "it takes less of a proportion of a higher number to equal the same value as a proportion of a lower number". This is extremely pertinent when dealing with potentially curvilinear relationships. We therefore apply methods recommended to deal with this problem, utilising iteratively re-weighted least squares regression to estimate race-specific relationships between disadvantage and violent crime, which assigns less weight to outlying observations (Hannon and Defina 2005).

RESULTS

RACE-SPECIFIC MODELS OF VIOLENT CRIME

Figure 2 shows overlaid scatterplots of violent crime by the index of disadvantage for white, black and Asian communities, providing a more graphic illustration of the 'unrestricted

distributions' present in the U.K. The graph shows how the community disadvantage index distributions of our three racial groups overlap significantly, eliminating the past problem that differential effects of disadvantage on violent crime rates may be caused by 'restricted distributions' of racial groups to different levels of disadvantage (Krivo and Peterson 2000; McNulty 2001).

<Figure 2 about here>

Table 3 presents the regression results predicting race-specific white, black and Asian violent crime rates. Using our race-specific (dependent and independent variables) data we run the same model separately for each of our three racial categories e.g. black disadvantage predicting black violent crime, white disadvantage predicting white violent crime, etc. This allows us to explore the main tenets of the 'racial invariance' hypothesis: that disadvantage effects all racial groups equally, and that differences in exposure to disadvantage can explain differential violent crime rates between racial groups. To study these tenets we will examine: firstly, whether the disadvantage coefficients are significantly different for each racial group, and secondly, whether at similar levels of disadvantage, white, black and Asian violent crime rates are similar.

<Table 3 about here>

Model 1 presents the model examining the effects of race-specific independent variables on race-specific violent crime rates. The results reveal significant racial differences in the strength and significance of the predictors of violent crime. Most importantly, the index of disadvantage has a significant, positive effect on rates of violent crime for blacks and whites.

However, the effect is four times as high for blacks than for whites. It is also surprisingly not a significant predictor of Asian violent crime. However, the percent over 16 in professional and managerial work (also an indicator of the level of social control and collective efficacy) is significant for Asians but not for blacks or whites. The results also show important racial differences in the effects of our control variables. The percent of race-specific young males has a significant effect on black and Asian violent crime rates but not on white rates. However, the effect of young males is four and a half times greater for black violent crime rates compared to Asians.

The results show that the effect of the level of disadvantage on blacks is not weaker, as cultural theorists argue, or similar as the 'racial invariance' theory predicts, but is in fact stronger than the effect for whites. However, as discussed, we must explore whether these linear differences in the strength of the coefficients are actually a product of non-linearity in the disadvantage/violent crime relationship. We test this by adding quadratic terms into our models for blacks, whites and Asians. The results from model 2 (table 3) show that for whites and Asians the quadratic term is not significant (results not shown). However, the model for blacks indicates that black community disadvantage has a significant, positive curvilinear relationship with black violent crime. The significant, quadratic term shows that disadvantage has a weaker effect at low levels of disadvantage but its effect increases as disadvantage increases. The effect of all other significant predictor variables also weakens when we add in the black quadratic term.

POOLED MODELS OF VIOLENT CRIME: SIGNIFICANCE TESTING OF THE 'RACIAL INVARIANCE' HYPOTHESIS

Studies have inferred from a comparison of coefficient strength or a comparison of *p*-values whether the effect of disadvantage is invariant or not, and "have erroneously concluded from across-sample differences in *p*-values that the actual effects differ between racial groups" (Hannon et al. 2005: 18). To confirm the robustness of our results we must instead formally test whether the differences in the effect of disadvantage between race-groups are statistically significant. To do this we generate a pooled model from our data (Table 4). Firstly, we divide our variables for the 31 boroughs into their constituent white, black and Asian series (as performed in table 3). However, we then pool them all into a new model of 93 observations (the greater *n* of observations will also increase the robustness of our models and increase our confidence in the validity of the models in Table 3). Two sets of dummy variables are then generated. The first, 'black' and 'Asian', distinguish black and Asian rates of violent crime from white (the omitted category) rates of violent crime. The second set of dummy variables is generated from the disadvantage index, distinguishing high and extreme levels of disadvantage from low levels of disadvantage (the omitted category). Following Krivo and Peterson (1996) we employ an empirical approach to establishing cut off points for low, high and extreme levels of disadvantage. Indexes of disadvantage at least one standard deviation above the mean are classed as extremely disadvantaged. High levels of disadvantage are defined as between the mean and one standard deviation above the mean, and low levels of disadvantage are those with disadvantage scores below the mean.

