Original Research Article

Social Disorganization and Strain: Macro and Micro Implications for Youth Violence

Maria João Lobo Antunes[1] ⓘ and Michelle Manasse[1]

Abstract

Objectives: Explanations of community violence traditionally reflect a social disorganization perspective, suggesting that neighborhood characteristics affect crime via the intervening mechanism of informal social control. Drawing on Agnew's Macro Strain Theory [MST], we argue that neighborhood characteristics 1) *also* affect macro-level crime for reasons related to aggregated strain and 2) condition the relationship between micro-level strains and individual violent offending. *Methods:* Using data from the Project on Human Development in Chicago Neighborhoods, we conduct a series of multilevel models examining both the macro- and multi-level relationship between neighborhood characteristics, strain and youth violence. *Findings:* Results generally support our arguments, suggesting that neighborhood characteristics like concentrated disadvantage 1) remain associated with community violence even after adjusting for multiple measures of informal social control and 2) condition the association between micro-level strain and violent offending. *Conclusions:* Strain processes, at both the macro and micro-level, play a critical role in the well-established empirical relationship

[1] Department of Sociology, Anthropology & Criminal Justice, Towson University, MD, USA

Corresponding Author:
Maria João Lobo Antunes, Department of Sociology, Anthropology & Criminal Justice, Towson University, 8000 York Rd, Towson, MD 21252, USA.
Email: mantunes@towson.edu

between structural disadvantage and violence. In light of results, community crime control policies should address the ways in which structural disadvantage increases motivation, rather than focusing exclusively on the ways in which it weakens informal social control.

Keywords
general strain theory, strain theories, criminological theory, youth violence, neighborhoods, social disorganization, criminological theory

Introduction

Neighborhood variations in violent crime have often been explained from a social disorganization perspective, particularly that communities characterized by structural disadvantage, such as concentrated poverty or residential instability, are less able to impose formal and informal social controls that can effectively regulate deviance (Bursik and Grasmick 1999; Elliott et al. 1996; Sampson and Groves 1989; Sampson, Raudenbush, and Earls 1997; Warner and Rountree 1997). However, such structural disadvantage likely exerts a variety of effects on both the community and its residents beyond the reduction of control. Shaw and McKay (1942) originally identified dual mechanisms by which communities influence crime rates, noting that "disorganized" communities contribute to a variety of strains, particularly economic deprivation. Agnew's (1999) Macro Strain Theory [MST] builds on this original framework and argues that community-level measures of structural disadvantage may not only weaken a neighborhood's ability to control crime, but also increase residents' motivation to offend by raising levels of strain and negative emotion across the community. Agnew (1999, 2001, 2006) suggests that economically deprived communities are especially likely to expose residents to multiple strains, such as criminal victimization, exposure to violence, family conflict, and negative school experiences, that are, in turn, likely to result in criminal coping. Although empirical tests are somewhat limited, existing research shows partial support for Agnew's MST (Botchkovar, Antonaccio, and Hughes 2017; Brezina, Piquero, and Mazerolle 2001; Hoffmann 2003; Wareham et al. 2005; Warner and Fowler 2003).

As we work to understand how communities influence criminal behavior, framing control and strain as competing perspectives limits the full elaboration of intervening mechanisms in the link between neighborhood

structural characteristics and behavioral outcomes (Bernard 1990; Elliott, Ageton, and Huizinga 1982; Wellford 1989). Further testing of Agnew's MST will indicate the extent to which macro-level strain can account for the neighborhood-crime link; we argue it could also be the next step toward a more integrated theoretical perspective acknowledging that structural disadvantage can weaken informal social controls critical to curbing offending, while *also* increasing residents' motivation to engage in crime. In addition, while Agnew's (1999) MST draws a link between neighborhood characteristics, aggregated strain, and community crime rates, research has largely failed to explore how neighborhood factors may condition micro-level strain/offending processes. Yet, neighborhood structural characteristics (i.e. disadvantage) do influence the probability and severity of exposure to criminogenic strains (Agnew 1999, 2001, 2006), and to the extent that disadvantaged communities provide lower levels of social control and less access to legal coping resources, residents of disadvantaged communities experiencing criminogenic strain may face heightened motivation to adopt criminal coping strategies. The limited number of studies examining such macro-micro links therefore further hinder our understanding of how structural disadvantage influences individual experiences and behavior. As Muftić (2009) argues, "Only through integration of existing theories (including across levels of explanation) will criminologists improve our understanding of the phenomenon we study, as well as improving the predictive power of our theories" (p. 39).

In the present study, we test the central contention of Agnew's (1999) MST that neighborhood structural characteristics affect community crime rates, in part, through the intervening mechanism of aggregated strain. We also examine the extent to which such characteristics condition the relationship between micro-level strains and individual violent offending thus assessing some of Agnew's (2006) propositions regarding the role of social control in strain processes. Below, we begin by describing social disorganization theory in more detail and discussing empirical findings specific to violent crime. Second, we discuss Macro Strain Theory, paying focused attention to Agnew's assertion that MST is compatible with more traditional approaches. Third, we extend strain arguments by positing that neighborhood characteristics moderate the micro-level link between personal strain and violent offending. Finally, we derive and test five major hypotheses developed from the above goals.

Social Disorganization and Violence

Social disorganization arguments have historically reflected Shaw and McKay's (1942) proposition that communities with structural characteristics such as concentrated disadvantage, high residential mobility and racial heterogeneity would demonstrate higher levels of "disorganization" or weakened social controls at the community level. Disorganized communities are therefore thought to be less equipped to regulate deviant behavior because they are less able to exert social control over residents (Bursik and Grasmick 1999; Elliott et al. 1996; Sampson and Groves 1989; Sampson et al. 1997; Warner and Rountree 1997). Indeed, a large body of research has shown that neighborhood poverty and related factors of structural disadvantage are consistently related to violent outcomes, including exposure to violence (Antunes and Ahlin, 2017; Bingenheimer, Brennan, and Earls 2005; Sampson et al. 1997); violent delinquency (De Coster, Heimer, and Wittrock 2006; Zimmerman and Messner 2010); aggression (Molnar et al. 2008); victimization risk (Burchfield and Silver 2013); and arrests for violence (Ludwig, Duncan, and Hirschfield 2000).

A resurgence of interest in social disorganization processes during the 1980's led to significant elaboration of intervening mechanisms between structural disadvantage and crime (Bursik, 1988). Echoing Shaw and McKay's (1942) original claim that "disorganization" reflected weakened social controls at the neighborhood level, Wilson's (1987) influential work *The Truly Disadvantaged* notes that concentrated disadvantage stemming from the co-occurrence of unemployment and poverty weakens family bonds and institutional ties, thereby undermining the capacity for communities to engage in both formal and informal control of crime. Sampson and Groves' (1989) classic analysis of intervening mechanisms found that unstructured peer socialization, organization participation, and friendship networks had direct, positive effects on property/violent offending rates and significantly mediated the relationship between the structural characteristics originally identified by Shaw and McKay (i.e., SES, racial heterogeneity, residential stability) and crime. Subsequent research has reinforced the argument that control mechanisms mediate the effect of structural characteristics on rates of community victimization, and empirical findings highlight intervening mechanisms such as weaker friendship ties (Bellair 1997; Rountree and Warner 1999) and higher levels of unsupervised peer groups among juveniles (Lowenkamp, Cullen, and Pratt 2003; Maimon and Browning 2010; Veysey and Messner 1999; Antunes and Ahlin, 2021). Yet, Veysey and Messner (1999) find that "social disorganization" consists of

multiple mechanisms that serve to undermine neighborhood stability, and, that even in combination, these control constructs do not fully mediate the relationship between structural community characteristics and crime. Therefore, even while control mechanisms seem essential in accounting for the relationship between neighborhood characteristics and crime, other potential intervening mechanisms—here, we posit strain—are likely also at work, yet remain relatively neglected in existing empirical research.

Further expanding the discussion of intervening mechanisms in disorganization theory, Sampson et al. (1997) suggest that the differential ability of neighborhoods to control crime depends on residents' willingness to disrupt deviance, which is unlikely to occur without mutual trust. As such, Sampson et al. (1997) formulated the concept of "collective efficacy," proposing that neighborhoods with high levels of informal social control and social cohesion will be better equipped to achieve shared community values and restrict deviant behaviors. Studies have consistently found measures of informal control and social cohesion to be inversely related to both neighborhood crime rates (Armstrong, Katz, and Schnebly 2015; Bellair 1997; Elliott et al. 1996; Markowitz et al. 2001; Sampson et al. 1997) and individual-level deviance (Browning, Leventhal, and Brooks-Gunn 2005; Simons et al. 2005). Findings from Sampson and colleagues (1997) suggest that the relationship between neighborhood structure and violence is significantly mediated by collective efficacy. Similarly, Maimon and Browning (2010) report that, although unstructured socializing strongly predicts violence, this effect decreases as collective efficacy increases, suggesting that mechanisms of collective efficacy represent the way in which weaker social controls intervene in the relationship between structurally disadvantaged communities and violent crime. In sum, established literature repeatedly finds crime rates to be correlated with multiple measures of informal social control. Therefore, the analyses below include a statistical adjustment for collective efficacy to ensure that our measures of aggregated strain reflect something over and above informal social control.

Similar to the proposed effects of concentrated poverty and residential instability, early social disorganization arguments by Shaw and McKay (1942) identified levels of ethnic/racial heterogeneity within communities as a central structural characteristic. Heterogeneity is argued to activate in-group/out-group biases, thereby undermining community attachment/cohesion and, ultimately, community levels of informal social control. Although research by Sampson et al. (1997) and Morenoff and Astor (2006) find that higher immigrant concentration (a measure intended to

better reflect increasing rates of Latino immigration to the United States and foreign-born residents of high-poverty neighborhoods) had a significant negative effect on collective efficacy, the hypothesized relationship between greater ethnic diversity and crime has largely failed to materialize. Instead, a growing body of research suggests that communities with higher immigrant concentrations consistently experience less crime (Akins, Rumbaut, and Stansfield 2009; Graif and Sampson 2009; Kubrin and Desmond 2015; Kubrin and Ishizawa 2012; Martinez, Stowell, and Cancino 2008; Martinez, Stowell, and Lee 2010).

The protective effect of higher immigrant concentration in disadvantaged communities is well-documented, but it is less clear what drives these patterns. First, the "self-selection" hypothesis suggests that individuals choosing to immigrate to the United States generally have long-term goals, such as establishing financial stability and/or supporting family members remaining in home countries, which likely increase their motivation to conform to laws and avoid deviance (Kubrin and Ishizawa 2012; Stowell et al. 2009). Second, growing immigrant populations in distressed communities may spur a set of formal control policies (i.e., greater police presence and/or crackdowns on low-level offenses) that tamp down criminal behavior (Ousey and Kubrin 2009). However, additional research indicates that larger immigrant populations may limit criminal activity by actively improving conditions for residents in disadvantaged communities. The immigrant revitalization perspective (Lee and Martinez 2009) posits that communities with higher immigrant concentration may provide enhanced work opportunities as well as stronger neighborhood and familial institutions (Kubrin and Ishizawa 2012; Reid et al. 2005). Despite remaining essentially cut off from secondary labor markets, ethnic enclaves often provide opportunity for within-community entrepreneurship and thus greater access to work and economic stability within those communities (Aguilar-San Juan 2005; Portes and Rumbaut 2001). Similarly, larger immigrant populations are linked to lower rates of divorce and single-family homes, thereby strengthening opportunities for informal social controls that limit crime (Kubrin and Ishizawa, 2012; Ousey and Kubrin, 2009). Nevertheless, again, while such "revitalization" effects surely enhance a community's ability to control the behavior of residents, we submit they also likely reduce both aggregated and individual levels of economic and interpersonal strain, thereby reducing motivation to offend.

