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Religiosity as a Buffer in the Association Between Economic Disadvantage and Violence

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Abstract

Strain theory has long argued that many forms of strain, especially pertaining to economic disadvantage, can lead to feelings of anger and frustration. Research has shown that economic disadvantage is associated with a variety of negative outcomes, including violence. While strain theory has made the assumption that social control serves to inhibit juvenile criminal behavior, no study to date has answered questions about how other types of social control such as religiosity may moderate the relationship between economic disadvantage and adolescent violence. Waves I and II of the National Study of Adolescent Health were used to investigate the moderation effects of religiosity on the economic disadvantage and violence relationship. Tobit regression was used. Results indicate that the relationship between economic disadvantage and violence is increased by public religiosity but diminished by private religiosity.

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To what extent does religiosity protect impoverished youth from engaging in delinquent behavior? Prior research suggests that economic disadvantage is a strong correlate of violent delinquency (Allison et al. 1999; Anderson 1999; Baron 2007; Bearman and Moody 2004; Elliot et al. 1996; Kasarda and Janowitz 1974; Kingston, Huizinga, and Elliott 2009; Messner and South 1986; Sampson, Morenoff, and Earls 1999; Shaw and McKay 1942; Webber 2008). It is not currently well understood, however, whether religiosity could be a protective factor in this association. Theoretically, such a role for religiosity is reasonable. General strain theory (GST) (Agnew 1992, 2001) has provided a foundation for much of the research on strain concepts in the criminological literature by suggesting that there is a positive relationship between economic strain and violent delinquency. Strain theorists suggest, however, that certain conditioning factors may moderate the relationship between strain and negative outcomes (Agnew 1992, 2001). These conditioning effects presumed to be crime-inhibiting include social control, social support, and social capital.

Religiosity has been alluded to as a possible moderator for the relationship between strain and negative behavior (Jang 2007; Jang and Johnson 2003, 2005; Johnson and Morris 2008; Piquero and Sealock 2004). Religiosity has been identified as a mechanism that helps individuals positively cope with stressful circumstances (Compas et al. 2001; Pargament 1990; Pargament and Saunders 2007) such as those brought about by economic disadvantage. It has been established that adolescents who are religiously oriented are substantially less likely to engage in criminal behavior (Adamczyk 2009; Burkett and White 1974; Cochran 1993; Cretacci 2003; Regnerus 2007; Smith and Denton 2005; Tittle and Welch 1983; Wallace et al. 2007). For this reason, religious adherence may embody both social control and social capital with respect to the relationship between economic disadvantage and violence.

Only a small number of studies (Jang and Johnson 2003, 2005; Johnson and Morris 2008) have assessed the ability of religiosity to serve as a coping mechanism for stress. Religiosity can act as a buffer to strain-induced negative emotions, which by extension may help to deter criminal behavior. Specifically, Jang and Johnson (2003) posit that because the relationship between strain and criminal behavior is predicated upon negative emotions, religiosity may function as a conditioning factor in the aforementioned relationship. Religious individuals are not only less likely to develop negative emotions when faced with strain, they are more likely to have positive coping resources, such as stronger social support systems through family and friends who are also religious (Smith and Denton 2005). Yet previous work has failed to examine directly whether religiosity buffers the relationship between economic disadvantage and violence. Therefore, this study seeks to make a contribution to the GST literature by investigating

whether religiosity conditions the association between economic disadvantage and violence among adolescents.

THEORETICAL FRAMEWORK

Agnew's General Strain Theory elaborates on traditional macro-structural strain models proposed by Durkheim (2006 [1897]), Merton (1938), and Cloward and Ohlin (1960) via the use of a micro-level social psychology perspective (Agnew 1985, 1992, 1999, 2001). Agnew (1985) introduced a different type of strain, which is the failure to escape from aversive situations or stimuli. Additionally, Agnew included the concept of anger and frustration as negative emotions within his idea of strain. Agnew found that individuals who could not escape from an aversive environment would be more likely to be involved in violent delinquency, aggression, and other forms of negative behavior directly and indirectly through the expression of anger. Agnew concluded that there are three central components to GST: strain, negative emotion, and coping strategies.

According to Agnew's GST (Agnew 1992), crime is committed due to the effects of strain caused by a person's failure to achieve society's positively valued goals, the removal of positively valued stimuli from the individual, and the presentation of negative stimuli in an individual's life. Each of these three types of strain increases an individual's feeling of anger, an emotion that not only increases the desire for revenge but also helps both to justify aggressive behavior and to stimulate individuals to action. In looking specifically at strain and its relationship to adolescent violence, Agnew (1992, 2001) found that economic disadvantage strain is cumulative; that is, economic disadvantage leads to additional stressors such as those within the family context (e.g., domestic violence between parents and child maltreatment) and the formation of criminogenic relationships (e.g., delinquent peers).