We will then create interaction terms between our disadvantage dummy variables with our race dummy variables. By dividing our disadvantage index in such a way and interacting it

with our race-group dummy variables (which identify race-specific rates of violent-crime) we can therefore test whether, firstly, the stronger effect of disadvantage on black rates of violent crime previously observed is significantly different from the effect of disadvantage on whites and Asians i.e. at equal levels of high and extreme disadvantage are rates of violent crime significantly different between whites, Asians and blacks. Secondly, it will also allow us to test whether the difference in the effect of disadvantage between race-groups is significant at all levels of disadvantage or whether, as the quadratic term suggests, it is only at extreme levels of disadvantage that it appears to have a stronger effect on black rates of violent crime.

<Table 4 about here>

Table 4 presents the results of this pooled analysis. Model 1 presents a model examining the differences in the effect of high and extreme levels of disadvantage compared to low levels, including our race dummy variables (distinguishing crime rates for specific ethnic groups). The significant positive effect of the black dummy suggests that, as in the U.S., black rates of violent crime are on average higher than white rates. However, the significant negative effect of the Asian dummy suggests rates of Asian violent crime are, on average, lower than for Whites. The significance of both high and extreme disadvantage dummy variables indicate that violent crime rates are significantly higher in communities with high or extreme disadvantage versus low levels of disadvantage. Importantly, the difference between the violent crime rates for extreme and high disadvantage areas (1.132) is approximately equal to the difference between high and low disadvantage areas (1.261), demonstrating the linearity of the relationship between violent crime and disadvantage. "A substantially larger difference between the rates for extreme and highly disadvantaged areas than the rates for high and low communities" is an indicator of non-linearity (Krivo and Peterson 1996: 627-628).

Model 2 includes the interactions between race-group dummy variables and disadvantage dummy variables to test whether the differences in the effects of disadvantage between groups is statistically significant or not. The results show the effect of either high or extreme disadvantage on Asians is not significantly different from that of whites. For blacks too, the results show that at high levels of disadvantage, the effect of disadvantage is not significantly different from the effect on whites. However, under extreme conditions, we find that the interaction between black and extreme disadvantage is significant, demonstrating that the effect of extreme disadvantage on black violent crime is significantly larger than the effect on whites[v]. Under conditions of extreme disadvantage, the strength of the disadvantage coefficient on rates of black violent crime is over double the effect on rates of white violent crime.

These results are not consistent with the 'racial invariance' hypothesis, namely that structural disadvantage affects all racial groups equally, revealing that disadvantage has a significantly stronger positive, quadratic effect on black violent crime rates. For low and high conditions of disadvantage the invariance is true, but under extreme conditions the effect of disadvantage is significantly greater on blacks[vi].

Our 'unrestricted distributions' also allow us to more accurately explore the second tenet of the 'racial invariance' hypothesis: that greater levels of black crime can be explained by the exposure of blacks to greater levels of disadvantage. McNulty's (2001) 'critical test' of the 'racial invariance' hypothesis states that at similar levels of disadvantage racial groups will have similar rates of violent crime. As said, Figure 2 demonstrates that the U.K. does not have the same problem of 'restricted distributions' and that therefore we can compare race-

specific violent crime rates at each level of disadvantage. It shows that at every level of disadvantage black violent crime rates remain higher than white rates. As this data is controlled for relative population sizes, at each disadvantage level these results show that higher levels of black crime cannot simply be explained by the fact that blacks live in more disadvantaged communities than whites and Asians, but instead that at equal levels of community disadvantage black violent crime rates are higher.

