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**NEIGHBORHOOD DISADVANTAGE, STRAIN, AND INTIMATE PARTNER VIOLENCE:
LINKING STRUCTURAL CONTEXT TO EMOTIONAL RESPONSE**

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ABSTRACT

Objectives. Many theoretical treatments of intimate partner violence (IPV) focus on micro-level processes, and dynamics associated with social control theories. Some researchers have attempted to situate IPV within the larger neighborhood context but few studies have sought to link macro-level social structural factors *and* micro-level processes. The current analyses fill a research gap by examining IPV from the combined lenses of strain theory, gendered emotions, and the mental health literature.

Methods. Using data from waves one and four of the Toledo Adolescent Relationships Study (TARS) and from the 2000 Census, this study employs hierarchical logistic regression models to highlight complex associations between neighborhood structure, social psychological processes (anger and depression), and the experience of IPV.

Results. Findings indicate that social psychological processes mediate the influence of structural disadvantage on IPV. Further, results suggest that structural strain moderates the effect of emotional responses, and that these processes operate differently for men and women.

Conclusions. Results underscore the need to move beyond a micro- and social control-oriented focus of IPV, and suggest the need for additional research to explore other emotional mediators and neighborhood characteristics that can amplify or perhaps ameliorate partner violence.

INTRODUCTION

Recent data from the National Intimate Partner and Sexual Violence Survey demonstrate that roughly 1 in 3 women (32.9%) and more than 1 in 4 men (28.2%) have experienced physical violence by an intimate partner in their lifetimes, and nearly half of women (47%) and two-fifths of men (39%) experienced this violence when they were between the ages of 18 and 24 (Black et al. 2011). There are significant consequences associated with intimate partner violence (IPV) across different health domains (Basile and Smith 2011; Breiding, Black, and Ryan 2005; Coker et al. 2002; Logan and Cole 2007; Sutherland, Bybee, and Sullivan 2002). Yet while we know much about certain risk factors and consequences, we know less about the processes that link structural and individual correlates underlying risk for partner violence. Importantly, there is renewed effort to contextualize IPV highlighting higher-order risk factors and processes associated with its risk. Recent prevention efforts note, especially, that we need to reframe the focus of IPV to address not just healthy relationships, but “healthy communities” as well—with the aim to “influence the structural and economic factors that contribute to IPV” (Parks, Cohen, and Kravitz-Wirtz 2007:vi). As such, scholars have begun to focus on how neighborhood context influences partner violence.

Despite renewed efforts to emphasize the importance of the neighborhood setting for understanding IPV risk, scholars still note a need for research that focuses, in particular, on “specifying exactly *how* the neighborhood environment affects experience and perpetration of intimate partner... violence” (Frye and O'Campo 2011:189). Thus, it is an advancement that much recent scholarship has shown that neighborhoods matter for IPV, but we still need to uncover the possible *ways* that they matter. This paper addresses this issue by drawing on strain theory (Agnew 1992; Agnew 1999) to unearth a small piece of the process puzzle. Specifically,

we use data from the Toledo Adolescent Relationships Study (TARS) to examine neighborhood variation in IPV to determine whether there is an indirect association between structural disadvantage and IPV via emotional response indicators at the individual-level (i.e., anger and depressive symptoms). Finally, given gender differences in responses to strain and in the availability of coping resources (Jennings et al. 2009; Piquero and Sealock 2004; Sharp, Brewster, and Love 2005), we examine whether the processes linking structural disadvantage to IPV vary for men and women.

NEIGHBORHOOD STRUCTURE AND INTIMATE PARTNER VIOLENCE

Researchers have described IPV as something that occurs “behind closed doors,” (Straus, Gelles, and Steinmetz 1980) thus alluding to its private nature. In contrast, prior scholarship linking community structural characteristics to violence has focused largely on overall rates of violence or “street” violence rather than IPV. These “culturally pervasive conceptions of the private nature of intimate relationships, however, should not obscure the potential embeddedness of these relationships in broader communities” (Browning 2002:849). Further, DeJong and colleagues note that it makes sense that structural characteristics would be associated with IPV just as with other forms of violence because perpetrators and victims of all types of violence “are likely to reside in the same neighborhoods and thus experience the same social structure” (2011:373). Moreover, structural disadvantage leads to normative acceptance of all kinds of violence, and thus “individuals in these neighborhoods are likely to react to situations with violence both inside and outside the home” (DeJong, Pizarro, and McGarrell 2011:373). In line with this argument, much of the current scholarship linking neighborhood structure to IPV highlights economic disadvantage as an especially salient factor.

Several studies have examined community rates of IPV as an outcome of community-level economic factors, while other studies have situated the *individual* experience of IPV within the neighborhood context of disadvantage. For example, starting in the mid-1990s, scholars began examining the association between community economic factors and IPV, although with rather restricted samples. O'Campo and colleagues' (1995) research is perhaps the first to demonstrate an association between tract-level unemployment rates and increased odds of IPV among low-income women in Baltimore. Miles-Doan (1998) showed that higher levels of disadvantage are associated with increased rates of IPV in a single county in Florida. Other studies using samples of one or two cities, counties, or states also found significant associations between indices of economic deprivation/disadvantage and IPV (DeJong, Pizarro, and McGarrell 2011; Diem and Pizarro 2010; Frye and Wilt 2001; Li et al. 2010; Wooldredge and Thistlethwaite 2003; Wu 2009) or between poverty levels and IPV (Pearlman et al. 2003). Few of these studies, however, examine potential social or psychological mediators of structural disadvantage on IPV.