Neighborhood Structural Characteristics and Strain— Macro Strain Theory & the Macro/Micro Link

Early strain theories (e.g., Cloward and Ohlin 1960; Cohen 1955) argued that crime results from a gap between economic aspirations and expectations but failed to garner empirical support. Agnew (1992, 2006), however, argues that such theories defined strain too narrowly and suggests that a broad range of stressful experiences increase motivation for offending, including the experience of negative stimuli, the loss of positive stimuli, and the disjuncture between valued/actual outcomes. Crime is therefore seen as a coping strategy, as strain elicits negative emotion and creates incentive for corrective action. A large literature testing Agnew's general strain theory has since developed, providing extensive support for the GST proposition that strain promotes crime (e.g., Agnew 2002; Agnew 2006; Agnew and White 1992; Hoffmann and Cerbone 1999; Paternoster and Mazerolle 1994), particularly in the case of strains that lower social constraints, incentivize crime, and are perceived as high in magnitude (Hay and Evans, 2006; Lin, Cochran, and Mieczkowski, 2011; Moon, Blurton, and McCluskey 2008; Ostrowsky and Messner 2005; Piquero and Sealock 2004; Spano, Rivera, and Bolland 2006a).

Agnew's (1999) Macro Strain Theory extends the theoretical mechanisms of GST to address community-level variations in offending, thereby broadening the theoretical discussion on how neighborhood characteristics affect community crime rates beyond control mechanisms. MST suggests that structural variables such as concentrated disadvantage both reduce a community's ability to curb crime and increase residents' motivation to offend. Agnew (1999, 2006) and Lowenkamp et al. (2003) stress that empirical research on community differences in crime rates must pay careful attention to the full range of potential intervening mechanisms across competing theories of crime. Agnew (1999) therefore frames MST as complementary, rather than contradictory, to existing social disorganization arguments, concluding "[MST] is proposed as a supplement rather than as a replacement for social disorganization and subcultural deviance theories . . . a full explanation of community differences in crime rates must draw on a range of theories, including those that examine the ways in which communities *motivate* as well as *control* crime" (p. 147).

Strain refers to aversive life events (Agnew 1992, 2001, 2006); when individuals are confronted with stimuli they find painful or unpleasant (e.g. criminal victimization) or are unable to achieve a valued goal (e.g. school failure), they experience negative emotion and may view crime as an

effective coping strategy (Agnew 1992; Agnew 2006). Yet, while people certainly experience strain and engage in illegal forms of coping across class lines, some individuals may encounter more strain or be less equipped to find legal avenues to alleviate it (Agnew 1999, 2006). To the extent that structural realities in disadvantaged communities expose residents to higher levels of criminogenic strain and/or encourage use of illegal coping strategies, this may partially account for increased offending within structurally disadvantaged communities, particularly violence. Empirical tests of Agnew's (1999) Macro Strain Theory are few, but existing studies provide some support (Botchkovar et al. 2017; Brezina et al. 2001; Hoffmann 2003; Wareham et al. 2005). In the most direct test of MST propositions, Warner and Fowler (2003) report that concentrated disadvantage and residential stability predict community-level strain in addition to informal social control, both of which affect neighborhood levels of violence. In their fully specified model, informal social control becomes non-significant, while aggregated strain amplifies community violence levels. Their study, however, was limited to only one form of aggregated strain, specifically aversive treatment (e.g., verbal threats and police harassment), and the authors suggest future research should expand the forms of strain being evaluated and consider how the type/effect of strain measures may vary across neighborhoods.

Agnew (1999, 2001, 2006) emphasizes that communities experiencing structural disadvantage are particularly likely to expose residents to a variety of strains that predict offending. For example, economic inequality exacerbates family strains, including divorce, harsh discipline/abuse, and conflict in the home (Benson et al. 2000; Rankin and Quane 2002) as well as school-based strains, such as low school quality and negative educational outcomes (Ainsworth 2002). According to Agnew (1999, 2006; also see Agnew et al. 2000), such strains increase negative affect, thereby amplifying the motivation to engage in criminal coping strategies. These strains are among the strongest predictors of crime in empirical evaluations of GST (Agnew 2006). Agnew (1999) also emphasizes that, as the characteristics of structurally disadvantaged communities exacerbate the amount and severity of strain experienced by residents, aggregated levels of negative affect (particularly anger and frustration) will rise as well. High levels of anger and frustration in the community are likely to result in an increased sense of injustice and increased interaction with angry and/or frustrated others, both of which increase the likelihood of criminal responses to strain (Agnew 1999, 2006).

Community exposure to violence is another highly criminogenic strain commonly experienced by residents in disadvantaged neighborhoods. While exposure to violence increases interaction with criminal models and may contribute to the internalization of criminal attitudes, it likely also increases psychological distress, which can motivate criminal forms of coping. In fact, exposure to violence need not be direct to be criminogenic; indirect exposure to violence (Agnew 2002; Eitle and Turner 2002; Lin et al. 2011; Zimmerman and Posick 2016) and even anticipation of future violence (Agnew 2002) increase the risk of violent offending, suggesting exposure to violence may affect criminal behavior, in part, through increased *motivation* to offend. Regardless of whether violence is present in their home, youth living within structurally disadvantaged areas are more likely to report personally experiencing criminal victimization in the neighborhood (Zimmerman and Messner 2013; Zimmerman and Posick 2016), as well as more frequently witnessing street violence and feeling greater fear of future victimization (Zimmerman and Posick 2016). Prior research shows that exposure to violence exerts a criminogenic effect, particularly on violence among juveniles (Antunes and Ahlin, 2014; Brookmeyer, Henrich, and Schwab-Stone 2005; Gorman-Smith, Henry, and Tolan 2004; Hay and Evans 2006; Spano, Rivera, and Bolland 2006b; Zimmerman and Posick 2016).

To our knowledge, few studies have directly examined multilevel relationships between structural characteristics of the community and individual-level processes of strain and deviant coping responses. Yet, as Agnew (1999) argues, "Crime rates are an aggregation of individual criminal acts, so [community-level] theories essentially describe how community-level variables affect individual criminal behavior" (p. 123). Therefore, a complete examination of the intervening mechanisms in the relationship between neighborhood structural characteristics and crime must begin to incorporate multilevel theorizing/modeling. In the context of an MST argument, multilevel models allow us to explore the extent to which exposure to strain and criminal responses to such strain vary across communities with different levels of structural disadvantage. Agnew (2013) argues that criminal behavior results when experiences of criminogenic strain converge with a set of individual characteristics *and* exposure to an environment conducive to criminal coping. In disadvantaged communities likely to offer lower levels of social control and less access to legal coping resources, the experience of criminogenic strain heightens individual motivation to adopt criminal coping strategies. Therefore, we argue neighborhood structural conditions influence the probability and severity of

exposure to criminogenic strains as well as the likelihood that individuals will ultimately respond to strains through illegal coping responses, like youth violence.

The Present Study

Although the empirical link between neighborhood structural characteristics, such as concentrated disadvantage, and violent offending is well-established in the criminological literature, discussions of the intervening and/or conditioning mechanisms that account for this relationship generally focus on the reduction of various forms of control (e.g., collective efficacy) to the exclusion of other theoretical processes. To the extent that structurally disadvantaged communities affect residents beyond the reduction of informal social control, our present understanding of how structural disparities influence criminal behavior is sharply constrained by this omission. While Agnew's (1999) MST proposes that both social control and strain processes account for the relationship between community structural attributes and crime, tests of these claims have yet to include the role of cross-level mechanisms between neighborhood factors and individual experiences with strain and deviance. Responding to Warner and Fowler's (2003) call to evaluate additional forms of strain and variations across neighborhoods, this study will explore how the neighborhood structural characteristics of concentrated disadvantage, residential mobility, and immigrant concentration affect community-level rates of strain and violence, controlling for the possible intervening effect of community collective efficacy. Additionally, we examine how the relationship between micro-level youth strains and violent behavior varies based on neighborhood structural conditions.

Testing Agnew's MST

We begin at the macro level, testing the central MST proposition (Agnew, 1999) that neighborhood structure will influence mean levels of strain within communities and significantly account for variation in violent crime rates. At the community level we anticipate that:

Hypothesis 1: Neighborhood structural characteristics will influence aggregate youth strain: exposure to violence in the community; negative school experiences; disjuncture between educational goals/achievement; being held back a grade; parental divorce; family

conflict; harsh discipline. Specifically, concentrated disadvantage is posited to increase strain, while immigrant concentration and stability are anticipated to attenuate strain.

Hypothesis 2: Neighborhood structural characteristics, collective efficacy, and aggregate levels of the above measures of youth strain will predict aggregate youth violence. We anticipate that strains will increase violence, as will concentrated disadvantage, while collective efficacy, immigrant concentration and stability will exert a protective effect on (i.e. decrease) violence.

Hypothesis 3: The criminogenic/protective effect of neighborhood structural characteristics on youth violence will be mediated by aggregate levels of youth strain measures, even upon controlling for collective efficacy.

Testing Agnew's GST

Next, we evaluate the general strain argument (Agnew 2001, 2006) that the experience of greater strain among youth will increase the probability they will engage in delinquent coping responses, specifically violent offending. After testing MST, our remaining research question concerns multi-level processes, specifically the ways in which neighborhood characteristics condition micro-level strain processes. For these analyses, we must first establish that—within this sample—strains identified as criminogenic by Agnew (1999, 2001, 2006) significantly predict youth engagement in violence.

Hypothesis 4: Juveniles' experience of a range of micro-level strains—including family-based strain, school-based strain, and exposure to violence in the community—will increase their likelihood of engaging in violence.

Testing Multi-level Effects

Our final research question centers on the potential multilevel relationship between neighborhood structural characteristics, youth strains, and engagement in violent behavior, specifically the extent to which neighborhood conditions moderate the effects of individual strain on youth engagement in violence.
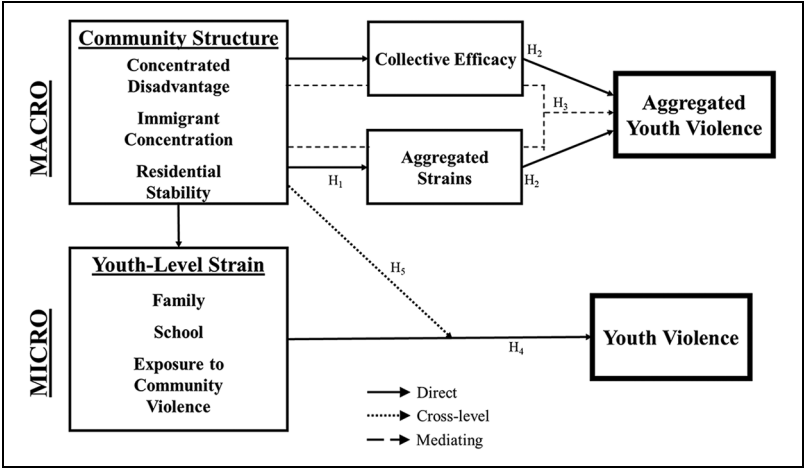
Figure 1. Multilevel heuristic model of the relationship between neighborhood characteristics, youth strains and violence.

> **Hypothesis 5:** The effects of strain on youth violence (slopes) will be conditioned by neighborhood structural characteristics, controlling for other strains and youth demographic variables.

The heuristic model illustrating the relationships between the hypotheses is depicted in Figure 1.

Data and Methods

We use the Project on Human Development in Chicago Neighborhoods (PHDCN) to examine the nexus between neighborhood conditions, youth strains and violent behavior. The PHDCN is a community and longitudinal cohort study examining community characteristics and resident perceptions as well as the development of children and youth living in the city of Chicago. These data are highly suited to our analysis, as the population of Chicago is highly diverse in terms of race, ethnicity and socioeconomic status (SES). The data contain a wide range of information applicable to the research goals, including engagement in violence, individual strains, indicators of neighborhood structural characteristics and collective efficacy, allowing for analysis of how community conditions shape both macro- and micro-level strain processes.

The PHDCN consists of several studies. The Community Survey (CS), conducted between 1994 and 1995, is a cross-sectional assessment of the perceptions and experiences of Chicagoans. Over 8,500 adult residents were included, identified via sampling of the city's 847 census tracts. The census tracts, collapsed into 343 neighborhood clusters (NC), were conceived to be "ecologically meaningful" and were structured using geographic boundaries. The Longitudinal Cohort Survey (LCS) is a multi-wave, prospective longitudinal study. Using a stratified probability sample, 80 NCs were selected from the original 343. Participants were placed into one of seven age cohorts- birth, 3, 6, 9, 12, 15 and 18. Of the over 8,000 eligible children and youth identified for participation, 6,228 were interviewed for the LCS at Wave 1. Respondents took part in several in-home interviews and assessments, conducted over the three waves of data collection. By Wave 3, 25 participants had died and 2,227 were lost due to attrition. Therefore, the remaining eligible pool of youth was 4,850 across the seven cohorts.