The results from our pooled model also demonstrate this. The significance of our race dummy variables show that the intercept of black violent crime at every level of disadvantage is greater than the white intercept (although at extreme levels this difference is larger), while the Asian intercept is significantly less than white rates. Along with Figure 1, these results indicate that each racial group has a significantly different intercept that cannot simply be explained by differential effects of disadvantage on rates of violent crime. These results mirror those found by other researchers (Hannon and Defina 2005; Krivo and Peterson 1996; 2000) that greater exposure to disadvantage alone cannot explain greater levels of violent crime. This higher base line rate of violent crime for blacks and lower rate for Asians must be caused by other factors not included in the model, for example an underlying historical factor, one based on perceptions of racism and discrimination, differential ethnic-group policing, or even a cultural one.

DISCUSSION AND CONCLUSION

The 'racial invariance' thesis argues that disadvantage affects all races equally and that the cause of differential violent crime rates between different racial groups is a product of the exposure of some groups to greater levels of disadvantage than others (Sampson and Wilson

1995). However, verifying this argument has been difficult due to data issues in the U.S., notably 'restricted distributions', and also methodological problems, in particular the possibility of non-linearity in the disadvantage/violent crime relationship (Krivo and Peterson 2000; McNulty 2001) and a sensitivity "to the ways in which logarithmic transformation of the dependent variable can bias tests for non-linearity and statistical interaction" (Hannon and Knapp 2003: 1427). Examining the relationship between race, crime and poverty in the U.K. (along with making the necessary methodological adjustments) has allowed us to circumvent these shortcomings and provide a more robust test of the 'racial invariance' hypothesis.

These findings provide evidence against the 'racial invariance' hypothesis, as the effect of disadvantage on blacks in the U.K. is significantly stronger than it is on whites. This result is not completely unknown in the U.S. 'racial invariance' literature, as more recent studies have begun to find a stronger effect of disadvantage for blacks (Hannon and Defina 2005; Hannon et al. 2005; Wooldredge and Thistlethwaite 2003). While such a result does not correspond to the 'racial invariance' hypothesis, it does negate the 'black subculture of violence' arguments that "moral poverty" (Bennett et al. 1996) would lead to disadvantage having a weaker effect on black violent crime compared to whites. However, unlike previous studies that have found a stronger linear effect of disadvantage on black violent crime rates, our result is caused by the presence of a positive, non-linear relationship between violent crime and disadvantage. Krivo and Peterson (1996) found a similar positive, non-linear relationship between violent crime and disadvantage; however their effect was racially invariant. Our results show that in the U.K. it is solely a black experience. Some studies have found race-specific non-linearity for blacks and not whites. However, these studies detected a negative non-linear relationship, present only for blacks at the highest levels of disadvantage (Krivo and Peterson 2000; McNulty 2001). Due to 'restricted distributions' no white communities were exposed to

comparably extreme levels of disadvantage and therefore it was impossible to test whether this result was racially specific or racially invariant. Our results indicate that at similar levels of low and high disadvantage, the effect of disadvantage on white, black and Asian rates of violent crime is invariant but that at equal levels of extreme disadvantage, there is a positive non-linear relationship between disadvantage and violent crime for blacks but not for whites and Asians. However, although the race-specific, positive curvilinear relationship is somewhat unique in the literature, similar to studies in the U.S. we find that the intercept is significantly higher for rates of violent crime in black communities than it is in white, even after controlling for our positive curvilinearity.