In the past decade, a number of studies have used the Project on Human Development in Chicago Neighborhoods (PHDCN) to examine the link between structural disadvantage and IPV. Some studies using these data do address social processes that either mediate or moderate the effect of neighborhood disadvantage on partner violence. Browning (2002) found that an index of concentrated disadvantage was associated with higher rates of intimate partner homicides against women, but this relationship was mediated by collective efficacy. Others have examined the role of other social processes beyond collective efficacy; a number of recent studies by Wright and colleagues (Wright 2012; Wright and Benson 2010; Wright and Benson 2011) found that this same index of disadvantage increased risk of IPV, but also that disadvantage

conditioned individual levels of social support, such that the positive effect of social support diminished in neighborhoods higher in disadvantage (Wright 2012). Thus, neighborhood disadvantage matters in its own right, but it also contextualizes the influence of other micro-level resources. A recent study by Jain and colleagues (2010) using PHDCN data found that neighborhood poverty moderates the association between collective efficacy and IPV, but only for men. That is, higher collective efficacy reduces the risk of male perpetration, but only in communities with low- to moderate- poverty levels. The relationship between collective efficacy and IPV deserves more attention; collective efficacy has been identified as an important mediating mechanism in the link between concentrated disadvantage and levels of street and gang violence (Morenoff, Sampson, and Raudenbush 2001; Sampson 2012; Sampson, Raudenbush, and Earls 1997) yet these are types of violence that occur in the public realm. The above research using the PHDCN demonstrates that collective efficacy plays an important role in predicting IPV, and other forms of violence, but it is unclear whether this relationship holds for other settings outside Chicago.

In addition to community studies, there are important nationally representative studies that examine the link between neighborhood economic disadvantage and IPV. Cunradi and colleagues (2000) used the National Alcohol Survey (NAS) to demonstrate an increased likelihood of IPV for African Americans, and of female-perpetrated IPV for African American and White individuals living in higher-poverty neighborhoods. Using the National Crime Victimization Survey (NCVS), Lauritsen and Schaum (2004) found that higher poverty levels *decreased* IPV, but caution against drawing conclusions because this finding might be due to multicollinearity or spuriousness. Finally, a number of studies rely on data from the National Survey of Families and Households (NSFH) to examine the relationship between community

disadvantage and IPV. These studies (Benson et al. 2003; Benson et al. 2004; DeMaris et al. 2003; Fox and Benson 2006; Van Wyk et al. 2003) consistently report that higher levels of neighborhood disadvantage are associated with increased risk of IPV.

The body of literature linking neighborhood structure and IPV is relatively new, and has yet to systematically examine additional mediating processes (in particular, emotions) or gender differences. This is somewhat surprising given the attention to the gendered nature of IPV as a form of violence. Nevertheless, there may be reason to expect the association between neighborhood disadvantage and IPV to vary as a function of gender. For example, much criminological research argues that young men form subcultural values that accept violence as a mechanism for attaining status (Cohen 1955; Messerschmidt 1993; Willis 1977). This value system is more likely to exist in disadvantaged contexts as an adaptation to reduced opportunities for status in “legitimate” realms (Anderson 1999). Women, on the other hand, have other opportunities to “do gender” or attain status in nonviolent ways (Anderson 1999; Edin and Kefalas 2005), even in disadvantaged contexts. This suggests that concentrated disadvantage may be especially salient for IPV among males. Alternatively, concentrated disadvantage has been linked to restricted marriage markets for women, especially minorities who are spatially and socially isolated from mainstream institutions (Massey and Shibuya 1995; South and Crowder 1999; Wilson and Neckerman 1986). As such, the restricted pool of available partners from which women in disadvantaged settings can draw may lead to less stable partnering (e.g., cohabitation rather than marriage), which has been linked to increased risk of IPV for women (Brown and Bulanda 2008). Thus, neighborhood disadvantage may have especially salient influences on IPV for women compared to men.

THEORETICAL MECHANISMS

While there is a growing body of scholarship investigating the link between neighborhood disadvantage and IPV, the theoretical focus has been narrow. Of all the studies conducted in the United States in the past 12 years examining community characteristics as risk factors for IPV, the theoretical underpinning is most often either a version of social disorganization theory (Shaw and McKay 1942) or a particular theoretical framework is not identified (VanderEnde et al. 2012).¹ As such, the expectation is that neighborhood characteristics influence IPV through community-level social processes, such as collective efficacy, social control, and/or social cohesion, although there is mixed support in the literature for these mediational processes (Browning 2002; Caetano, Ramisetty-Mikler, and Harris 2010; Frye et al. 2008; Wright and Benson 2011). However, little research has explored alternative explanations for how neighborhood disadvantage influences relationship violence, particularly mechanisms emphasized by strain theories. Agnew (1999) explicitly argued for structural community characteristics to influence crime/violence directly, but also indirectly via social psychological processes. That is, neighborhood disadvantage or other neighborhood characteristics "...will have a significant direct effect on individual crime after individual-level variables are controlled. Communities also have an indirect effect on strain by influencing individual traits and the individual's immediate social environment" (Agnew 1999:128). Hence, there is an assumed *multilevel* process at work, in which neighborhoods influence criminal outcomes through micro-level social processes.

Despite renewed interest in strain theory after Agnew (1999) expanded it to apply to communities (i.e., Macro General Strain Theory (MGST)), there are few empirical tests

¹ Studies outside the U.S., for example in Haiti or India, are more likely to use feminist theories, or examine levels of gendered access to resources such as education or literacy (see, for example, Ackerson et al. 2008; Gage and Hutchinson 2006).

examining whether neighborhood or other macro-level characteristics influence crime/violence via the proposed strain processes outlined (removal of positive stimuli, failure to achieve positively valued goals, presence of negative stimuli), or whether they influence emotional responses. Warner and Fowler (2003) provided an empirical test of the theory, and found some support for Agnew's macro-level propositions. Specifically, they found that neighborhood levels of disadvantage and residential stability influenced neighborhood strain, and neighborhood strain increased neighborhood violence.

Although Agnew's MGST (1999) was not explicitly presented as a multilevel theory, most empirical tests examine the extent to which community characteristics influence individual levels of strain. Much of that research focuses on whether the effects of strain on individual behavior are especially salient within disadvantaged contexts. Wareham and colleagues (2005) examined the relationships between community characteristics, strain, and delinquency. Their initial findings do not support a multilevel model of general strain theory (supplemental analyses reveal variation in the relationships between strain, negative affect, and delinquency across communities). Hoffmann (2002) provided a multilevel analysis of differential association, social control, and strain theories using data from the Census and the National Educational Longitudinal Study (NELS). The results indicated that individual-level strain and community characteristics are related to delinquency, but strain at the individual-level did not mediate the relationship between community characteristics and delinquency.