Study Sample

Investigating how neighborhood characteristics influence youth strains is a key objective, therefore we spotlight the experiences of youth from cohorts 9, 12 and 15. The use of these particular cohorts permits the selection of age-relevant strain processes and capture of responses across developmental stages. The total eligible pool of respondents was over 2,900. The sample was reduced by matching identification numbers across all three waves to distinguish children/youth who took part in the entire study. Attrition analyses revealed no statistically significant differences between the study sample and initial pool on critical strain and violence measures. There were, however, differences with respect to socioeconomic status. The final sample of 1,611 youth is 49 percent male, 46 percent Latino, and the average age at Wave 1 was 12.07 years (S.D. = 2.47). By Wave 3, the average age of the youth was 16.53 years (S.D. = 2.51).

Data Considerations

The wealth of information provided by the PHDCN, the nested structure of the data, and research design are strong advantages that affirm the data's suitability for this study. Although these benefits outweigh potential problems, it is imperative to address data limitations. One of the criticisms levied concerns the age of the data. Data collection for the final wave was completed over 17 years ago, which calls into question the present-day

relevance of some of the measures and information collated. Violence remains one of the top causes of youth premature death (Murphy, Xu, and Kochanek 2013) and is still highly germane to criminological inquiry, especially within the proposed framework. Another oft-cited limitation is the length between waves. Although the time span between the start of each data collection period approached two years, the end-to-start from wave to wave was fairly close, approximately one year. Furthermore, the time between waves allowed the cohorts to mature and progress through key developmental stages from infancy to adulthood. The final concern pertains to the static nature of the CS and thus the relevance of variables like the structural characteristics and collective efficacy. Debate persists regarding the rate at which communities evolve and change, but there is some evidence to suggest that neighborhood attributes change at a slower pace than is generally believed (Kingsley and Pettit 2007). Considering time elapsed between waves of data collection, it is unlikely that community conditions would have significantly changed during that period. Although we cannot be certain that the neighborhoods have remained stable, it is probable that, if they have changed, any changes would be insufficient to detract from our findings.

Measures

Youth violent behavior. Our main dependent variable *youth violent behavior* was constructed from the *Self-Report of Offending* administered at Wave 3.[1] Youth were asked a series of questions tapping into past year involvement in a range of violent behaviors. These included- snatched purse, hit someone not lived with, attacked with weapon, thrown objects at people, and been in gang fight (see Maimon and Browning 2010; Sharkey 2006). In keeping with the plethora of studies employing the PHDCN and recommendations by Raudenbush, Johnson, and Sampson (2003) we use Item-Response Theory to construct our measure of youth violence, such that the 12 items representing violent behavior are presented in long format, with each response (1/0) placed within its own row. We then run a series of three-level Rasch models to assess our hypotheses. Because Raudenbush et al. (2003) note, in comparing IRT versus an additive ("simple") measure of violence, that "in every case, the absolute value of the t-ratio was smaller in the simple analysis" (p. 208) we ran the same analyses with a violence variety score, and findings were comparable.

Neighborhood measures. The Community Survey provides information for the derivation of the neighborhood variables. The structural characteristics (*concentrated disadvantage*, *immigrant concentration* and *residential stability*) were constructed using data from the 1990 Census. The PHDCN researchers (see Sampson et al. 1997, for example) used factor analysis with oblique rotation to create measures that represent the three key variables of classical social disorganization theory- *concentrated disadvantage* (percent below poverty line, on public assistance, female-headed households, unemployed, less than age 18 and Black); *immigrant concentration* (percent Latino and foreign-born) and *residential stability* (same house as in 1985 and percent of owner-occupied houses), which were standardized for the analyses. *Collective efficacy* is composed of two scales: informal social control and social cohesion, which Sampson et al. (1997) combined into a single variable because "social cohesion and informal social control were closely associated, which suggests that the two measures were tapping aspects of the same latent construct" (Sampson, 2001:19).

Strain measures. The following measures of strain likely affect crime via multiple intervening mechanisms, an evaluation of which is beyond the scope of these analyses. We argue, however, that any residual association between these measures and violent crime *net* of the above measure of collective efficacy is evidence consistent with the proposition that informal social control does not *fully* account for the association between community characteristics and crime. Rather, structural characteristics of the community also affect crime, in part, by increasing residents' motivation to engage in violence.

Family-based strain. Agnew (2001, 2006) emphasizes that strains involving relations with family members are among those particularly likely to increase juvenile offending. Existing tests of Agnew's GST have shown a variety of family-based strains to be predictive of delinquency, including parental divorce (Hay 2003; Price and Kunz 2003; Spohn and Kurtz 2011), conflict between family members (Hay 2003; Moon and Morash, 2014; Sigfusdottir, Farkas, and Silver 2004), and harsh discipline tactics, particularly those rising to the level of physical and/or verbal abuse (Evans, Simons, and Simons 2012; Hay 2003; Hollist, Hughes, and Schaible 2009). As noted above, such family-based strains may affect delinquency through a variety of mechanisms (see Rebellon 2002), however psychological distress has been identified as a significant mediating factor in the relationship between family strains and delinquency (Bao, Haas, and Pi

2004; Evans et al. 2012; Hollist et al. 2009). We constructed three family-based strain measures to reflect stressors that youth experience within the family unit/home environment.

Divorce is a binary variable describing whether the youth experienced parental divorce during the study period. If the respondent experienced parental divorce, they were given a 1, and a 0 if not.

Family conflict is a nine-item scale ($\alpha = 0.70$) constructed from youth responses to the *Family Environment Scale*. The scale includes responses to statements including "members fight a lot," "members get so angry they throw things," "members often criticize each other," and "members sometimes hit each other."

Harsh discipline is a 12-item scale ($\alpha = 0.80$) constructed from parent/caregiver responses to the *Conflict Tactic Scales* (Straus 1979) conducted at Wave 1 (Molnar et al. 2003; Molnar, Buka, and Kessler 2001). Parents and primary caregivers were asked "in the past year when there was a problem with **** . . . how many times did you . . . " where responses included slapping, punching, insulting, hitting and beating up. This measure is a variety score illustrating a count of harsh discipline events as identified by parents/caregivers.

School-based Strain. Most juveniles spend a large proportion of their lives in a school setting, and Agnew (2001, 2006) highlights school-based strains as significant predictors of deviance/offending. Prior GST research has examined a particularly wide array of school-based strains, ranging from bullying and negative relations with teachers to enhanced school security measures, low educational achievement, and limited educational opportunity. Given such variation, findings have been decidedly mixed regarding which school-based strains increase the likelihood of which forms of deviance/delinquency (if any). Nonetheless, school strains have been found to be predictive of violent, property, drug, and status offenses (see Ford and Schroeder 2008; Jennings et al. 2009; Song 2020; Thaxton and Agnew 2018), and multiple studies have further found that the relationship between school-based strain and delinquency is at least partially mediated by emotions such as anger and/or depression (Ford and Schroeder 2008; Jennings et al. 2009; Lin and Yi 2013). We constructed three school-based strain measures to reflect aversive experiences youth might face within the school environment, including the perceived inability to achieve educational goals.

Negative school experience is a four-item scale ($\alpha = 0.69$) constructed from the Wave 2 *School Interview*. Youth provided yes/no responses to the following questions regarding their exposure to aversive experiences within

the school environment: 1) Are there racial or ethnic problems? 2) Is there gang activity at your school? 3) Are security guards posted at doors or in hallways? and 4) Are metal detectors used?

Held back is a binary measure indicating whether the youth had ever been held back a year in school. If the respondent had been held back, they were given a 1, and a 0 if not.

School disjuncture captures the gap between youth aspirations and their belief that their goals are attainable; it is derived from the Wave 2 *School Interview.* Youth were asked 1) How far would you like to go in school and 2) How far do you think you actually will go in school? While 44 percent of the sample indicated they would like to go to college and beyond, only 29 percent believed they actually would. If the youth's objectives exceeded what they believed was attainable, they were given a 1, and a 0 if not.

Neighborhood-based Strain. Juveniles may be exposed to a variety of aversive experiences within their neighborhood (i.e., while away from their home and/or school), including criminal victimization. Personal experiences of violent victimization (Agnew 2002; Cudmore, Cuevas, and Sabina 2017; Hay and Evans 2006; Kort-Butler 2010; Lin et al. 2011; Wemmers et al. 2017) as well as vicarious experiences of violence (Agnew 2002; Kort-Butler 2010; Lin et al. 2011) have been shown to be predictive of subsequent offending. Indeed, Agnew (2001, 2002, 2006) identifies direct and indirect victimization as particularly criminogenic strains, as they are generally perceived to be both high in magnitude and unjust. While exposure to violence likely influences offending through multiple mechanisms, including exposure to criminal models/attitudes, it is well-established that exposure to violence can elicit significant psychological distress; existing tests of GST find that such negative emotion significantly mediates the relationship between exposure to violence and subsequent offending (Cudmore et al. 2017; Hay and Evans 2006; Lin et al. 2011; Wemmers et al. 2017). The following measure of exposure to violence reflects respondents' direct and/or indirect experiences of violence within the larger community.

Exposure to Violence in the Community (ETV-C) is constructed from the My Exposure to Violence survey. Youth respondents answered a series of questions designed to capture experiences of direct victimization (e.g., was personally chased, hit, threatened, shot, etc.) and indirect victimization (e.g., witnessed someone else be chased, hit, threatened, shot, etc.). Respondents also identified the location of the exposure to violence (home, neighborhood, or school). Using a similar methodology to Gardner and

Table 1. Descriptive Statistics of Study Variables (*N* = 1,611).

	Mean or Prop.	*SD*	**Min**	**Max**
Youth Violent Behavior				
Item 1: Hit someone	.27	—	0	1
Item 2: Thrown objects	.13	—	0	1
Item 3: Carried hidden weapon	.10	—	0	1
Item 4: Set fires	.07	—	0	1
Item 5: Attacked w/ a weapon	.04	—	0	1
Item 6: Gang fights	.36	—	0	1
Item 7: Snatched purse/wallet	.00	—	0	1
Item 8: Chased to hurt	.13	—	0	1
Item 9: Shot at someone	.01	—	0	1
Item 10: Damaged property	.19	—	0	1
Item 11: Threatened hurt	.26	—	0	1
Item 12: Shot someone	.00	—	0	1
Family Strains				
Family Conflict	1.18	1.41	0	5
Harsh Discipline	6.42	6.20	0	37
Divorce	.33	—	0	1
School Strains				
Held back in School	.18	—	0	1
School Disjuncture	.30	—	0	1
Negative School Exps.	2.47	1.21	0	4
Community Strain				
ETV-C	1.32	1.78	0	8
Controls				
Hispanic	.46	—	0	1
Black	.34	—	0	1
White	.15	—	0	1
Male	.49	—	0	1
Cohort 9	.35	—	0	1
Cohort 12	.33	—	0	1
Cohort 15	.32	—	0	1
First Gen. Imm.	.12	—	0	1
One-Half Gen. Imm.	.06	—	0	1
Second Gen. Imm.	.32	—	0	1
Third Gen. Imm.	.56	—	0	1
SES	.00	1.00	−2.03	2.51
Neighborhood Variables				
Collective Efficacy	3.43	.29	2.90	4.17
Poverty	.02	1.00	−1.86	3.49

Table 1. (continued)

	Mean or Prop.	SD	Min	Max
Immigrant Concentration	.01	1.00	−1.75	2.70
Residential Stability	−.01	.98	−1.87	2.29
Community ETV-C	1.29	.70	0	4

ABBREVIATIONS: SD = Standard Deviation; SES = Socioeconomic Status.

Brooks-Gunn (2009) and Antunes and Ahlin (2021), the index ($\alpha = 0.73$) is a variety score of the violent events youth experienced and/or witnessed in the neighborhood during the past year.

Youth demographic variables. Several demographic control variables are included to glean possible gender, race and immigrant status differences in responses to strain. *Gender* is a dichotomous variable with males scored 1 and females 0. *Race/ethnicity* consists of three separate binary variables that distinguish between Hispanic/Latino, Black, and White. *Immigrant generational status* involves four binary variables (Antunes and Ahlin, 2021; DiPietro and Cwick 2014). Foreign-born youth who moved to the United States after the age of six were classified as *first generation*. Those who were foreign born but moved as infants or before the age of six were coded as *one and one-half generation* (or 1.5). *Second generation* youth are born in the United States but have at least one foreign-born parent and finally, *third+ generation* youth were born in the United States and whose parents are also native born. *Cohort*,[2] is a series of dummy variables depicting the cohort membership of each participant (9, 12 and 15). We use the *SES* measure constructed by the PHDCN researchers, *SES* is the standardized principal component of the parents' maximum education, household income and parent socioeconomic index variables.