Our results therefore show that black violent crime rates are significantly higher than white and Asian rates at every level of community disadvantage, and that disadvantage has a significantly stronger effect on black violent crime rates under extreme levels of disadvantage compared to white and Asian rates. One possible explanation for our results lies in the potential sources of error in our data. Part of the significantly higher black violent crime rates may be artefactual, caused by biases within the data. Firstly we are dealing with police reported race-specific violent crime, not victim reported data and therefore there is a large amount of unreported offences not represented. The British Crime Survey aims to provide a more accurate picture of crime rates in the U.K. through analysing victim reported and not police reported data (The Home Office 2006). A comparison of the two sources reveals that in 2001 police recorded crime rates showed that 12% of crimes were committed by blacks (The Home Office 2002) whilst the British Crime Survey found that blacks committed only 9% of crimes[vii], indicating the potential for black overrepresentation. A second possible source of bias is differences in the rate of stop and searches. In 2003/4, the London Metropolitan police force recorded 103 blacks, 25 whites, and 33 Asians were stopped and

searched per 1000 of the race-specific population (The Home Office 2005). Possible discrimination in terms of stop and searches may also lead to a greater black arrest rate than for whites and Asians, especially in poor, black areas i.e. extreme disadvantaged communities. There therefore exist a number of possible biases in the data, which can in principle help explain the greater rates of violent crime in black communities compared to white and Asian communities at similar levels of disadvantage[viii].

Such an explanation may partially account for a higher black intercept, but it does not manage to explain the positive curvilinear effect of disadvantage on black violent crime rates (unless such explanations for blacks increase in salience in extreme disadvantage communities)[ix]. Wilson (1987) predicted that at extreme levels of disadvantage, violent crime would be significantly higher compared to lower levels of disadvantage as residents become isolated from mainstream society and tied to areas of multiple disadvantages, causing mechanisms of social control and collective efficacy to be particularly lacking. Wilson (1987) claimed that his theory was universal for extremely disadvantaged neighbourhoods. Our results however reveal that it is only extremely disadvantaged black communities in the U.K., which show significantly higher rates of violent crime. Therefore, there must be an effect peculiar to black communities, which means they experience the detrimental effects of disadvantage on social control and collective efficacy more acutely than white or Asian communities at similarly extreme levels of disadvantage.

One possible explanation stems from Merton's (1938) anomie perspective. Merton believes that inherent to disadvantage is the disjuncture between cultural goals (economic success) and structural arrangements (socio-economic resources) where crime originates from individuals who share the same cultural goals of the society (wealth, status, power) but with "little access

to the conventional and legitimate means for attaining such success" (Merton 1938: 678). An individual in a disadvantaged community is more likely to express deviant behaviour from feelings of frustration and alienation because of a lack of perceived opportunities (adopted from observing their environment) to gain these goals via licit pathways (Peterson and Krivo 2005). Merton's (1938) theory can be viewed as predicting that disadvantage will have an equal effect on the violent crime rates for blacks and whites by emphasising near universal acceptance of the goal of monetary success (Messner and Rosenfeld 2001). However, Blau and Blau (1982) found that expressions of frustration in the form of violent crime are particularly pronounced when socioeconomic inequality is based on ascriptive characteristics like race, and not on meritocratic concepts of performance, insinuating that when the lines of disadvantage are based (be this perceived or real) on prejudice and discrimination and not performance, violent crime will be higher amongst certain racial groups. Such a situation has resonance with Ogbu's (1991) 'oppositional culture' where an historical legacy of racism, discrimination and the resulting concentrations of disadvantage and lack of political opportunity increase frustration at the dominant system in preventing individuals achieving their goals. In other words, such discrimination and prejudice (historical or present day) results in black communities experiencing much greater levels of frustration and alienation. Therefore black communities may perceive themselves as more disadvantaged (with less opportunity to achieve their goals) relative to whites at similar levels of disadvantage because of their additional obstacles, the product of which would be greater levels of violent crime at similar levels of disadvantage.

The difficulty is that in the U.K., Asians experience similar levels of discrimination to blacks (Heath and Cheung 2006). Our results indicate a significantly lower rate of violent crime for Asians compared to blacks at comparable levels of disadvantage, indicating that

discrimination itself cannot be the only cause. However, there is some evidence to suggest that the development of 'oppositional cultures' is more prominent in black communities than Asian. The religious and cultural groups existent within Asian communities provide stronger ethnic networks and greater access to social and cultural capital, with the resulting networks of social ties reinforcing the authority and values of parents and role models (Rothon 2005). These can act as key sources of social control and help mediate the consequences of greater potential levels of frustration and alienation caused by discrimination coupled with disadvantage. The absence of these sources of control within black communities therefore means the impact of prejudice and discrimination may increase the frustration and alienation felt by blacks, reflected in the higher violent crime rate at similar levels of disadvantage.