Empirical tests of MGST have also taken place at the school-level. Brezina and colleagues (2001) found that school-level anger was related to school- and individual-level aggression, providing strong support for a multilevel model of strain theory. Hoffmann and Ireland (2004) examined the role of school opportunity structure on individual offending.

Specifically, they expected the relationship between individual strain and offending to be more robust in schools high in illegitimate opportunity structures, but the results did not support their hypothesis. More recently, Op de Beek and colleagues (2012) found that although school-level strain does influence individual violent offending, strain at the individual-level does not mediate this relationship. The limited empirical evidence provides mixed support for a macro-micro version of Agnew's GST. Most of the research cited above, however, focuses on delinquency and school structure and not young adult violence and neighborhoods. The link between neighborhoods, emotions, and young adult IPV has received scant attention. The logical extension is that affective states such as depressive symptoms and anger serve as social psychological responses to living in disadvantaged communities, and that intimate partner violence is a manifestation of these emotions.² Research has examined the former link, but not the latter.

NEIGHBORHOOD STRUCTURE AND EMOTIONAL MALADAPTATION

There is a growing body of work that situates mental health within the larger neighborhood structural context, although the overwhelming focus has been on depression as an outcome. The literature generally excludes other expressive adaptations, such as anger.

Moreover, the focus on mental health as an outcome fails to consider emotional responses as potential linking mechanisms, or triggers, for subsequent behavioral outcomes, such as IPV.

² The theoretical perspective put forth in the current study suggests that the development of negative emotions stems from the neighborhood environment. Disorderly neighborhood conditions contribute to feelings of hopelessness and abandonment—among an already vulnerable population—fostering heightened levels of anger and distress. Those negative emotions are then carried into an individual's intimate relationship, placing them at higher risk of IPV. An alternative explanation suggests that the structural context of the neighborhood influences the characteristics of romantic relationships, including emotional responses to sources of conflict (Giordano et al. 2013). These two perspectives are not competing; it is likely that the neighborhood context does shape emotional responses, but this does not preclude the role of relational considerations in further shaping and influencing their expression.

Early Chicago School research suggested that mental disorders, like other social ills, were spatially concentrated in the most disadvantaged areas in and around the city center (Faris and Dunham 1939). Researchers originally recognized this spatial pattern in aggregate data. Yet contemporary work examining the effects of individual- and neighborhood-level indicators of socioeconomic status on individual and aggregate rates of mental health indicators has found significant associations (Galea et al. 2005; Matheson et al. 2006; Ross 2000; Ross and Mirowsky 2009; Ross, Reynolds, and Geis 2000; Silver, Mulvey, and Swanson 2002). The majority of the research in this area uses the stress process model as an orienting framework (Aneshensel 2009). This perspective suggests that contextual factors serve as stressors that influence an individual's mental health and emotional well-being. Much of this work focuses on the link between objective neighborhood conditions, including poverty and residential instability, and mental health (Galea et al. 2005; Kim 2010; Matheson et al. 2006; Ross 2000). Moreover, the largest body of work assumes that perceptions of neighborhood disorder are crucial mediators in the link between neighborhood conditions and mental health (Kim 2010; Latkin and Curry 2003; Ross 2000; Ross and Mirowsky 2009; Schieman and Meersman 2004; Snedker and Hooven 2013). For example, Ross (2000), examining the association between neighborhood disadvantage and adult depression, found that perceived neighborhood disorder mediated the effect of female headship and poverty on depression. Similarly, Kim (2010) found that perceptions of disorder explained, in part, the effect of neighborhood disadvantage on depression.

A number of these same studies also examine anger as an emotional response to neighborhood disorder. Focusing on a regional sample of young adults, Snedker and Hooven (2013) found that perceived neighborhood stressors are related to indicators of mental health, including depressed affect, hopelessness, and anger. Ross and Mirowsky (2009) found that net of

individual characteristics, neighborhood disorder led to anxiety, anger, and depressive symptoms. Schieman and colleagues (2004) found that the association between neighborhood disadvantage and anger was conditional on individuals' income and financial comparisons with neighbors. That is, perceived economic inequality appears to amplify the detrimental effects of neighborhood disadvantage on levels of anger. Taken as a whole, this literature suggests that adverse neighborhood conditions lead to increases in depressive symptoms and/or anger, and that perceptions explain part of the relationship between neighborhood conditions and social psychological processes. Whether this association between neighborhood factors and social psychological processes are subsequently linked to an increased risk of IPV has yet to be examined.

EMOTIONAL WELL-BEING AND INTIMATE PARTNER VIOLENCE

Research on the mental health predictors of partner violence is more common in the family violence tradition. Although investigations typically focus on depression as an outcome of relationship violence (Beydoun et al. 2012; Coker et al. 2002; Johnson et al. 2014), a number of scholars using nationally representative and clinical samples have found that both stress and depression influence IPV perpetration (Hamberger and Hastings 1986; Straus 1990). These findings highlight that IPV is, at least in part, related to emotional wellbeing (Anderson 2002). Given the high rates of mental health issues among individuals reporting IPV, researchers have considered the possibility of comorbidity between abusive relationships and clinical disorders. This research provides evidence of the co-occurrence of IPV and clinical disorders, including depression. Moreover, this body of research suggests that these relationships may vary by gender, with depression showing a stronger relationship to IPV among women (Danielson et al.

1998; Straus 1990). A limitation of this research, however, is that it focuses only on female victims and male perpetrators of IPV.