Analytic strategy. To maintain temporal ordering, we use measures derived from Wave 1 and Wave 2 to predict youth engagement in violence at Wave 3. The PHDCN data are nested such that youth and their family are situated within neighborhoods. Individuals living in the same community share attributes and are ultimately more similar to each other than they are to those who live in other communities. In essence, the clustered structure of the data means that within NC responses are likely correlated resulting in dependence between the error terms. Multilevel modeling accounts for this dependence as well as the clustering of the data, and the very nature of the

PHDCN and the questions posed by the current investigation necessitate a multilevel approach. The analysis is conducted in stages with each step assessing a particular research objective/hypothesis.

To best address the established goals, analyses start with an evaluation of the MST propositions that neighborhood-level measures of structural disadvantage increase levels of aggregated strain, which in turn increases community crime rates, beyond the effect of collective efficacy. Hypotheses 1–3 are formulated to address the main tenets of MST. Because at this stage we are interested in the macro-level processes, we begin with a series of means-as-outcomes-regressions (MAOR). MAORs estimate the influence of level-2 predictors (neighborhood and/or strains) on the dependent variable of interest while leaving level-1 unconditional (no predictors). The variables are grand-mean centered as this reduces multi-collinearity between the youth-level variables. The first series of models examine neighborhood predictors of strain. Specifically, we determine the extent to which disadvantage, immigrant concentration, residential stability and collective efficacy predict each of our strains. We follow this with a direct assessment of the MST propositions and MAORs with youth violence now set as the outcome of interest. The models build upon each other and culminate in a full model incorporating the disorganization, collective efficacy, and strain measures. To evaluate potential mediating relationships, we not only employ traditional methods of examining coefficients (Baron & Kenny 1986) but more advanced techniques via the PROCESS v.3.5 Macro for SPSS developed by Hayes (2017). More specifically, we adopt the bootstrapping (bootstrapping resamples = 5,000) approach to testing mediation.

The next step is to evaluate individual strain mechanisms and GST-Hypothesis 4. We employ a series of three-level logistic regressions (for a discussion on the application of the three-level Rasch model and IRT in measuring self-reported offending we suggest Raudenbush et al. 2003). To keep our models and findings comparable to other research using the PHDCN we follow the methodologies of Maimon and Browning (2010), Raudenbush et al. (2003) and Sharkey (2006). The predictors at both level-1 and level-2 are grand-mean centered, except for any slope relationships found to vary significantly across neighborhoods. Specifically, we do not have clear hypotheses of how relationships may vary given that this study is a first of its kind. Therefore, we run a series of random coefficients regressions whereby the youth-level predictor is group mean centered and the error term allowed to vary, while level-2 is kept unconditional. In practical terms, we individually examined whether the effect of each level-1

predictor on youth violence (the slope) varies across NC. There are different schools of thought regarding whether to allow all error terms to be free and group-mean center our measures. However, we decided to follow the suggestions of Raudenbush and Bryk (2002) to construct our models by introducing and examining random effects one at a time and noting the significance level. This avoids a "saturated" model with too many random effects because; "if one overfits the model by specifying too many random level-1 coefficients, the variation is partitioned into many little pieces, none of which is of much significance" (p. 256). Thus, for any statistically significant slope relationships, the predictors will be group-mean centered and all other grand-mean centered. Our analytic strategy ends with a multi-level exploration of disorganization and GST. The between-neighborhoods models are randomly varying intercepts-and-slopes-as-outcomes whereby the level-2 variables are introduced, and cross-level interactions are assessed for any slopes found to vary during the previous step. For graphing cross-level interactions we use the variance-covariance matrices and the online calculator offered by Preacher, Curran and Bauer at http://www.quantpsy.org/interact/hlm2.htm.

Results

Evaluating Agnew's Macro Strain Theory

We begin by examining the broad propositions of MST and the potential role neighborhood structural characteristics have on mean community levels of youth strains. The results of the MAOR are presented in Table 2. One of the central tenets of MST is that structural characteristics such as concentrated disadvantage and residential mobility not only hinder a community's ability to exert social control over its members but also increase strain (H_1). The effects depicted in Table 2 are revealing in several ways. First, there is mixed support for H_1 as, unlike other metrics of neighborhood structure, residential stability failed to achieve significance in any of the strains assessed, except for family conflict. By far, concentrated disadvantage is the most robust predictor of the different neighborhood levels of youth strain. Harsh discipline practices excepted, concentrated disadvantage predicted higher average levels of each family- and school-based strain measure. A standard deviation increase in disadvantage was associated with a 25 percent,[3] increase ($b = .22$, $p < .001$) in family conflict. An even stronger impact is seen for being held back in school, as a standard deviation increase predicts a 49 percent rise in repeating a grade ($b = .40$,

Table 2. Neighborhood Predictors of Youth Strains.

| | Family | | | | | | Community | |
| | Family Conflict | | Harsh Discipline | | Divorce | | ETV-C | |
	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	1.19*** (.03)	1.19*** (.04)	1.87*** (.03)	1.87*** (.03)	−.73*** (.06)	−.73*** (.06)	.24*** (.04)	.24*** (.04)
Concentrated Disadvantage	.22*** (.03)	.26*** (.05)	.03 (.02)	.03 (.03)	.47*** (.06)	.42*** (.07)	.20*** (.04)	.22 (.05)
Immigrant Concentration	−.08+ (.04)	−.07+ (.04)	−.10*** (.03)	−.10*** (.03)	−.37*** (.05)	−.39*** (.05)	−.10*** (.04)	−.10 (.04)
Residential Stability	−.06 (.04)	−.09+ (.05)	−.03 (.03)	−.03 (.03)	−.05 (.06)	.00 (.07)	.06 (.04)	.04 (.05)
Collective Efficacy		.22 (.18)		.01 (.11)		−.35+ (.21)		.04 (.05)
Random Effects (μ_0)	.00	.00	.01*	.01*	.00	.00	.01+	.01+

School

| | Held Back | | School Disjuncture | | Negative School Experience | |
	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	−1.60*** (.08)	−1.6*** (.08)	−.86*** (.06)	−.86*** (.06)	.91*** (.02)	.91*** (.02)
Concentrated Disadvantage	.40*** (.08)	.41*** (.10)	.15** (.05)	.11 (.08)	.09*** (.02)	.08** (.02)
Immigrant Concentration	.06 (.07)	.07 (.07)	.16** (.06)	.15 (.06)	.04* (.02)	.03* (.02)
Residential Stability	−.01 (.09)	−.02 (.10)	−.05 (.07)	−.01 (.08)	−.04 (.03)	−.03 (.03)
Collective Efficacy		.06 (.35)		.01		−.09 (.11)
Random Effects (μ_0)	.08*	.08*	.01	.01	.03***	.03***

ABBREVIATIONS: SE = Standard Error.
+p < .10, *p < .05, **p < .01, ***p < .001.

$p < .001$). The most substantial effect of neighborhood characteristics on the youth strain measures is seen in the relationship between concentrated disadvantage and divorce, as a standard deviation increase in disadvantage corresponds to a 63 percent increase in the likelihood a youth would experience parental divorce ($b = .47, p < .001$).

The analyses also revealed that a community's immigrant concentration shapes aggregated youth strains, but the direction of the effects varied. Of note is the stark contrast in the effect immigrant concentration has on measures of family- versus school-based strains. A community's percentage of Latino and foreign-born residents functions as a protective factor for mean neighborhood levels of family strains but aggravates school-based strains. Specifically, a standard deviation increase in immigrant concentration predicts lower levels of divorce ($b = -.37, p < .001$) and harsh discipline practices ($b = -.10, p < .001$); the same increase intensifies school disjuncture ($b = .16, p < .01$) and negative school experiences ($b = .04, p < .05$). With respect to ETV-C, community disadvantage increases levels of exposure to violence, while immigrant concentration functioned as a buffer. Notably, the effects of collective efficacy are minimal and seem to marginally act as a protective factor with respect to community levels of divorce ($b = -.35, p < .10$).

We next examine the macro relationships between neighborhood structural characteristics and strains, evaluating how these contribute to youth violence. To address H_2 and H_3 we aggregated the strains to the neighborhood level using a mean-based method. The results of the MAOR are shown in Table 3. The discrepancy in effects between concentrated disadvantage and immigrant concentration is particularly salient. Concentrated disadvantage is noticeably criminogenic in its influence on mean neighborhood youth violence ($b = .15, p < .001$), whereas immigrant concentration seems to exert the opposite effect, predicting lower levels of youth violence ($b = -.15, p < .001$). Collective efficacy, however, did not attain significance in any of the analyses. As collective efficacy mechanisms failed to attain significance, while the measures intended to reflect strain were predictive of violence, the findings regarding H_2 suggest that informal social control may be only one, among several, mechanisms that can account for the relationship between community structural characteristics and violence. Of the macro-level family strains, family conflict had no apparent effect on mean youth violence, with community levels of harsh discipline ($b = .04, p < .05$) and divorce ($b = .91, p < .01$) seeming to predict youth violence. Examining the school strains, only the proportion of students repeating grades ($b = .72, p < .05$) seemed to exacerbate levels of youth violence

Table 3. Testing Agnew's Macro Strain Theory-Effects on Community Levels of Youth Violence.

	Social Disorganization	Social Control	Family Strains	School Strains	Exposure to Community Violence	Full Model
	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	.42*** (.04)	.42*** (.04)	.42*** (.04)	.42*** (.04)	.41*** (.03)	.41*** (.03)
Concentrated Disadvantage	.15*** (.03)	—	—	—	—	.03 (.05)
Imm. Concentration	−.15*** (.03)	—	—	—	—	−.09* (.04)
Residential Stability	.01 (.04)	—	—	—	—	.03 (.04)
Collective Efficacy	—	−.09 (.19)	—	—	—	−.16 (.18)
Family Conflict	—	—	.09 (.12)	—	—	.11 (.10)
Harsh Discipline	—	—	.04* (.01)	—	—	.03+ (.01)
Divorce	—	—	.91** (.28)	—	—	−.08 (.31)
Held Back	—	—	—	.72* (.31)	—	−.19 (.29)
School Disjuncture	—	—	—	−.03 (.37)	—	.54+ (.31)
Neg. School Experience	—	—	—	.00 (.09)	—	−.04 (.07)
ETV-C (exposure to community violence)	—	—	—	—	.41*** (.06)	.34*** (.06)
Random Effects (μ_0)	.03*	.03*	.03*	.06***	.02+	.02

ABBREVIATIONS: SE = Standard Error.
+p < .10, *p < .05, **p < .01, ***p < .001.

in the community. As expected, community ETV significantly predicted higher neighborhood violence (b = .41, p < .001).

The changes in relationships once all predictors were considered simultaneously is especially marked (Table 3). Several of the variables that had been previously significant—most notably concentrated disadvantage and immigrant concentration—either were no longer statistically significant or the magnitude of the effect and coefficient were reduced. In addition to visually inspecting the coefficients and relationships, mediation effects were evaluated using the bootstrapping method[4] detailed by Hayes (2017), with several indirect effects detected. At the macro-level, the effect of community exposure to violence was estimated to lie between −.15 and −.08 with a 95 percent confidence interval, suggesting that immigrant concentration has an indirect effect on violent behavior through experiencing exposure to violence in the community. Similarly, the proportion of students held back in school has an indirect effect on youth violence, also through community exposure to violence (95 percent CI = .01, 1.6, p < .05). The only other strain to mediate the effect of neighborhood structural characteristics, specifically concentrated disadvantage (H_3) on youth violence, was divorce, such that the indirect effect was estimated to lie between .04 and .20 with a 95 percent confidence interval. As such, the variables used here to reflect strain mechanisms, e.g. exposure to violence or divorce, have significant, positive effects on violence that persist, even upon statistically controlling for the influence of collective efficacy. The results of the mediation analyses are therefore at least partially supportive of our contention that higher levels of strain in structurally disadvantaged communities increase residents' motivation to engage in violence (H_3).