The results show that the effect of this additional frustration and alienation on rates of violent crime, experienced by marginalised groups, operates on top of the effect of disadvantage. Even though rates of black violent crime remain higher at every level of disadvantage, as disadvantage increases, black community levels of social control and collective efficacy fall at similar rates to whites and Asians. However, this relationship only maintains up to highly disadvantage conditions. As disadvantage increases, feelings of frustration and alienation are likely to become more acute as there are (either perceived or real) increasingly smaller chances of achieving the cultural goals of society. This combines with feelings of powerlessness inherent in 'oppositional cultures', increasing perceptions of hopelessness towards their situation, resulting in increasing isolation from mainstream society. Therefore, as disadvantage increases a threshold may be reached under conditions of extreme disadvantage, at which point there is an interaction between black communities and extreme disadvantage. The combination of weaker social control and collective efficacy in these communities, along with increased frustration, may feedback to further undermine the

structures of social control. This could therefore result in the effectiveness of structures of social control in suppressing violent crime weakening at a significantly faster rate compared to white and Asian communities at similar levels of disadvantage. Within Asian communities, although they experience similar levels of discrimination, this phenomenon is absent as the strong social and cultural capital is able to act as a source of social control and collective efficacy to offset this effect. However, although our results suggest the possibility of a cultural factor inherent to black communities which affects their propensity towards violence, the fact that at similar levels of extreme disadvantage black rates of violent crime increase at a faster, not a slower, rate than in white and Asian communities, demonstrates that unlike the 'black subculture of violence' hypothesis, where it is not disadvantage driving higher levels of violent crime but a culture of violence (demonstrated through disadvantage having a weaker effect on rates of violence), our results show ultimately it is disadvantage driving this change, especially as in high and low disadvantage communities the effect of disadvantage is racially invariant.

In conclusion, our results demonstrate that, similar to much of the 'racial invariance' literature, at low and high levels of disadvantage the effect of disadvantage on rates of violent crime is racially invariant. However, the less 'restricted distributions' in the U.K. have also allowed us to test whether this relationship is maintained at similar levels of extreme disadvantage. Under these conditions there is an interaction between extreme disadvantage and black communities which results in disadvantage having a significantly stronger effect, causing black violent crime rates to increase at a significantly faster rate than in white and Asian communities. These results therefore show that at least part of the larger black violent crime rate in London can be explained by a stronger effect of disadvantage on the most disadvantaged black communities, echoing the call by Wooldredge and Thistlethwaite (2003)

and Hannon and Defina (2005) for a redirection of attention towards the possibility that structural factors may actually matter more for the production of violence for blacks than whites. However, black communities in both the U.K. and the U.S. still maintain a larger intercept for rates of violent crime at similar levels of disadvantage. Our results also show that Asian communities have a significantly lower intercept compared to whites (albeit a smaller gap compared with that of blacks and whites). When this fact is combined with the racial variance in the disadvantage/violent crime relationship, this work suggests we should not completely discount the possibility of a socio-cultural role in the disadvantage/violent crime relationship, and that attention needs to be paid to the possibility of interactions between disadvantage and socio-cultural factors in the causes of differential race-specific violent crime rates.