Research drawing connections between anger and IPV often conceptualizes anger as a trait-based behavior (Follingstad et al. 1991; Swan et al. 2005). As such, differences in styles of anger expression are believed to be due to individual differences. Other research (Wolf and Foshee 2003) has implicated early social learning experiences in the family of origin, suggesting that exposure to family violence may influence anger expression styles. Some research has examined the meanings attached to specific violent episodes and has identified anger as a “predominant emotion, both as effect and perceived cause” (Jackson, Cram, and Seymour 2000:35). Although this work suggests a general association between anger and IPV, theoretical development in this regard is still lacking and it has not fully explored links between neighborhood structural conditions and the experience of anger. Moreover, it fails to articulate the process by which anger results in violence. An exception, however, is Giordano et al. (2013) who emphasize that emotional processes are integral to a comprehensive understanding of IPV; drawing on an interactionist perspective of IPV, the authors found that both trait- and relationship-based anger were positively associated with self-reported IPV perpetration.

Based on strain theory, prior theorizing about anger and IPV (Giordano et al. 2013), and the above research linking community structure to both emotional responses and IPV (separate literatures), we expect that both anger and depression mediate the association between neighborhood disadvantage and IPV. Additionally, we explore the possibility of moderation effects. For example, in general we expect that persons with high levels of anger and depression will be at higher risk of experiencing relationship violence, and that concentrated disadvantage will amplify this risk. The alternative hypothesis is that for persons living in highly

disadvantaged communities, emotional states of anger and depression might matter less. Thus, a tipping point process may operate—at higher levels of neighborhood disadvantage, social psychological processes may have a decreasing influence.

GENDERED RESPONSES AND INTIMATE PARTNER VIOLENCE

Although the body of research linking neighborhood context to emotional health and well-being is growing, few scholars have considered the role of gender. There is evidence to suggest that women are more enmeshed in their communities (Campbell and Lee 1992) and thus may be more affected by disruptions in social support as a result of neighborhood stressors. Few studies have examined gender differences in the effect of neighborhood factors on mental or emotional health. Schieman and Meersman (2004) found that neighborhood problems were positively associated with anger for both men and women. Matheson and colleagues (2006) found that the associations between neighborhood chronic stress and depression did not differ by gender. This limited scholarship seems to indicate that neighborhood conditions influence men and women similarly.

Yet other research provides a basis for expecting that men and women may respond differently to chronic stressors in the neighborhood. Particularly in the fields of psychology and social psychology, there has been an emphasis on differing reactions to stress, resulting in women's internalizing (Angold and Rutter 1992) and men's externalizing behaviors (Lewinsohn et al. 1993). Some research points to trait or genetic factors (Loeber and Stouthamer-Loeber 1998), while other studies suggest that gender differences are due to differences in the prevalence of and exposure to risk factors associated with internalizing or externalizing problems (Leadbeater, Blatt, and Quinlan 1995). Much research focuses on the tendency for women to be socialized to self-regulate and to be particularly sensitive to interpersonal concerns, whereas men

are taught to be assertive and to focus less on empathy and self-regulation (Leadbeater et al. 1999). As such, we expect that social psychological responses to the neighborhood context may vary by gender. Extending this line of research and theorizing leads to the expectation that neighborhood disadvantage may exert indirect influences on IPV through anger for men and depressive symptoms for women.

THE CURRENT STUDY

The literatures on neighborhood structure, mental health, gender, and IPV are largely disjointed. One body of work links community structure to IPV, another body links community structure to mental health, yet another links mental health to IPV, and yet another explores the gendered responses to stress. We seek to overcome this disconnect by joining insights from these lines of research—to highlight the more nuanced processes linking structure, emotion, gender, and IPV—offering a unique contribution to scholarship on IPV, and neighborhood effects research more broadly. Extending the prior work on the above separate scholarships, the objective of the current analyses is fourfold: (1) to examine whether concentrated disadvantage is related to IPV; (2) to determine whether the relationship between concentrated disadvantage and IPV is mediated by individual emotional responses of anger and depression; (3) to examine whether concentrated disadvantage moderates the effect of emotional processes on IPV, and (4) to test whether these relationships work differently for men and women.

Our analyses include a number of sociodemographic and traditional predictors that prior research has shown are related to IPV, neighborhood disadvantage, and emotional adaptations. Specifically, we account for age, race/ethnicity, gainful activity, family background, and relationship factors. The IPV literature has identified several demographic risk factors including age (Abramsky et al. 2011; Kim et al. 2008), racial minority status (Caetano et al. 2005; Huang,

Son, and Wang 2010), and socioeconomic status (Benson and Fox 2004; Benson et al. 2003; Cunradi et al. 2000; DeMaris et al. 2003; Van Wyk et al. 2003). Similarly, both racial minority status and economic marginality have been linked to concentrated disadvantage (Browning, Leventhal, and Brooks-Gunn 2004), and adverse neighborhood conditions are associated with emotional adaptations (Ross 2000; Ross and Mirowsky 2009; Schieman and Meersman 2004). Because both education and employment are important markers of socioeconomic status, and young adults are often actively pursuing education, we account for whether individuals are enrolled in school or employed (Alvira-Hammond et al. 2013). A number of relationship factors have been found to increase IPV risk including relationship status (Brown and Bulanda 2008; Cui et al. 2010; Herrera, Wiersma, and Cleveland 2008), relationship duration (Halpern et al. 2013; Magdol et al. 1998; Stets and Straus 1989), and the presence of children (Vest et al. 2002) Additionally, social learning models of partner violence highlight the role of exposure to violence in the family of origin as a precursor to later IPV perpetration and victimization (Capaldi and Clark 1998; Renner and Slack 2006; White and Widom 2003), and so we account for adolescent reports of parental coercion. Finally, due to prior research in the social disorganization tradition which identifies neighborhood social processes as critical mediators of the relationship between concentrated disadvantage and crime (Morenoff, Sampson, and Raudenbush 2001; Sampson, Raudenbush, and Earls 1997), we include a measure for an alternative mediating mechanism, collective efficacy.

-Meekin

Few studies have examined the mechanisms underlying the relationship between neighborhood context and IPV, and thus the literature upon which to base our hypotheses is limited. Nevertheless, drawing on existing theory and findings from a disparate body of work, we put forth a number of expectations. First, we expect that neighborhood levels of concentrated

disadvantage will directly influence self-reported IPV. Second, we expect that anger and depressive symptoms will mediate the association between neighborhood disadvantage and IPV. Third, we also expect that emotions will moderate the effect of neighborhood disadvantage on IPV, but suggest this might work in a couple of ways; concentrated disadvantage may amplify the risk of IPV among individuals with high levels of anger and depressive symptoms, or alternatively, anger and depression may be more loosely associated with IPV among individuals living in disadvantaged contexts. Finally, the above associations between neighborhood context, social psychological processes, and IPV may vary by gender.