Evaluating Micro-Level Strain Processes

Our next series of analyses address H_4 and test the propositions of GST; they begin with an estimation of the intra-class correlation (ICC) which provides information about the proportion of the variance in the dependent variable, in this case violence that is accounted for by neighborhood. The results indicate that approximately 5 percent of the variance in youth violent behavior occurs between neighborhoods, which is comparable to previous studies using the PHDCN data. We then assessed the effects of each strain grouping, establishing these relationships prior to estimating the full within neighborhood model. As seen in Table 4, harsh discipline and divorce have the most damaging effects of the family-based strains. For youth who experience parental divorce, predicted violence increases by 51 percent

Table 4. Within Neighborhood Model: Testing Agnew's GST.

	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	−2.26*** (.05)	−2.25*** (.05)	−2.24*** (.05)	−2.26*** (.05)
Family Conflict	.08** (.03)			.06* (.03)
Harsh Discipline	.04*** (.01)			.03*** (.01)
Divorce	.42*** (.07)			.40*** (.07)
Held Back		.21* (.11)		−.02 (.10)
School Disjuncture		.24** (.08)		.17** (.08)
Neg. School Experience		.01 (.03)		−.05 (.03)
ETV-C			.25*** (.02)	.24*** (.02)
Random Effects (μ_0)	.07***	.11***	.06***	.05**

ABBREVIATIONS: SE = Standard Error.
$^+$p < .10, *p < .05, **p < .01, ***p < .001.

($b = .42$, $p < .001$). Likewise, harsh discipline ($b = .04$, $p < .001$) predicts a small 4 percent, yet statistically significant, rise in youth violent behavior. At the individual-level, strains that youth experience in school also tend to have sizable criminogenic effects on behavior, although with varying strength. The findings in Table 4 suggest that for youth who are held back a year, violence increases by 23 percent ($b = .21$, $p < .05$). Similarly, for youth who reported school disjuncture, violence increased by 27 percent ($b = .24$, $p < .01$). For negative school experiences, the predicted increase in violence is notably smaller and statistically insignificant. Finally, and as anticipated, exposure to community violence magnified youth likelihood of engaging in violence by 29 percent ($b = .25$, $p < .001$).

The intervening role ETV-C plays between community structural characteristics and other strain measures at the macro-level led us to examine similar potential mediating relationships at the youth level. Apart from divorce and school disjuncture, all strains impacted youth ETV-C. For example, both family conflict ($b = .05$, $p < .05$) and harsh discipline ($b = .02$, $p < .01$) increased the likelihood of youth experiencing violence in their community. For those youth repeating a grade and experiencing negative school events, exposure to violence increased by 58 percent ($b = .46$, $p < .001$) and 16 percent ($b = .15$, $p < .001$) respectively. The complete within neighborhood model portrayed in Table 4 includes all strains examined and shows appreciable reduction in the strength of some.

Although family strains remain statistically significant, the magnitude of the coefficients drop. The previous significance of being held back a grade disappears when considering the simultaneous impact of all strains on youth violence, while no substantial change is detected for ETV-C. Given the impact of the strains on youth experiences with neighborhood violence, and the considerable drop in the size of the coefficients, it is likely that ETV-C mediates the influence of the family- and school-based strain measures on youth violent behavior. We therefore used the bootstrapping approach to conduct mediation analyses. Analyses revealed that the indirect effect of exposure to community violence was significantly different from zero for all family-based strains, being held back in school and negative school experiences (confidence intervals available upon request). Overall, effects presented in Table 4 provide strong support for H_4.

Evaluating Multi-level Relationships between Neighborhood Characteristics, Micro-level Strains, and Violent Offending

The final set of models are depicted in Table 5. Model 1 presents the neighborhood effects on the intercepts and the strain effects on youth engagement in violence. The intercepts are the estimated means of the neighborhood average of youth violence, holding all predictors constant. As observed in previous analyses, immigrant concentration exerts a protective effect on youth violent behavior ($b = -.16$, $p < .001$), an effect that persists in Models 2 and 3. Concentrated disadvantage, however, has limited influence and, consistent with our prior findings, residential stability again fails to exert any significant influence on youth engagement in violence. It is revealing that, of the school strains, only disjuncture has a statistically significant influence, albeit a modest one ($b = .19, p < .01$). Yet, the significance of school disjuncture is appreciably reduced upon the introduction of the control variables. As with previous findings, youth exposure to community violence remains a robust predictor of youth violence. Collective efficacy continues to have no discernible effect on youth violent behavior, whereas the criminogenic effect of divorce and harsh discipline endures. Therefore, we again find that, even when adjusting for the effects of collective efficacy, variables that reflect strain mechanisms continue to exert a significant mediating effect between community structural characteristics and violence, and the potential role of strain processes in accounting for community-level variation in violence cannot be discounted.

Table 5. Multilevel Regression of Youth Violence on Neighborhood Characteristics, Strain Processes and Controls.

	Model 1	Model 2	Model 3	Model 4
	b (SE)	b (SE)	b (SE)	b (SE)
Intercept	−2.26*** (.04)	−2.26*** (.04)	−2.26*** (.04)	−2.27*** (.04)
Concentrated Disadvantage	.13** (.05)	.12** (.06)	.04 (.05)	−.04 (.05)
Immigrant Concentration	−.16*** (.04)	−.17*** (.04)	−.11* (.04)	−.05 (.06)
Residential Stability	.05 (.06)	.05 (.06)	.02 (.05)	−.01 (.05)
Collective Efficacy	−.11 (.24)	−.11 (.24)	−.16 (.22)	−.05 (.23)
Community Violence			.35*** (.08)	.35*** (.07)
Family Conflict	.07* (.03)	.07* (.03)	.05$^+$ (.03)	.05$^+$ (.03)
Harsh Discipline	.03*** (.01)	.04*** (.01)	.03*** (.01)	.03*** (.01)
Divorce	.35*** (.07)	.34*** (.07)	.34*** (.07)	.18* (.08)
Held back in School		.15 (.10)	−.02 (.10)	.08 (.10)
School Disjuncture		.19** (.08)	.19** (.08)	.13$^+$ (.08)
Negative School Exps.		.00 (.04)	−.05 (.03)	.00 (.04)
Exp. to Comm. Violence			.25** (.02)	.30*** (.03)
Concentrated Disadvantage			−.05* (.02)	−.07** (.03)
Hispanic				.03 (.17)
Black				.22$^+$ (.13)
Male				.34*** (.07)
Cohort 09				.72*** (.11)
Cohort 12				.64*** (.09)
First Gen Immigrant				−.37$^+$ (.20)
1.5 Gen Immigrant				.17 (.25)
Second Gen Immigrant				−.21* (.10)

Table 5. (continued)

	Model 1	Model 2	Model 3	Model 4
	b (SE)	b (SE)	b (SE)	b (SE)
SES				−.08 (.05)
Random Effects (μ_0)	.039*	.039*	.031*	.029[+]
Exp. to Comm. Violence			.005	.003

ABBREVIATIONS: SE = Standard Error.
[+]p < .10, *p < .05, **p < .01, ***p < .001.
Referent Groups: White, and Cohort 15.

The extent to which neighborhood characteristics shape the relationship between ETV-C and youth violence is examined in Model 3. When evaluating slope relationships between the strains and youth violence, only ETV-C varied significantly across neighborhoods, however modestly. As suggested by Lee and Bryk (1989), we include an aggregate measure of community exposure to violence to control for contextual effects of violence. Youth living in a neighborhood with average levels of concentrated disadvantage experience a likely 28 percent increase in violence ($b = .25$, $p < .001$). The impact of concentrated disadvantage on the relationship between ETV-C and youth violence is somewhat unexpected, as the slope is flatter in neighborhoods with higher levels of concentrated disadvantage, with a net effect that is lower in these neighborhoods ($b = .25+−.05$).

As is showcased in Figure 2, at lower levels of exposure, the effect on violence is similar across levels of disadvantage. However, the gap widens as exposure to violence increases, and the slope becomes sharpest within less disadvantaged neighborhoods. A standard deviation increase in concentrated disadvantage decreases the slope of ETV-C by about 20 percent [0.05/0.25].

The introduction of the youth demographic measures generated some intriguing findings (Model 4). Firstly, the impact of immigrant concentration on mean levels of youth violence (the intercept) is no longer significant. At the individual-level, divorce and harsh discipline remain important in predicting youth violent behavior, although there is a slight decrease in the magnitude of the divorce coefficient ($b = .18$, $p < .05$). Upon examining the influence of the demographic variables, it is clear that several matter. According to the results of Model 4, compared to White youth, Black youth
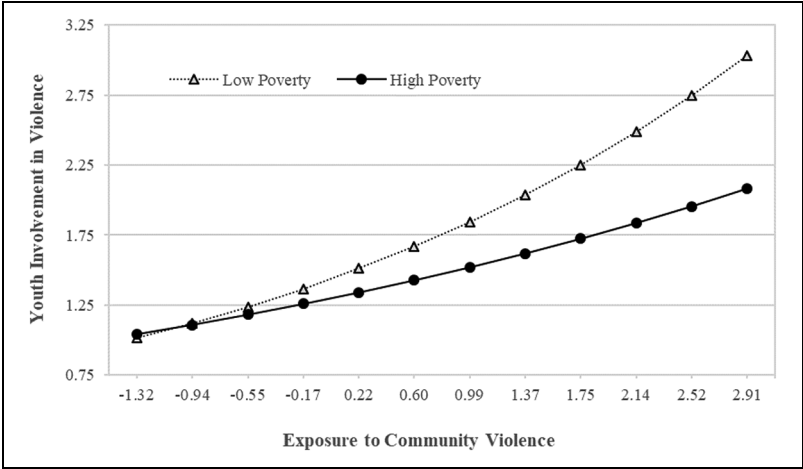
Figure 2. Expected involvement in violence by exposure to community violence and concentrated disadvantage.

remain more likely to engage in violence even in the fully specified model, but the effect is a small one. Specifically, for Black youth, predicted violence is 25 percent higher than Whites ($b = .22$, $p < .10$). Along the same lines, males' ($b = .34$, $p < .001$) engagement in violence is 40 percent higher than that of females. As anticipated, cohort membership is also a significant predictor of youth violent behavior. For members of cohort 9, expected predicted violence is higher ($b = .72$, p $<$ .001) compared to cohort 15, just as findings indicate that youth in cohort 12 had higher predicted levels of violence ($b = .64$, p $<$ .001). These findings are not unusual considering that at Wave 3 cohort 9 is, on average, 13 years old, cohort 12 is 16 years old, with cohort 15 approaching a downward trend in delinquency at 20 years of age. Contrary to much of the current political rhetoric, and in support of previous work (see DiPietro and Cwick, 2014), immigrant youth reported fewer instances of violent behavior. For youth born outside of the US and who arrived here after the age of 6, expected involvement in violence was 31 percent lower than native born ($b = -.37$, p $<$ .10). Similarly, second generation were also less likely to participate in violence. These effects exist above and beyond contextual influences of immigrant concentration that fade with the incorporation of youth immigrant status. Lastly, family SES acts neither as a risk nor a protective factor, as the analyses revealed no statistically significant effects. Also worthy of mention, the random effects

(μ_0) decreased 21 percent with the inclusion of exposure to community violence and was reduced a further 5 percent, indicating the model has explained some of the variability of youth violence across neighborhoods.

Discussion

The current investigation explores the relationships among neighborhood structural factors, strain, and youth violence, by 1) testing MST propositions that community-level rates of strain will partially account for the relationship between neighborhood characteristics and violent offending, even after adjusting for informal social control (i.e., collective efficacy) and 2) evaluating the extent to which the relationship between micro-level youth strain and violent behavior varies based on neighborhood structural conditions. Our findings suggest that variables we have constructed to reflect aversive life events (i.e., strains), at both the macro and micro level, play a critical role in the well-established empirical relationship between community disadvantage and violence. The analyses demonstrate support for the MST propositions that neighborhood characteristics of structural disadvantage predict levels of aggregated strain, and that aggregated levels of exposure to violence in the community intervene in the relationship between neighborhood characteristics and levels of youth violence. Importantly, variables such as ETV-C remain significant predictors of violent behavior, even after controlling for the effects of collective efficacy. The results further indicate that the extent to which youth's exposure to violence in the community predicts subsequent violent behavior varies based on neighborhood levels of concentrated disadvantage and residential stability.