ACKNOWLEDGEMENTS

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Figure 1
Predicted Logged Violent Crime by Levels of Disadvantage for Black and White
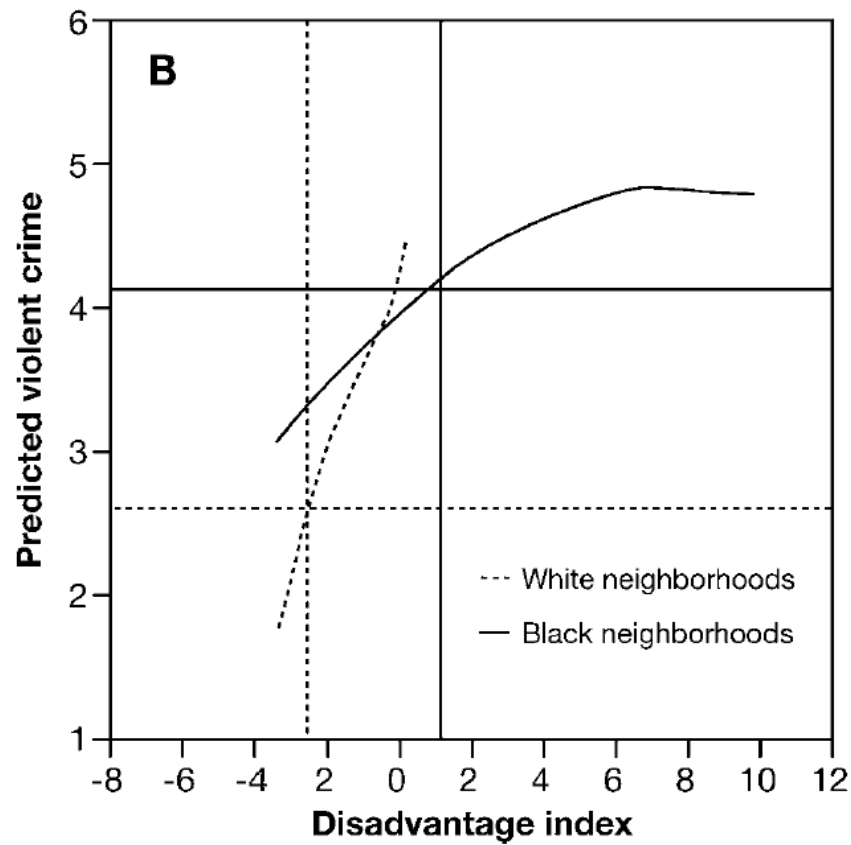Neighbourhoods. Source: McNulty 2001

Table 1. Pattern Matrix from Principal Components Analysis

	Factor – Disadvantage			
	All	White	Black	Asian
% Population in social housing	.965	.976	.966	.957
% Lone female headed households	.919	.928	.898	.757
% Home ownership	-.952	-.923	-.959	-.959
% 16 + male unemployed	.959	.934	.954	.893
% of Variance	90.035	88.440	89.225	85.139

Table 2. The Distribution of Race-specific Borough Communities between Different Levels of Disadvantage

Community Disadvantage Index	All Communities	White Communities	Black Communities	Asian Communities
Greater than 1 standard deviation below mean	8	8	6	4
Mean to 1 standard deviation below	8	10	9	12
Mean to 1 standard deviation above	9	7	7	10
Greater than 1 standard deviation above mean	6	6	9	5
Total	31	31	31	31