DATA AND METHODS

The current study uses data from the Toledo Adolescent Relationships Study (TARS), a stratified, random sample of adolescents registered for the 7th, 9th, and 11th grades in Lucas County, Ohio, based on enrollment records from the year 2000. The sample (n=1,321), devised by the National Opinion Research Center, was drawn from 62 schools across seven school districts with over-samples of Blacks and Hispanics. To examine neighborhood effects, this study used the TARS contextual database which was created by appending data from the 2000 U.S. Census. While the study draws primarily on data from the Wave 4 interview, when respondents are ages 17-24, some of the sociodemographic characteristics are from the parent questionnaire, which was administered at the time of the first interview.

At Wave 4, there are 1,092 valid respondents, or 83% of Wave 1. Attrition analyses indicate that participation at Wave 4 is not related to most characteristics. The analytic sample, however, is more likely to be female and to report an 'other' family structure. The analytic sample includes all those who participated in the Wave 4 interview, but excludes those who did not identify as Black, White, or Hispanic (n = 22). Additionally, we exclude individuals who did

not report on a current or most recent relationship (n = 85). Finally, we exclude those with missing information on variables from the contextual database (n = 10). The final analytic sample consists of 975 respondents.

MEASURES

Dependent Variable

The outcome variable in this study, *relationship violence*, is from a revised version of the Conflict Tactics Scale (Straus and Gelles 1990) which includes the following four items: “thrown something at,” “pushed, shoved or grabbed,” “slapped in the face or head with an open hand,” and “hit.” The questions refer to experiences with the current/most recent partner and ask about both victimization and perpetration experiences. The focus here is on any experience of relationship violence, regardless of the respondent’s role, and thus taps perpetration, victimization, and mutual violence. Given the nature of the sample, the measure likely captures common couple violence rather than the severe female IPV victimization linked with intimate terrorism (Johnson and Ferraro 2000). This measure is dichotomous (1 = any IPV; 0 = no IPV).

Independent Variables

Neighborhood structure. The neighborhood economic indicators (measured at the tract level) include the proportion of households below the poverty line, proportion of households receiving public assistance, proportion of the population over 16 who are unemployed, and the proportion of female-headed households. Following prior research using the TARS contextual data (Warner et al. 2011), and research concluding that it is the combined effect of multiple disadvantages that defines the neighborhood socioeconomic context for residents (Kubrin and Weitzer 2003; Sampson and Wilson 1995), we combine these items into a summed scale of *concentrated disadvantage* (Cronbach’s alpha = .92)

Social psychological processes. The focal level-one independent variables are anger and depression. *Anger* is a single item assessing the degree of agreement with the following statement: “To what extent do you agree that other people would describe you as angry?” (responses range from “strongly disagree” to “strongly agree”). We measure *depressive symptoms* using a revised six-item version of the Center for Epidemiological Studies’ depressive symptoms scale (CES-D) (Radloff 1977). Respondents were asked how often each of the following six statements was true during the past seven days: “you felt that you could not shake off the blues,” “you had trouble keeping your mind on what you were doing,” “you felt lonely,” “you felt sad,” “you had trouble getting to sleep or staying asleep,” and “you felt that everything was an effort” (responses range from “never” to “every day”) (Cronbach’s alpha = .82).

Collective efficacy is a single item assessing the level of agreement with the following statement: “People in this neighborhood look out for each other” (responses range from “strongly disagree” to “strongly agree”).

Controls. Controls include sociodemographic factors, family background factors, and relationship factors. Sociodemographic factors include gender, a dichotomous variable with *female* as the reference category. We measure *age* in years using a continuous variable reported from wave 4. We include three dichotomous variables to measure race/ethnicity including non-Hispanic *White* (reference category), non-Hispanic *Black*, and *Hispanic*. *Gainful activity* is a dichotomous indicator defined as being currently enrolled in school or employed.

We include several family background factors including family structure, mother’s education, and prior coercive parenting. Family structure was based on four dichotomous variables including *two biological parents* (contrast category), *step-family*, *single-parent family*, and “*other*” family type at wave 1. To control for socioeconomic status origins, we use the

highest level of mother's education reported on the parent questionnaire from wave 1. Categories include *less than high school*, *high school* (reference category), *some college*, and *college or more*. We measure *parental coercion* using a six-item scale from the parent questionnaire asking, during the past month, how often they have, "gotten angry at their child," "criticized their child," "shouted or yelled at their child," "argued with their child," "threatened to physically hurt their child," and "pushed, grabbed, slapped, or hit their child" (responses range from "never" to "very often") (Chronbach's alpha = .83).

In terms of relationship factors, three dichotomous variables tap relationship status reported at wave 4, including *dating* (reference), *cohabiting*, and *married*. *Relationship duration* is a single continuous item indicating the length of the focal relationship (responses range from "less than a week" to "a year or more"). Finally, we include a dichotomous variable to account for whether the respondent had any *children* at the time of the wave 4 interview.

ANALYTIC STRATEGY

Hierarchical logistic regression models were used to examine the multilevel association between concentrated disadvantage, anger, depressive symptoms, and IPV. Models were estimated using the PROC GLIMMIX function available in the statistical package SAS (Snijders and Bosker 2011). The analyses consisted of several stages. First, an unconditional model was estimated to determine whether the between-neighborhood variation in IPV was significant ($p < .001$). From this unconditional model, the intraclass correlation (ICC) was computed to determine the total variation that occurs between census tracts. In our sample, the ICC is 0.06, indicating that 6% of variation in IPV is at the neighborhood level. Next, we predict IPV in models (Table 2) with neighborhood concentrated disadvantage (Model 1). A second model (Model 2) adds the covariates of anger and depression to determine whether these mediate the

effect of neighborhood disadvantage on IPV. A third model (Model 3) includes all covariates, and two final models (Model 4 and Model 5) add interactions between neighborhood disadvantage, gender, and social psychological processes.