We acknowledge that the measures of strain used in our analyses may influence youth violent behavior through a variety of mechanisms, including weakening of social control and/or exposure to deviant models, in addition to heightened negative emotion. Indeed, in real-world contexts, most variables found to predict violence, such as exposure to violence, have complex and interactive effects on individuals. For example, a child who observes a peer being shot within their community may discover the power of wielding a gun, while simultaneously experiencing a significant increase in anger, fear, and sadness and subsequently begin to withdraw from more conventional peers inexperienced in violence and/or trauma. Certainly, future research must seek to tease out precisely *why* variables such as ETV-C so strongly predict violence; unfortunately, such analyses were beyond the scope of this investigation. Nonetheless, these results—at the very least—indicate that an exclusive focus on informal social controls as

the intervening mechanisms between structural disadvantage and crime simply does not tell the full story. As Agnew (1999) emphasizes, propositions of MST are complementary to traditional social disorganization arguments; living within disadvantaged neighborhoods may increase residents' motivation to engage in criminal coping strategies, particularly violence, even as it also lessens the types of informal social controls that could effectively tamp down crime and deviance. Thus, any comprehensive understanding of how neighborhood characteristics impact violence should acknowledge the potentially significant role of strain processes at both the macro and micro-level.

Beginning with our test of Macro Strain Theory (Agnew, 1999), our findings reveal that neighborhood concentrated disadvantage worsens aggregated levels of strain. Specifically, communities with higher levels of concentrated disadvantage had higher rates of exposure to violence in the community, each of the school-based strain measures, as well as family conflict and divorce. At this macro level, even when controlling for collective efficacy, divorce mediated the effect of concentrated disadvantage on youth violent behavior, and ETV-C, in turn, further mediated that relationship between divorce and aggregated levels of youth violence. However, support for our hypotheses is less consistent across other classic measures of neighborhood structure. Counter to our hypotheses, residential stability did not significantly affect any of the strains examined, and there are no direct effects of residential stability on youth violent outcomes. Moreover, and across all models, collective efficacy failed to attain significance, even as a range of variables identified as criminogenic strains in MST/GST research did significantly predict violence. It is possible that the detrimental influence of the strains superseded any potential benefits bestowed by collective efficacy or simply that the strains themselves impeded the development of collective efficacy at the neighborhood level. We encourage continued investigation into the ways in which strain and social control mechanisms both co-occur and complement each other. Specifically, future research on communities and crime should explore the utility of the MST mechanism, as well as how weakened informal social controls and heightened experiences of strain might interact at the macro level.

Turning to the significance of immigrant concentration, while higher immigrant concentration heightened school-based strains, it lessened neighborhood levels of family-based strains and, as expected, provided a protective effect against youth violence. The disparate influence of higher immigrant concentration on school- vs. family-based strains may reflect the relative level of autonomy residents have in determining conditions in

their individual family units, as compared to a state and/or county-controlled school system. If residents experience problems within the educational system and a lack of agency in addressing those concerns, this may be a significant source of strain. As expected, higher immigrant concentration reduced rates of exposure to violence in the community, and ETV-C mediated the relationship between immigrant concentration and violent behavior; again, this relationship persists when controlling for collective efficacy. Less exposure to violence predicts less violent offending via multiple theoretical pathways, but it is less obvious why higher immigrant concentration reduces community rates of ETV-C. However, it is important to emphasize that, counter to the original social disorganization propositions underscoring the noxious impact of heterogeneity on mechanisms of social control, these results highlight more recent empirical findings that ethnically heterogeneous communities may insulate residents from the deleterious effects of concentrated disadvantage (Kubrin and Ishizawa 2012; Lee and Martinez 2009; Ousey and Kubrin 2009) and further suggest that immigrants offend at lower rates than native-born Americans (Bersani 2014; DiPietro and Cwick 2014; Morenoff and Astor 2006; Sampson, Morenoff, and Raudenbush 2005). It is therefore essential that modern approaches to social disorganization theory reflect the complex role of racial/ethnic diversity in neighborhood-level effects on both strain and crime, particularly as recent political debate increasingly scapegoats immigrant groups for violence in urban communities.

To examine multilevel relationships, we also tested GST processes at the micro-level to determine the extent to which personal strains predicted individual violent offending; this allowed us to subsequently evaluate how such relationships vary by neighborhood characteristics. Individual-level strains robustly predicted juveniles' engagement in violence, and several strains—family conflict, divorce, and negative school experiences—also increased juveniles' exposure to violence in their community. In fact, these findings reveal several interesting mediating effects, which are generally consistent with GST propositions (Agnew 2006; Mazerolle et al. 2000; Mazerolle and Piquero 1997). Some strains with direct effects on violence (i.e., school disjuncture and family conflict) lost significance when all family and school-based strains were added to the model. In addition, several strains appear to influence youth violence through their effect on community exposure to violence. Juveniles' exposure to violence in the community fully mediated the relationship between negative school experiences and youth violence and partially mediated the effect of divorce and harsh discipline on violent offending, above and beyond possible

neighborhood effects. This is not particularly surprising as research shows "family-level variables tend to be more strongly associated with individual outcomes than are neighborhood-level variables," (Leventhal and Brooks-Gunn 2000:315), and in light of the small variance in youth violence attributed to neighborhood differences. Nonetheless, these findings underscore the complex pathways between the experience of strain and subsequent offending, and they echo theoretical arguments within GST that had yet to be directly tested. For example, Agnew (2006) asserts that certain types of chronic strain, such as family conflict or harsh discipline, may reduce juveniles' bonds to conventional others, increase time spent on the street, and thereby magnify exposure to delinquent/criminal others. We contend that certain criminogenic strains (e.g. harsh discipline, divorce and negative school experiences) within this sample intensify the likelihood of youth violence through their effect on exposure to violence in the community, perhaps because such exposure fosters the social learning of crime (Agnew, 2006), the seeking of peer activities to relieve strain, like unstructured socializing, or because the trauma of victimization in one's community exerts a unique influence on juveniles' decision to engage in violent coping strategies. Our findings further underscore the ways in which mechanisms historically treated as competitive and even contradictory may, in real-world contexts, work in tandem to influence youth violence.

One of our goals was to uncover the extent to which micro-level strain processes predictive of violence vary by neighborhood characteristics, yet upon the inclusion of all the neighborhood factors, only community exposure to violence, divorce and harsh discipline remain relevant, with none of the school-based strains retaining significance. The analyses further reveal that exposure to violence in the community differentially affects youth engagement in violence, varying by particular characteristics of the neighborhood in which the exposure occurs. At lower levels of exposure, the effect of experiencing violence on subsequent violent behavior is similar across levels of disadvantage, its impact diverging as exposure to violence increases. This suggests that neighborhoods lower in concentrated disadvantage are *less* equipped to control juveniles' violent responses to severe levels of direct and vicarious victimization within the community. Though contrary to our original hypothesis, this finding may reflect variations in parenting strategies by neighborhood characteristics. Specifically, parents facing poor conditions and/or high crime within their neighborhood may feel the need to be more vigilant in limiting their children's unsupervised time on the streets or with peers (Antunes and Ahlin, 2014; 2015; Zuberi 2016), thereby limiting opportunities to engage in violent forms of criminal

coping as a response to perceived and/or experienced strains. Although beyond the scope of this analysis, this may further reflect *interactions* between control and strain mechanisms that intervene in the link between neighborhood structure and violence. Differential levels of collective efficacy may shape residents' strategies for coping with the strain of community violence. For example, Kilewer (2013) finds that parents encourage different coping strategies (e.g., aggression vs. disengagement) in response to victimization, depending on neighborhood levels of collective efficacy. Parents may therefore limit deviant coping opportunities as juveniles experience greater strain, even if the best (or only available) strategy is to simply keep children away from harmful neighborhood environments and/or criminal opportunity.

A final notable result is that race remains significant even in the fully elaborated model, such that Blacks engage in more violence compared to Whites. Although more elaboration is necessary to fully untangle the context for this disparity, Black Americans likely more often reside in neighborhoods higher in concentrated poverty or lacking in protective characteristics such as higher racial heterogeneity. This reflects Sampson and Wilson's (1995) contention that historic patterns of poverty and discrimination have resulted in Black Americans' disproportionate residence in high-poverty communities, limited their ability to escape such conditions, and isolated them from conventional opportunities and behavioral norms. As community exposure to violence emerged as a powerful predictor of youth violence within this sample, future research should continue to explore the relationship between race and ETV-C in neighborhood contexts. For example, due to enduring issues of mistrust and brutality between police and Black communities (Brunson 2007; Brunson and Weitzer 2009; Tyler 2005), neighborhood variation in police practices and/or perceptions of police may partially account for the above racial disparity. Certainly, the perception that police are unreliable would influence coping strategies for both experienced and anticipated violence, and while we generally assume that violence witnessed/experienced in the community is between-residents, a significant proportion of perceived ETV-C in certain neighborhoods could be at the hands of the police. This begs the question of the extent to which micro-level relationships between victimization and violence vary, not just by neighborhood structural characteristics, but also by police practices.

The current study offers significant insight into the multilevel links between neighborhood structural characteristics, individual experiences of strain, and youth violence; nonetheless it is necessary to address a number of limitations. First, research testing MST and/or evaluating multilevel

relationships related to strain processes should include an aggregated measure of negative emotion (e.g., anger, frustration) to determine the extent to which variables identified as "strain" in these analyses motivate criminal coping responses or, rather, operate through other mechanisms such as exposure to criminal models or reduced informal social control. Also, while the micro-level strains that predict violence are analyzed here, these analyses do not constitute a full test of Agnew's (1992, 2007) general strain theory. Considering our main interest is the extent to which multilevel relationships between neighborhood characteristics and strain may account for violence, any consideration of the micro-level conditioning effects and/or intervening mechanisms proposed by GST is not included in these analyses. Moreover, while the analyses reveal clear gender and race effects that persist even in our fully elaborated model, exploring such effects was also beyond the scope of this study. We plan to look more fully at potential variation along these demographic characteristics in future research, as well as investigate additional factors not included in these results, which may more fully account for the complex macro-micro links identified here. It is also important to note that, due to the nature of the PHDCN data, there is at least a two-year temporal lag between our measures of youth strain and subsequent violent behavior theorized to be in response to these strains. While this is less than optimal, some time lag is essential to preserve proper temporal ordering, and this limitation is more likely to skew our results by suppressing findings of significance than magnifying them.

Our results confirm that communities matter in predicting youth violence, shaping behavior in ways both complex and multifaceted. Though just a first step, this study illustrates that we cannot eschew the causal mechanisms and multilevel processes that cut across theoretical perspectives. Thus, studies that draw from strain and control theories need not pit them against one another; given the inherent complexity of criminal behavior, integration rather than competition is likely to produce better theoretical advancement.

Declaration of Conflicting Interests

Funding

ORCID iD

Maria João Lobo Antunes ![ORCID] https://orcid.org/0000-0003-1274-3795

Notes

1. Descriptives are shown in Table 1.
2. We opt for cohort rather than age, as the three cohorts studied here illustrate unique developmental stages (childhood, early- and mid-adolescence) at Wave 1 and transition to critical periods during Waves 2 and 3. We chose to account for cohort differences rather than risk masking potential age-related influences with the use of an age variable (Lauritsen 1998).
3. The percentage change was calculated using the equation percent $= 100*[(\exp(б)*δ)-1]$ where $δ$ is equal to 1.
4. The indirect effect of the mediator M is considered not significantly different from zero if zero is contained within the confidence intervals, bootstrapping resamples $= 5,000$.

References

Agnew, Robert. 1992. "Foundation for a General Strain Theory of Crime and Delinquency." *Criminology* 30(1):47-88.

Agnew, Robert. 1999. "A General Strain Theory of Community Differences in Crime Rates." *Journal of Research in Crime and Delinquency* 36(2):123-55.

Agnew, Robert. 2001. "Building on the Foundation of General Strain Theory: Specifying the Types of Strain Most Likely to Lead to Crime and Delinquency." *Journal of Research in Crime and Delinquency* 38(4):319-61.

Agnew, Robert. 2002. "Experienced, Vicarious, and Anticipated Strain: An Exploratory Study on Physical Victimization and Delinquency." *Justice Quarterly* 19(4):603-32.

Agnew, Robert. 2006. *Pressured into Crime: An Overview of General Strain Theory*. Boston, MA: Roxbury.