NOTES: Numbers in each panel are borough group counts

Figure 2
Scatter Plot of Violent Crime Rates for the Standardised Index of Disadvantage: White, Black
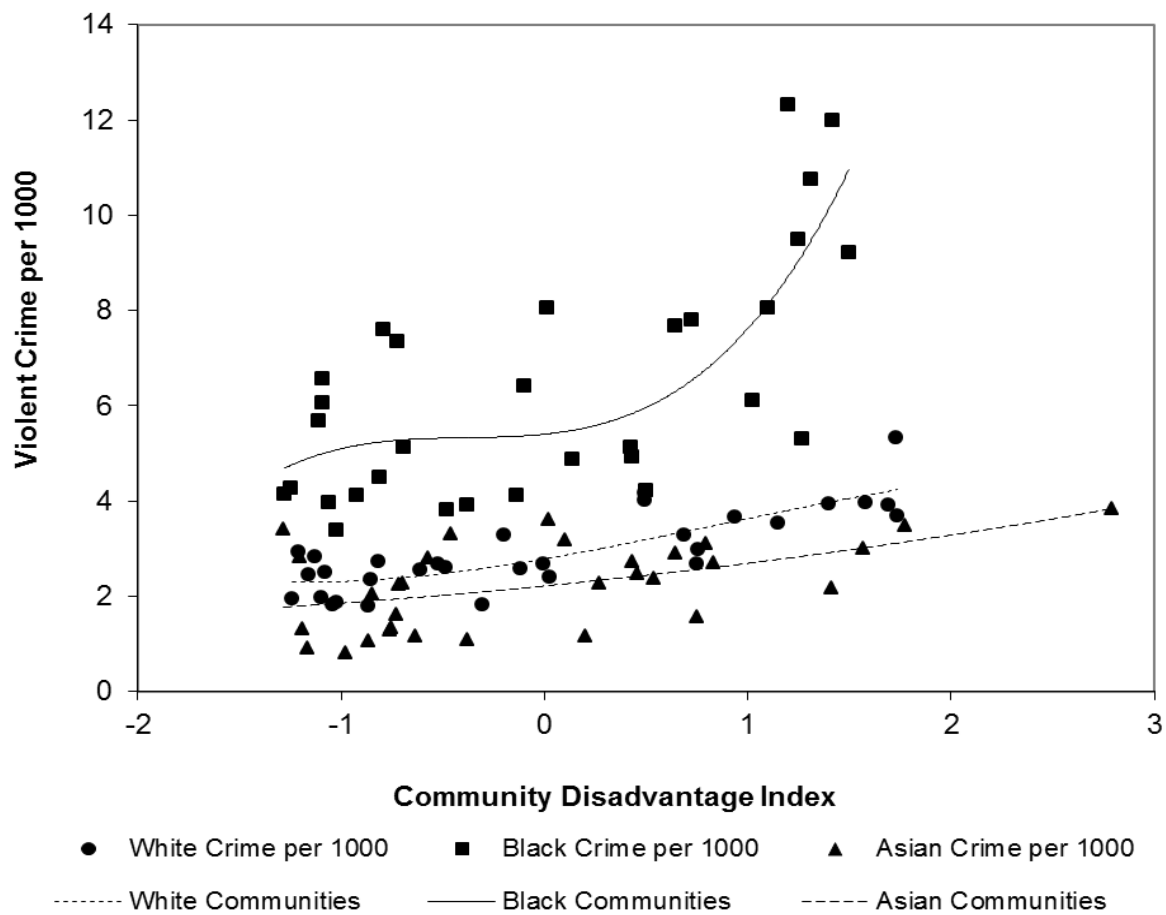and Asian Communities in London Boroughs

Table 3. Iteratively Re-weighted Least Squares Regression Analysis of Race-specific Violent Crime per 1000 on the Disadvantage Index and Control Variables

Race-specific independent variables	Model 1			Model 2		
Violent crime per 1,000	White	Black	Asian	White	Black	Asian
Index of disadvantage	0.533***	1.996***	0.173	-	1.95***	-
% Over 16 in professional and managerial	0.01	0.019	- 0.059**	-	0.051	-
% Male 15-24	0.24	0.619***	0.135**	-	0.566***	-
% Black	- 0.012	- 0.04	- 0.052	-	- 0.02	-
% Asian	- 0.009	- 0.09**	- 0.018	-	- 0.072**	-
Index of disadvantage* Index of disadvantage				Not Sig.	0.921**	Not Sig.