RESULTS

Table 1 includes all means and standard deviations for the pooled sample and for female and male subsamples. Examination of gender differences revealed that female respondents are significantly less likely to report IPV at Wave 4. Regarding individual emotions, female respondents report lower levels of anger and higher levels of depressive symptoms. Male and female respondents report similar levels of concentrated disadvantage and collective efficacy. Additionally, female respondents are more likely to be involved in cohabiting and married relationships, relationships of longer duration, and to have children at the time of the Wave 4 interview.

Table 2 shows the results of the individual- and neighborhood-level analyses. In the zero-order model, concentrated disadvantage was a significant predictor of IPV indicating that relationship violence, at the individual level, is related to neighborhood levels of disadvantage. In Model 2, individual-level measures of anger and depression were introduced to the model with concentrated disadvantage to predict IPV. Net of this neighborhood disadvantage, both anger and depressive symptoms significantly increase the odds of IPV. Furthermore, after the addition of anger and depressive symptoms, the magnitude of the coefficient for concentrated disadvantage is reduced, yet disadvantage remains significant. In Model 3, which includes controls for level-one sociodemographic, family background, and relationship characteristics, the association between concentrated disadvantage and IPV is attenuated. Specifically, after controlling for the strong positive relationships between concentrated disadvantage, race, and IPV, the association

between concentrated disadvantage and relationship violence is no longer significant. Given the complex nature of the association between concentrated disadvantage and race, it is difficult to separate the effects. Nevertheless, these findings are consistent with existing theory. Further, the associations between emotional processes and IPV remain significant net of sociodemographic, family, and relationship controls. Additionally, collective efficacy was introduced in Model 2, and net of individual emotions, collective efficacy is related to IPV (marginally significant). While not hypothesized, supplemental analyses (not shown) revealed that collective efficacy was not significantly associated with IPV risk among male respondents, but was related to the odds of IPV for female respondents. In contrast to theoretical expectations, collective efficacy does not mediate the link between neighborhood disadvantage and IPV, but it does appear to serve as a protective factor for female respondents.

Model 4 examines whether the relationship between concentrated disadvantage and IPV is similar for men and women. We examined the moderating effect of gender on the relationship between structural disadvantage and IPV via the cross-product term “concentrated disadvantage x gender.” Results of that model suggest that, net of covariates, the relationship between disadvantage and IPV differs for male and female respondents. Specifically, the association between concentrated disadvantage and IPV is more salient for female respondents.

In a final model (Model 5), we examine whether concentrated disadvantage moderates the influence of emotions on IPV. The results of these models indicate that anger exerts a similar influence on IPV across levels of concentrated disadvantage. Alternatively, structural disadvantage interacts with depressive symptoms to affect IPV such that the positive effect of depression on IPV is attenuated at higher levels of disadvantage. We depict this interaction graphically in Figure 1, which shows that the probability of IPV increases from .17 for

individuals with low levels of depressive symptoms to .21 for those with high levels of depressive symptoms. At high levels of structural disadvantage, however, the probability of IPV is similar for those with high and low levels of depression (.16 and .17, respectively). Thus, the association between depressive symptoms and self-reports of any relationship violence is strongest in less-disadvantaged neighborhoods. Once disadvantage reaches very high levels, depressive symptoms matter less for predicting IPV risk. Supplemental analyses examining three-way interactions between disadvantage, emotions, and gender (not shown) indicated that this conditioning influence of disadvantage appears only for male, and not female, respondents. For women, structural disadvantage influences self-reports of any IPV; however, it is closely linked to the way that disadvantage is tied to racial minority status (female minorities are at increased risk of IPV and this accounts for the effect of disadvantage). However, for men, there initially appears to be no connection between disadvantage and IPV, yet this association is uncovered in the complex ways that disadvantage interacts with emotional responses (in particular, depressive symptoms).

DISCUSSION

This study provides an integrated theoretical lens to examine the link between neighborhood disadvantage and self-reports of relationship violence. We combine insights from separate literatures linking neighborhood structure to mental health, gendered emotional responses to strain, and neighborhood structure and emotions to IPV. This study contributes beyond our prior work suggesting an association between angry emotions and IPV perpetration (authors, 2013) by demonstrating potential ways in which structural factors further contextualize intimate partner violence. Our results underscore the complex ways that concentrated disadvantage and emotions influence relationship violence. Partner violence does not always

represent a “private” form of violence, and even when it does, this does not preclude the importance of the larger neighborhood socioeconomic context as an influence. Whereas scholars in the field of IPV have begun to examine neighborhood effects, they often do it without much attention to theoretical processes or without examination of group differences. Our study confirms the importance of situating IPV within the larger neighborhood structure of disadvantage, and uncovers complex patterns of influence in which disadvantage moderates emotional responses and in which processes play out differently for men and women.

At the bivariate and multivariate level, we found gender differences in the experience of IPV, but also in the emotional and relationship profiles of our respondents; fewer women than men self-report IPV, yet women report more depressive symptoms than men and have higher rates of cohabitation and childbearing than men, as well as longer-lasting relationships. In multivariate analyses, we found that neighborhood disadvantage is more strongly linked to IPV experience among women, yet once we consider race, the effect of structural disadvantage is attenuated.