Agnew, Robert. 2013. "When Criminal Coping Is Likely: An Extension of General Strain Theory." *Deviant Behavior* 34(8):653-70.

Agnew, Robert, Cesar J. Rebellon, and Sherod Thaxton. 2000. "A General Strain Theory Approach to Families and Delinquency." in *Families, Crime and Criminal Justice*, edited by Greer L. Fox and Michael L. Benson. JAI Press.

Agnew, Robert and Helene Raskin White. 1992. "An Empirical Test of General Strain Theory." *Criminology* 30(4):475-500.

Aguilar-San Juan, Karin. 2005. "Staying Vietnamese: Community and Place in Orange County and Boston." *City & Community* 4(1):37-65.

Ainsworth, James W. 2002. "Why Does It Take a Village? The Mediation of Neighborhood Effects on Educational Achievement." *Social Forces* 81(1): 117-52.

Akins, Scott, Rubén G. Rumbaut, and Richard Stansfield. 2009. "Immigration, Economic Disadvantage, and Homicide: A Community-Level Analysis of Austin, Texas." *Homicide Studies* 13(3):307-14.

Antunes, Maria J. L. and Eileen M. Ahlin. 2014. "Family Management and Youth Violence: Are Parents or Community More Salient?" *Journal of Community Psychology* 42(3):316-337.

Antunes, Maria J. L. and Eileen M. Ahlin. 2017. "Youth Exposure to Violence in the Community: Towards a Theoretical Framework for Explaining Risk and Protective Factors." *Aggression and Violent Behavior* 34:166-177.

Antunes, Maria J. L. and Eileen M. Ahlin. 2021. "Minority and Immigrant Youth Exposure to Community Violence: The Differential Effects of Family Management and Peers." *Journal of Interpersonal Violence* 36(3–4):NP1883-1912NP.

Armstrong, Todd A., Charles M. Katz, and Stephen M. Schnebly. 2015. "The Relationship between Citizen Perceptions of Collective Efficacy and Neighborhood Violent Crime." *Crime & Delinquency* 61(1):121-42.

Bao, Wan-Ning, Ain Haas, and Yijun Pi. 2004. "Life Strain, Negative Emotions, and Delinquency: An Empirical Test of General Strain Theory in the People's Republic of China." *International Journal of Offender Therapy and Comparative Criminology* 48(3):281-97.

Baron, Reuben M. and David A. Kenny. 1986. "The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology* 51(6): 1173-1182.

Bellair, Paul E. 1997. "Social Interaction and Community Crime: Examining the Importance of Neighbor Networks." *Criminology* 35(4):677-704.

Benson, Michael L., Greer Litton Fox, Alfred DeMaris, Judy Van Wyk, and M. L. Benson. 2000. "Violence in Families: The Intersection of Race, Poverty, and Community Context." *Families, Crime and Criminal Justice* 2:91-109.

Bernard, Thomas J. 1990. "Twenty Years of Testing Theories: What Have We Learned and Why?" *Journal of Research in Crime and Delinquency* 27(4): 325-47.

Bersani, Bianca E. 2014. "An Examination of First and Second Generation Immigrant Offending Trajectories." *Justice Quarterly* 31(2):315-43.

Bingenheimer, Jeffrey B., Robert T. Brennan, and Felton J. Earls. 2005. "Firearm Violence Exposure and Serious Violent Behavior." *Science* 308(5726): 1323-1326.

Botchkovar, Ekaterina V., Olena Antonaccio, and Lorine A. Hughes. 2017. "Neighbourhood Disorder, Collective Sentiments and Personal Strain: Bringing Neighbourhood Context into General Strain Theory." *The British Journal of Criminology* 58(2):455-77.

Brezina, Timothy, Alex R. Piquero, and Paul Mazerolle. 2001. "Student Anger and Aggressive Behavior in School: An Initial Test of Agnew's Macro-Level Strain Theory." *Journal of Research in Crime and Delinquency* 38(4):362-86.

Brookmeyer, Kathryn A., Christopher C. Henrich, and Mary Schwab-Stone. 2005. "Adolescents Who Witness Community Violence: Can Parent Support and Prosocial Cognitions Protect Them from Committing Violence?" *Child Development* 76(4):917-29.

Browning, Christopher R., Tama Leventhal, and Jeanne Brooks-Gunn. 2005. "Sexual Initiation in Early Adolescence: The Nexus of Parental and Community Control." *American Sociological Review* 70(5):758-78.

Brunson, Rod K. 2007. "'Police Don't like Black People': African-American Young Men's Accumulated Police Experiences." *Criminology & Public Policy* 6(1): 71-101.

Brunson, Rod K. and Ronald Weitzer. 2009. "Police Relations with Black and White Youths in Different Urban Neighborhoods." *Urban Affairs Review* 44(6):858-85.

Burchfield, Keri B. and Eric Silver. 2013. "Collective Efficacy and Crime in Los Angeles Neighborhoods: Implications for the Latino Paradox." *Sociological Inquiry* 83(1):154-76.

Bursik, Robert J., Jr. 1988. "Social Disorganization and Theories of Crime and Delinquency: Problems and Prospects." *Criminology* 26(4):519-552.

Bursik, Robert J., Jr. and Harold G. Grasmick. 1999. *Neighborhoods & Crime*. Maryland: Lexington Books.

Cloward, Richard and Lloyd Ohlin. 1960. *Delinquency and Opportunity: A Theory of Delinquent Gangs*. Glencoe, IL: Free Press.

Cohen, Albert K. 1955. *Delinquent Boys; The Culture of the Gang*. Free Press.

Cudmore, Rebecca M., Carlos A. Cuevas, and Chiara Sabina. 2017. "The Impact of Polyvictimization on Delinquency Among Latino Adolescents: A General Strain Theory Perspective." *Journal of Interpersonal Violence*, 32(17):2647-67.

DeCoster, Stacy, Karen Heimer, and Stacy M. Wittrock. 2006. "Neighborhood Disadvantage, Social Capital, Street Context, and Youth Violence." *The Sociological Quarterly* 47(4):723-53.

DiPietro, Stephanie M. and Jaclyn Cwick. 2014. "Gender, Family Functioning, and Violence across Immigrant Generations." *Journal of Research in Crime and Delinquency* 51(6):785-815.

Eitle, David and R. Jay Turner. 2002. "Exposure to Community Violence and Young Adult Crime: The Effects of Witnessing Violence, Traumatic Victimization, and Other Stressful Life Events." *Journal of Research in Crime and Delinquency* 39(2):214-37.

Elliott, Delbert S., Suzanne S. Ageton, and David Huizinga. 1982. *Explaining Delinquency and Drug Use*. Behavioral Research Inst. National Institute of Justice Report. (https://www.ojp.gov/ncjrs/virtual-library/abstracts/explaining-delinquency-and-drug-use).

Elliott, Delbert S., William Julius Wilson, David Huizinga, Robert J. Sampson, Amanda Elliott, and Bruce Rankin. 1996. "The Effects of Neighborhood Disadvantage on Adolescent Development." *Journal of Research in Crime and Delinquency* 33(4):389-426.

Evans, Sara Z., Leslie Gordon Simons, and Ronald L. Simons. 2012. "The Effect of Corporal Punishment and Verbal Abuse on Delinquency: Mediating Mechanisms." *Journal of Youth and Adolescence* 41(8):1095-110.

Ford, Jason A. and Ryan D. Schroeder. 2008. "Academic Strain and Non-Medical Use of Prescription Stimulants among College Students." *Deviant Behavior* 30(1):26-53.

Gardner, Margo and Jeanne Brooks-Gunn. 2009. "Adolescents' Exposure to Community Violence: Are Neighborhood Youth Organizations Protective?" *Journal of Community Psychology* 37(4):505-25.

Gorman-Smith, Deborah, David B. Henry, and Patrick H. Tolan. 2004. "Exposure to Community Violence and Violence Perpetration: The Protective Effects of Family Functioning." *Journal of Clinical Child and Adolescent Psychology* 33(3):439-49.

Graif, Corina and Robert J. Sampson. 2009. "Spatial Heterogeneity in the Effects of Immigration and Diversity on Neighborhood Homicide Rates." *Homicide Studies* 13(3):242-60.

Hay, Carter. 2003. "Family strain, gender, and delinquency." *Sociological Perspectives* 46(1):107-35.

Hay, Carter and Michelle M. Evans. 2006. "Violent Victimization and Involvement in Delinquency: Examining Predictions from General Strain Theory." *Journal of Criminal Justice* 34(3):261-74.

Hayes, Andrew F. 2017. *Introduction to Mediation, Moderation, and Conditional Process Analysis, Second Edition: A Regression-Based Approach*. New York Guilford Publications.

Hoffmann, John P. 2003. "A Contextual Analysis of Differential Association, Social Control, and Strain Theories of Delinquency." *Social Forces* 81(3): 753-85.

Hoffmann, John P. and Felicia G. Cerbone. 1999. "Stressful life Events and Delinquency Escalation in Early Adolescence." *Criminology* 37(2):343-374.

Hollist, Dusten R., Lorine A. Hughes, and Lonnie M. Schaible. 2009. "Adolescent Maltreatment, Negative Emotion, and Delinquency: An Assessment of General Strain Theory and Family-based Strain." *Journal of Criminal Justice* 37(4): 379-87.

Jennings, Wesley J., Nicole L. Piquero, Angela R. Gover, and Deanna M. Perez. 2009. "Gender and general strain theory: A replication and exploration of Broidy and Agnew's gender/strain hypothesis among a sample of southwestern Mexican American adolescents." *Journal of Criminal Justice* 37(4):404-17.

Kilewer, Wendy. 2013. "The Role of Neighborhood Collective Efficacy and Fear of Crime in Socialization of Coping with Violence in Low-Income Communities." *Journal of Community Psychology* 41(8):920-30.

Kingsley, G. Thomas and Kathryn L. S. Pettit. 2007. "Concentrated Poverty: Dynamics of Change." *Neighborhood Change in Urban America*. Washington, DC: Urban Institute.

Kort-Butler, Lisa A. 2010. "Experienced and Vicarious Victimization: Do Social Support and Self-Esteem Prevent Delinquent Responses?" *Journal of Criminal Justice* 38(4):496-505.

Kubrin, Charis E. and Hiromi Ishizawa. 2012. "Why Some Immigrant Neighborhoods Are Safer Than Others: Divergent Findings from Los Angeles and Chicago." *The Annals of the American Academy of Political and Social Science* 641(1):148-73.

Kubrin, Charis E. and Scott A. Desmond. 2015. "The Power of Place Revisited: Why Immigrant Communities Have Lower Levels of Adolescent Violence." *Youth Violence and Juvenile Justice* 13(4):345-66.

Lauritsen, Janet L. 1998. "The Age-Crime Debate: Assessing the Limits of Longitudinal Self-Report Data." *Social Forces* 77(1):127-54.

Lee, Matthew T. and Ramiro Martinez. 2009. "Immigration Reduces Crime: An Emerging Scholarly Consensus." Pp. 3-16 in *Immigration, Crime and Justice*, edited by W. McDonald. UK: Emerald Group Publishing Limited.

Lee, Valerie E. and Anthony S. Bryk. 1989. "A Multilevel Model of the Social Distribution of High School Achievement." *Sociology of Education* 62(3): 172-92.

Leventhal, Tama and Jeanne Brooks-Gunn. 2000. "The Neighborhoods they Live in: The Effects of Neighborhood Residence on Child and Adolescent Outcomes." *Psychological Bulletin* 126(2):309.

Lin, Wen-Hsu and Chin-Chun Yi. 2013. "Family and School Strains and Their Effects on Adolescent Deviance in Taiwan: A Mediating Study." *Youth & Society* 48(4): 496-520.

Lin, Wen-Hsu, John K. Cochran, and Thomas Mieczkowski. 2011. "Direct and Vicarious Violent Victimization and Juvenile Delinquency: An Application of General Strain Theory." *Sociological Inquiry* 81(2):195-222.

Lowenkamp, Christopher T., Francis T. Cullen, and Travis C. Pratt. 2003. "Replicating Sampson and Groves's Test of Social Disorganization Theory: Revisiting a Criminological Classic." *Journal of Research in Crime and Delinquency* 40(4):351-73.

Ludwig, Jens, Greg J. Duncan, and Paul Hirschfield. 2000. "Urban Poverty and Juvenile Crime: Evidence from a Randomized Housing-Mobility Experiment." *The Quarterly Journal of Economics* 116(2):655-679.