NOTES: All independent variables are measured in %, except standardised disadvantage index. ** ($p > .05$); *** ($p > .01$)

Table 4. Iteratively Re-weighted Least Squares Regression Analysis of Race-specific Violent Crime per 1000 on Disadvantage Dummy Variables, Race Dummy Variables, and Control Variables

Pooled Independent Variables	Model 1	Model 2
% Over 16 in professional and managerial	0.005	0.000
% Male 15-24	0.084	0.161***
% Black	-0.017	-0.02
% Asian	0.004	-0.007
High disadvantage	1.261***	1.233***
Extreme disadvantage	2.393***	2.163***
Black	4.853***	4.074***
Asian	-1.182***	-1.312***
Black*High disadvantage	-	0.313
Black*Extreme disadvantage	-	2.932***
Asian*High disadvantage	-	-0.573
Asian*Extreme disadvantage	-	-1.108
Constant	1.58	1.01

NOTES: In 'Model 1' and 'Model 2' white is the reference category

NOTES

[i] In the U.K. the term Asian is used to describe those of South Asian descent and not East or South East Asian descent as used in the U.S. Throughout the remainder of this article South Asians will be referred to as Asian

[ii] Despite this unique data opportunity, and the complete population of London Boroughs it provides, the *n* of data points (*n*=31) is relatively small and our regressions may be biased, especially given the number of independent variables included in our final models. We undertake extensive sensitivity testing, including: multiple permutations of stepwise regressions (to check whether variable behaviour differs markedly depending on the number of (and which) independent variables are included and in what order); robust standard errors; and experimenting with bootstrapping. Also, our pooled model will exhibit greater robustness, with *n*=93 data points. As consistent findings are returned under sensitivity tests and also between both modelling approaches this increases our confidence in our analyses.

[iii] While there are similar estimates of net disadvantage between black Africans and black Caribbeans in the U.K., black Africans tend to be, on average, more highly educated than black Caribbeans. Both groups also share similar experiences of 'ethnic penalties' and disadvantage in the U.K. (Heath and Cheung, 2006)

[iv] However, mixed blacks share similar levels of disadvantage and similar experiences of 'ethnic penalties' to black Caribbeans and therefore their aggregation into a single group will not affect the robustness of our analysis (Heath and Cheung, 2006)

[v] Potentially, the model may be affected by the inclusion of interaction terms due to a degree of multicollinearity between the main effect and interaction variable. Testing the variance inflation factor (VIF) of the pooled models reveal that none of the parameter estimates in the interaction models suffer from multicollinearity. All variables have VIF levels below 30 and all but the percent males aged 15 – 24 have values less than 10

[vi] For robustness, alternative model specifications were calculated in which the disadvantage reference category was alternately switched from low to high to extreme to test whether we receive the same results. Under all specifications, non of our Asian-disadvantage interactions were significant and only the black and extreme disadvantage interaction variable was significant for blacks

[vii] This statistic was calculated using data from the 2001 British Crime Survey and the 2001 British Crime Survey Ethnic Booster. Although using this data for the entire study would have provided more accurate data, the small sample size of the British Crime Survey makes it difficult to produce accurate race-specific crime rate estimates at any level but the national

[viii] Another difficulty within the data is that some police racial categorisations are too broad to analyse important differences within certain racial groups. The 'Asian' racial classification homogenises a socio-economically and culturally disparate group of individuals, which if disaggregated into religious ethnic groups may show different patterns to each other. A possible explanation therefore for the failure of disadvantage to be a significant predictor of Asian violent crime rates in the race-specific model may be a product of a loss of accuracy caused by different concentrations of Indians, Pakistanis and Bangladeshis in different boroughs

[ix] An alternative structural explanation, which may explain the positive curvilinearity, is that different racial groups engage in different types of crime at equal levels of disadvantage. In 2001, blacks committed 21% of drug crime, and 66% was committed by whites, while 12% of Burglaries were committed by blacks compared to 82% by whites (Home Office, 2002). Although these figures are not controlled for disadvantage level, it is possible that higher black rates of violent crime are caused by disadvantaged blacks engaging more in drug related crime (an inherently more violent crime). Therefore, a stronger effect of disadvantage on black violent crime rates in extremely disadvantaged communities could be a product of certain racial groups engaging in different sorts of crime at equal levels of disadvantage which involve more violence. The centrality of drug crime to policing agendas would also result in a higher policing of black areas relative to white and Asian areas and therefore a greater arrest rate of blacks