Further, while disadvantage had a direct effect on self-reports of IPV, it also interacted with depressive symptoms in an unexpected way: when concentrated disadvantage reached very high levels, it did not matter whether individuals reported low or high levels of depression—it predicted relatively low levels of IPV regardless. However, at low levels of neighborhood disadvantage, depression has variable effects: those with low levels of depression have low predicted IPV, yet those with more severe depression have significantly higher predicted odds of IPV. This is a somewhat surprising finding, yet it may be that once disadvantage reaches high levels, it becomes harder to distinguish among respondents in their internalizing emotions; depression may be so common in highly disadvantaged communities that it operates similarly in

its effect on IPV. Yet in better-off neighborhoods, depressive symptoms may be less anticipated, and therefore when it reaches high levels, it has especially negative consequences with respect to relationship violence. Conversely, normative beliefs accepting of the use of violence in intimate relationships may be more pervasive in disadvantaged contexts, and thus the experience of IPV may be more anticipated in those settings, and consequently, less intimately linked to emotional well-being. It seems more typical for individuals—particularly men—to receive post-incident *treatment* that focuses on anger management, whereas the findings here point more toward the need for *prevention* efforts. IPV may be reduced if there are resources for men who are dealing with a less common emotional response—depression. Along these same lines, findings underscore the need for scholarship to move beyond the “men as externalizing and angry” label that is often applied to IPV scenarios. Our findings demonstrate that anger increases IPV for both men and women, and in fact, depression increases the odds of IPV among men. Future research should explore whether these patterns hold for different samples of respondents.

Although these analyses contribute to the growing body of literature on neighborhood context and IPV, there are a few limitations. First, unlike previous contextual examinations of the link between neighborhood disadvantage and IPV, we did not find a relationship after accounting for individual controls. Although race was primarily responsible for the attenuation of this relationship between neighborhood disadvantage and IPV, future work should reassess these associations to confirm whether there is a neighborhood effect net of compositional characteristics. Additionally, this study drew data from a regional sample of young adults in Lucas County, OH. Although these individuals are similar to other nationally representative samples in terms of their sociodemographic profiles, these results are from one geographic area of the country.

Researchers have increasingly looked beyond the individual to understand factors related to the experience of IPV. Our findings are consistent with that work and emphasize the notion that IPV does not occur in isolation, but rather that it is tied to a number of individual-, couple-, and contextual-level factors. To present a multi-faceted explanation of IPV, researchers should continue to examine ways in which the broader context influences the experience of relationship violence. Yet while our study adds important insight into the complex nature of IPV, future research should build on these analyses to answer additional questions. Beyond exploring the link between emotions and neighborhood characteristics in other cities/with other samples, a worthy line of research might focus on additional mediating and moderating mechanisms—in particular, normative and cultural definitions. For example, Browning (2002) found that collective efficacy reduced partner violence in communities where tolerance of intimate violence was low. It would be worth examining whether such tolerance depends on cultural differences at the group level—for example, among immigrant communities or among racial minority vs. majority populations. Processes of acculturation may be particularly relevant, as scholars note for example that Asian immigrant women experience IPV through a multifaceted lens that points to the importance of patriarchal socialization in the country of origin, economic insecurity, and lack of institutional support and protection in U.S. neighborhoods (Kim 1998; Lee and Hadeed 2009). Among Latinos, acculturation also has implications for IPV, especially if women acculturate more rapidly than men, which leads to declines in conformity to traditional roles, as well as perceptions of male powerlessness (Lewis et al. 2005). It may also be the case that different emotional responses are relevant to different groups, for example frustration with the acculturation process may be linked to feelings of shame when gendered roles become violated. The complexities of different experiences of immigration for different ethnic groups could have

variable implications for IPV; as such, the nuanced patterns we find in our research may be a small piece of the picture when it comes to IPV among different subgroups with unique cultural histories living in different neighborhood contexts. Finally, given the central role of relationship dynamics in the experience of IPV, future work should continue to examine the ways in which relational considerations condition the influence of other risk factors on partner violence.

Although we suggest that negative emotions are fostered in disadvantaged contexts, it is equally plausible that neighborhood conditions influence the inner-workings of romantic relationships. According to this approach, feelings of anger and depression may evolve from the nature and quality of the relationship itself in addition to external structural forces.

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Table 1: Means/Percentages and Standard Deviations of all Variables (n = 975)^a

Variable	Full Sample		Men (n = 454)		Women (n = 521)	
	Mean/Percentage	SD	Mean/Percentage	SD	Mean/Percentage	SD
<i>Dependent Variable</i>						
Relationship Violence	38.90%		41.97%		*	35.80%
<i>Neighborhood Structure</i>						
Concentrated disadvantage	-0.02	13.46	-0.13	13.37		0.09 13.53
<i>Social Psychological Processes</i>						
Anger	2.14	3.80	2.24	3.96	**	2.04 3.63
Depression	14.48	30.07	13.89	30.66	*	15.06 29.43
Collective Efficacy	3.14	4.06	3.18	4.20		3.10 3.93
<i>Sociodemographic Factors</i>						
Female	49.87%		--			--
Age	20.34	6.47	20.40	6.65		20.28 6.30
Black	24.81%		26.52%			23.09%
Hispanic	7.13%		7.20%			7.05%
Gainful Activity	75.00%		75.64%			74.35%
<i>Family Background Factors</i>						
Single parent	22.56%		21.77%			23.35%
Step-parent	13.47%		12.83%			14.11%
Other	12.83%		11.33%			14.33%
Mother's Educ. < high school	10.76%		10.41%			11.12%
Mother's Educ. some college	34.74%		35.35%			34.13%
Mother's Educ. college or >	22.77%		23.75%			21.79%
Parental Coercion	1.84	2.10	1.83	2.18		1.84 2.03
<i>Relationship Factors</i>						
Cohabiting	20.93%		16.43%		***	25.46%
Married	6.09%		4.78%		†	7.40%
Relationship Duration	6.62	6.59	6.32	7.35	***	6.92 5.66
Children	18.71%		13.35%		***	24.09%

† p < .10; * p < .05; ** p < .01; *** p < .001

^a All means/percentages and standard deviations are weighted

Table 2. Multilevel Logistic Regression of Relationship Violence on Neighborhood & Individual Predictors (n=975)