Maimon, David and Christopher R. Browning. 2010. "Unstructured Socializing, Collective Efficacy, and Violent Behavior Among Urban Youth*." *Criminology* 48(2):443-74.

Markowitz, Fred E., Paul E. Bellair, Allen E. Liska, and Jianhong Liu. 2001. "Extending Social Disorganization Theory: Modeling the Relationships between Cohesion, Disorder, and Fear." *Criminology* 39(2):293-319.

Martinez, Ramiro, Jr., Jacob I. Stowell, and Jeffrey M. Cancino. 2008. "A Tale of Two Border Cities: Community Context, Ethnicity, and Homicide." *Social Science Quarterly* 89(1):1-16.

Martinez, Ramiro, Jr., Jacob I. Stowell, and Matthew T. Lee. 2010. "Immigration and Crime in an Era of Transformation: A Longitudinal Analysis of Homicides in San Diego Neighborhoods, 1980–2000." *Criminology* 48(3):797-829.

Mazerolle, Paul, Velmer S. Burton, Jr. Francis T. Cullen, T. David Evans, and Gary L. Payne. 2000. "Strain, Anger, and Delinquent Adaptations Specifying General Strain Theory." *Journal of Criminal Justice* 28(2):89-101.

Mazerolle, Paul and Alex Piquero. 1997. "Violent Responses to Strain: An Examination of Conditioning Influences." *Violence and Victims* 12(4):323.

Molnar, Beth E., Stephen L. Buka, Robert T. Brennan, John K. Holton, and Felton Earls. 2003. "A Multilevel Study of Neighborhoods and Parent-to-Child Physical Aggression: Results from the Project on Human Development in Chicago Neighborhoods." *Child Maltreatment* 8(2):84-97.

Molnar, Beth E., Stephen L. Buka, and Ronald C. Kessler. 2001. "Child Sexual Abuse and Subsequent Psychopathology: Results from the National Comorbidity Survey." *American Journal of Public Health* 91(5):753.

Molnar, Beth E., Magdalena Cerda, Andrea L. Roberts, and Stephen L. Buka. 2008. "Effects of Neighborhood Resources on Aggressive and Delinquent Behaviors among Urban Youths." *American Journal of Public Health* 98(6):1086-1093.

Moon, Byongook, David Blurton, and John D. McCluskey. 2008. "General Strain Theory and Delinquency: Focusing on the Influences of Key Strain Characteristics on Delinquency." *Crime & Delinquency* 54(4):582-613.

Moon, Byongook and Merry Morash. 2014. "Gender and General Strain Theory: A Comparison of Strains, Mediating, and Moderating Effects Explaining Three Types of Delinquency." *Youth & Society* 49(4):484-504.

Morenoff, Jeffrey D. and Avraham Astor. 2006. "Immigrant Assimilation and Crime." *Immigration and Crime: Race, Ethnicity, and Violence* July(1):36-63.

Muftić, Lisa R. 2009. "Macro-Micro Theoretical Integration: An Unexplored Theoretical Frontier." *Journal of Theoretical & Philosophical Criminology* 1(2):33-71.

Murphy, Sherry L., Jiaquan Xu, and Kenneth D. Kochanek. 2013. "Deaths: Final Data for 2010." *National Vital Statistics Reports*, 61(4), 1-117.

Ostrowsky, Michael K. and Steven F. Messner. 2005. "Explaining Crime for a Young Adult Population: An Application of General Strain Theory." *Journal of Criminal Justice* 33(5):463-76.

Ousey, Graham C. and Charis E. Kubrin. 2009. "Exploring the Connection between Immigration and Violent Crime Rates in US Cities, 1980–2000." *Social Problems* 56(3):447-73.

Paternoster, Raymond and Paul Mazerolle. 1994. "General Strain Theory and Delinquency: A Replication and Extension." *Journal of Research in Crime and Delinquency* 31(3):235-263.

Piquero, Nicole Leeper and Miriam D. Sealock. 2004. "Gender and General Strain Theory: A Preliminary Test of Broidy and Agnew's Gender/GST Hypotheses." *Justice Quarterly* 21(1):125-58.

Portes, Alejandro and Rubén G. Rumbaut. 2001. *Legacies: The Story of the Immigrant Second Generation*. Berkeley: University of California Press.

Price, Cynthia and Jenifer Kunz. 2003. "Rethinking the Paradigm of Juvenile Delinquency as Related to Divorce."*Journal of Divorce & Remarriage*39(1-2): 109-133.

Rankin, Bruce H. and James M. Quane. 2002. "Social Contexts and Urban Adolescent Outcomes: The Interrelated Effects of Neighborhoods, Families, and Peers on African-American Youth." *Social Problems* 49(1):79-100.

Raudenbush, Stephen W. and Anthony S. Bryk. 2002. *Hierarchical Linear Models: Applications and Data Analysis Methods*. Vol. 1. Thousand Oaks, CA: Sage.

Raudenbush, Stephen W., Christopher Johnson, and Robert J. Sampson. 2003. "A Multivariate, Multilevel Rasch Model with Application to Self–Reported Criminal Behavior." *Sociological Methodology* 33(1):169-211.

Rebellon, Cesar J. 2002. "Reconsidering the Broken Homes/Delinquency Relationship and Exploring its Mediating Mechanism(s)." *Criminology* 40(1):103-36.

Reid, Lesley Williams, Harald E. Weiss, Robert M. Adelman, and Charles Jaret. 2005. "The Immigration–Crime Relationship: Evidence across US Metropolitan Areas." *Social Science Research* 34(4):757-80.

Rountree, Pamela Wilcox and Barbara D. Warner. 1999. "Social Ties and Crime: Is the Relationship Gendered?" *Criminology* 37(4):789-814.

Sampson, Robert J. and W. Byron Groves. 1989. "Community Structure and Crime: Testing Social-Disorganization Theory." *American Journal of Sociology* 94(4): 774-802.

Sampson, Robert J., Jeffrey D. Morenoff, and Stephen Raudenbush. 2005. "Social Anatomy of Racial and Ethnic Disparities in Violence." *American Journal of Public Health* 95(2):224-32.

Sampson, Robert J., Stephen W. Raudenbush, and Felton Earls. 1997. "Neighborhoods and Violent Crime: A Multilevel Study of Collective Efficacy." *Science* 277(5328):918-24.

Sampson, Robert J. and William Julius Wilson. 1995. "Toward a Theory of Race, Crime and Urban Inequality." Pp. 37-56 in *Crime and Inequality*, edited by John Hagan and Ruth D. Peterson. Stanford, CA: Stanford University.

Sharkey, Patrick T. 2006. "Navigating Dangerous Streets: The Sources and Consequences of Street Efficacy." *American Sociological Review* 71(5):826-46.

Shaw, Clifford Robe and Henry Donald McKay. 1942. *Juvenile Delinquency and Urban Areas*. Chicago: University of Chicago Press.

Sigfusdottir, Inga-Dora, George Farkas, and Eric Silver. 2004. "The role of depressed mood and anger inthe relationship between family conflict and delinquent behavior." *Journal of Youth and Adolescence* 33(6):509-22.

Simons, Ronald L., Leslie Gordon Simons, Callie Harbin Burt, Gene H. Brody, and Carolyn Cutrona. 2005. "Collective Efficacy, Authoritative Parenting and Delinquency: A Longitudinal Test of a Model Integrating Community-and Family-Level Processes." *Criminology* 43(4):989-1029.

Song, Juyoung. 2020. "Patterns and Explanations of Delinquency among Korean Youth Using General Strain Theory." *Children and Youth Services Review* 114. doi: 10.1016/j.childyouth.2020.105080.

Spano, Richard, Craig Rivera, and John Bolland. 2006a. "The Impact of Timing of Exposure to Violence on Violent Behavior in a High Poverty Sample of Inner City African American Youth." *Journal of Youth and Adolescence* 35(5): 681-92.

Spano, Richard, Craig Rivera, and John Bolland. 2006b. "The Impact of Timing of Exposure to Violence on Violent Behavior in a High Poverty Sample of Inner City African American Youth." *Journal of Youth and Adolescence* 35(5):681-92.

Spohn Ryan, E. and Don Kurtz. 2011. "Family Structure as a Social Context for Family Conflict: Unjust Strain and Serious Delinquency." *Criminal Justice Review*, 36(3):332-56.

Stowell, Jacob I., Steven F. Messner, Kelly F. McGeever, and Lawrence E. Raffalovich. 2009. "Immigration and the Recent Violent Crime Drop in the United States: A Pooled, Cross-Sectional Time-Series Analysis of Metropolitan Areas." *Criminology* 47(3):889-928.

Straus, Murray A. 1979. "Measuring Intrafamily Conflict and Violence: The Conflict Tactics (CT) Scales." *Journal of Marriage and the Family* February(1):75-88.

Thaxton, Sherod and Robert Agnew. 2018. "When Criminal Coping is Likely: An Examination of Conditioning Effects in General Strain Theory." *Journal of Quantitative Criminology* 34:887-920.

Tyler, Tom R. 2005. "Policing in Black and White: Ethnic Group Differences in Trust and Confidence in the Police." *Police Quarterly* 8(3):322-42.

Veysey, Bonita M. and Steven F. Messner. 1999. "Further Testing of Social Disorganization Theory: An Elaboration of Sampson and Groves's 'Community Structure and Crime.'" *Journal of Research in Crime and Delinquency* 36(2): 156-74.

Wareham, Jennifer, John K. Cochran, Richard Dembo, and Christine S. Sellers. 2005. "Community, Strain, and Delinquency: A Test of a Multi-Level Model of General Strain Theory." *Western Criminology Review* 6(1): 117-33.

Warner, Barbara D. and Shannon K. Fowler. 2003. "Strain and Violence: Testing a General Strain Theory Model of Community Violence." *Journal of Criminal Justice* 31(6):511-21.

Warner, Barbara D. and Pamela Wilcox Rountree. 1997. "Local Social Ties in a Community and Crime Model: Questioning the Systemic Nature of Informal Social Control." *Social Problems* 44(4):520-36.

Wellford, Charles F. 1989. "Towards an Integrated Theory of Criminal Behavior." Pp. 119-127 in *Theoretical Integration in the Study of Deviance and Crime: Problems and Prospects*, edited by Steven J. Messner, Marvin D. Krohn, and Allen E. Liska. Albany: State University of New York Press.

Wemmers, Jo-Anne, Katie Cyr, Claire Chamberland, Genevieve Lessard, Delphine Collin-Vezina, and Marie-Eve Clement. 2017. "From Victimization to Criminalization: General Strain Theory and the Relationship Between Poly-victimization and Delinquency." *Victims & Offenders* 13(4):542-57.

Wilson, William Julius. 1987. *The Truly Disadvantaged: The Inner City, the Underclass, and Public Policy*. Chicago: University of Chicago.

Zimmerman, Gregory M. and Steven F. Messner. 2010. "Neighborhood Context and the Gender Gap in Adolescent Violent Crime." *American Sociological Review* 75(6):958-80.

Zimmerman, Gregory M. and Steven F. Messner. 2013. "Individual, Family Background, and Contextual Explanations of Racial and Ethnic Disparities in Youths' Exposure to Violence." *American Journal of Public Health* 103(3): 435-42.

Zimmerman, Gregory M. and Chad Posick. 2016. "Risk Factors for and Behavioral Consequences of Direct versus Indirect Exposure to Violence." *American Journal of Public Health* 106(1):178-88.

Zuberi, Anita. 2016. "Neighborhoods and Parenting: Assessing the Influence of Neighborhood Quality on the Parental Monitoring of Youth." *Youth & Society* 48(5):599-627.

Author Biographies

Maria João Lobo Antunes is an Assistant Professor in the Department of Sociology, Anthropology & Criminal Justice at Towson University and is a 2016 recipient of the National Institute of Justice's W. E. B. Du Bois Fellowship. Her research focuses on intersections of neighborhood and youth negative outcomes, primarily violence and victimization. Her most recent scholarship can be seen in Feminist Criminology, Aggression and Violent Behavior, Youth Violence and Juvenile Justice, and Journal of Youth and Adolescence.

Michelle Manasse is a professor in the Department of Sociology, Anthropology & Criminal Justice at Towson University, where her work has primarily focused on criminological theory testing and elaboration. Her most recent publications have appeared in Women & Criminal Justice and Feminist Criminology.