Variable	Model 1		Model 2		Model 3		Model 4		Model 5	
	OR	SE	OR	SE	OR	SE	OR	SE	OR	SE
<i>Neighborhood Structure</i>										
Concentrated disadvantage ^a	1.079***	0.02	1.056*	0.02	0.993	0.03	0.992	0.04	0.992	0.03
<i>Social Psychological Processes</i>										
Anger ^b			1.564***	0.07	1.575***	0.08	1.572***	0.08	1.571***	0.08
Depression ^b			1.026**	0.01	1.027**	0.01	1.027**	0.01	1.029**	0.01
Collective Efficacy			0.872*	0.06	0.875†	0.07	0.877†	0.07	0.873†	0.07
<i>Sociodemographic Factors</i>										
Female					0.616**	0.15	0.615**	0.15	0.612**	0.16
Age					0.951	0.05	0.952	0.05	0.960	0.05
Black					1.829**	0.22	1.851**	0.22	1.836**	0.22
Hispanic					1.932**	0.25	1.913**	0.25	1.915**	0.25
Gainful Activity					0.787	0.19	0.776	0.19	0.776	
<i>Family Background Factors</i>										
Single parent					0.886	0.21	0.880	0.21	0.892	0.21
Step-parent					1.669*	0.23	1.686*	0.23	1.693*	0.23
Other family structure					1.280	0.24	1.271	0.24	1.272	0.24
Mother's education < high school					1.401	0.26	1.426	0.26	1.444	0.26
Mother's education some college					0.764	0.18	0.765	0.18	0.768	0.18
Mother's education college or >					0.887	0.22	0.880	0.22	0.890	0.22
Parental Coercion					1.627***	0.13	1.610***	0.14	1.643***	0.19
<i>Relationship Factors</i>										
Cohabiting					1.638*	0.20	1.649*	0.20	1.613*	0.20
Married					1.798†	0.32	1.874†	0.32	1.795†	0.32
Relationship Duration					1.265***	0.05	1.255***	0.05	1.267***	0.05
Children					0.700	0.22	0.674†	0.22	0.691†	0.22

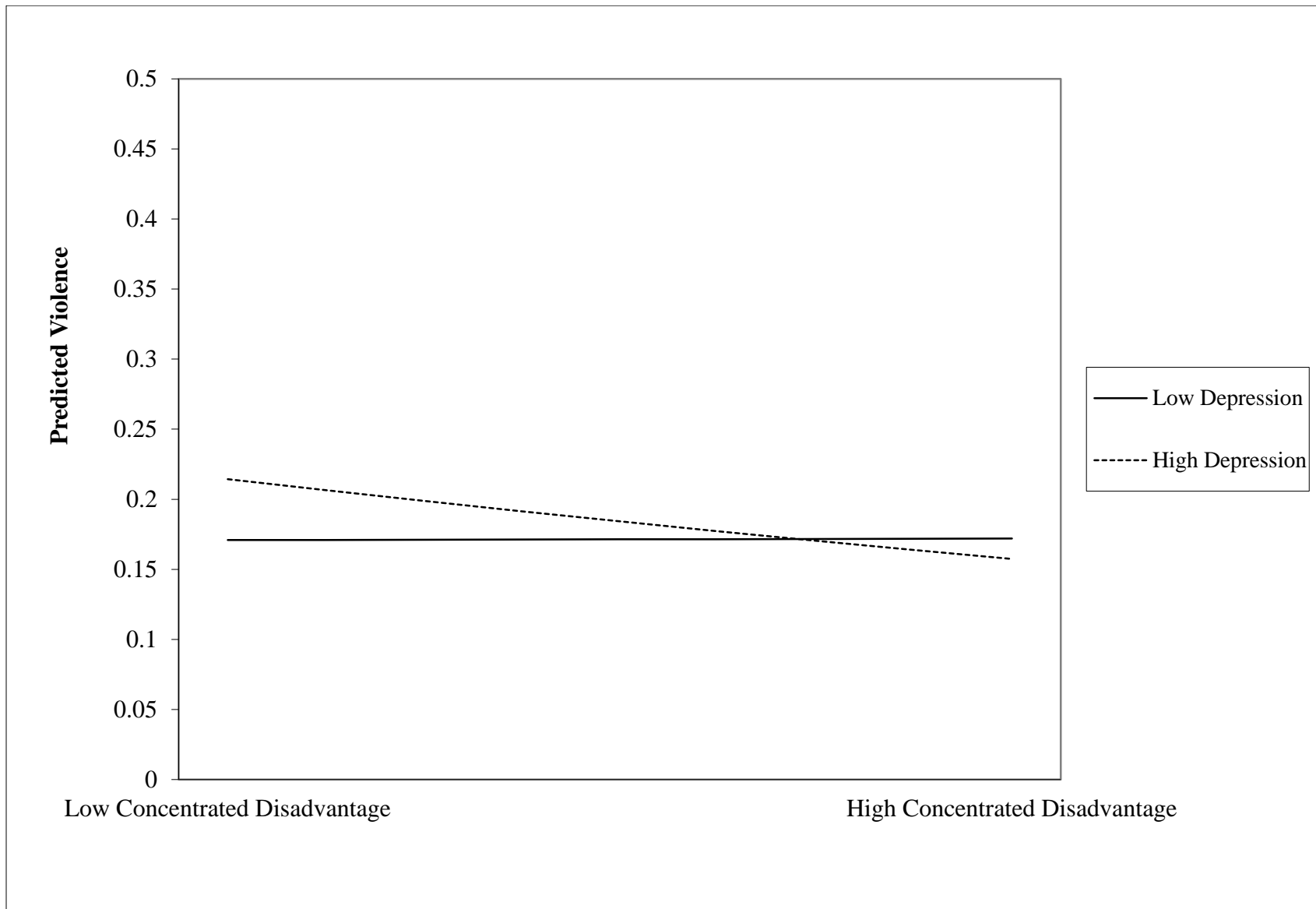
Interactions

Concentrated disadvantage x Gender	1.072 [†]	0.04		
Concentrated disadvantage x Anger			1.007	0.02
Concentrated disadvantage x Depression			0.995 [†]	0.003

[†] p < .10; * p < .05; ** p < .01; *** p < .001

^aCentered in Models 4 and 5.

Figure 1. The Probability of Relationship Violence across Levels of Depression and Concentrated Disadvantage



Appendix. Factor Loadings for Concentrated Disadvantage (n = 975)

Indicator	Factor Loadings
Households below the poverty line	0.896
Receipt of public assistance	0.940
Unemployed	0.834
Female-headed households	0.901