Adolescents may cope with the stresses and strains of economic disadvantage when there are strains in their household by forming negative relationships with other violent friends (Haynie and Payne 2006; Heimer 1997). This coping mechanism is most common among adolescents who reside in communities that are stricken with economic disadvantage. As suggested in Anderson's (1999) ethnographic study of inner-city black youths in Philadelphia, in areas plagued by economic disadvantage, adolescent boys adhere to a "code of the streets" that involves the perception of being tough and the use of violence as necessary to achieve desired goals. Older adolescent peers often teach this code to younger children as a way to navigate the streets. Stewart and Simons (2006) also have shown that the use of street code is prevalent among the disadvantaged and associated with violent offending. Further, Haynie, Silver, and Teasdale (2006) examined neighborhood characteristics as correlates of violence and found that

the effect of economic disadvantage on delinquency is mediated by exposure to violent peers.

ECONOMIC DISADVANTAGE AND VIOLENCE

The literature examining the relationship between economic disadvantage and violent delinquency does show an association between the two, but it is important to note that the association often hinges upon how economic disadvantage is measured (Office of the Surgeon General 2001) Empirical research indicating that economic disadvantage is associated with delinquency tends to operationalize economic disadvantage among violent youth in one of three ways: as relative economic deprivation (Baron 2007; Messner and South 1986; Webber 2008), as a socioeconomic (SES) measure that includes an admixture of a parent's educational level, parental income, and/or parental occupational status (Bearman and Moody 2004; Heimer 1997), or as concentrated disadvantage, such as living in poor neighborhoods (Allison et al. 1999; Anderson 1999; Jencks 1992; Krivo and Peterson 1996; Ludwig, Duncan, and Pinkstone 2000; Sampson, Morenoff, and Earls, 1999; Shaw and McKay 1942).

Empirical studies that question the existence of an economic disadvantage-violence relationship tend to use SES as an economic disadvantage indicator (Braithwaite 1981; Johnstone 1978; Tittle and Meier 1990; Tittle 1991; Wright et al. 1999). For example, Tittle and Meier (1991) argue that SES-related measures only show a relationship between SES and delinquency for those individuals who are experiencing the most drastic and severe forms of economic disadvantage. Wright et al. (1999) measured SES through the use of a 6-point scale developed by Elley and Irving (1976) that assessed parental occupational status; in addition, their model accounted for parental education achievement and joint income. Wright and colleagues (1999) found that there are certain social-psychological and structure factors associated with high and low SES that both promote and inhibit delinquency via mediation effects. Specifically, the authors found that low SES promoted delinquency when people experienced increased financial strain and aggression but that when low-SES individuals had higher educational and occupational aspirations, their violence was inhibited.

Studies examining the relationship between economic deprivation and delinquency find that economic disadvantage is strongly associated with crime (Baron 2006; Messner and South 1986; Webber 2008). Baron (2006) used measures of relative deprivation in terms of financial goals, financial success, and current financial status on youth delinquency and found a significant relationship between the two. That is, those who are of a lower SES who are also unable to meet certain financial goals of getting out of economic disadvantage are more likely to have children who engage in delinquency. Messner and South (1986)

found similar results among White and Black families whose incomes were below $4,000 (the economic disadvantage line for that time period). Both studies indicate that there is a direct relationship between strains of economic disadvantage and delinquency.

There is a significant amount of literature pertaining to the relationship between concentrated disadvantage and violent delinquency (Allison et al. 1999; Anderson 1999; Elliot et al 1996; Kasarda and Janowitz 1974; Kingston, Huizinga, and Elliott 2009; Sampson, Morenoff, and Earls 1999; Shaw and McKay 1942). Shaw and McKay's classic study in 1942 on the geographic distribution of delinquent boys and the manner in which rates of violent delinquency varied from area to area in Chicago has often been used to understand the relationship between concentrated economic disadvantage and juvenile delinquency. Their main findings are that socially disorganized areas contribute to the occurrence of juvenile delinquency when these areas experience low residential stability, high rates of economic disadvantage, and are racially heterogeneous. That is, much of the research shows that living in a neighborhood that is predominately poor increases an adolescent's likelihood of engaging in delinquency and especially in violence.

THE CONDITIONING EFFECT OF RELIGION

The strains associated with economic disadvantage may cause negative coping, such as engaging in violence. But it has been suggested (Agnew 2001; Pargament 1997) that religion may reduce the strain that some adolescents face because it provides connectedness to God, to religious others, and to religious institutions. When attempting to cope with strain, individuals who seek to understand their circumstances from a religious perspective may interpret their suffering as spiritual warfare, punishment by God, or a test meted out by God (Pargament et al. 1992; Pargament 1999; Pargament and Mahoney 2005). Religious coping refers to using the significance and sacredness of religion to regulate emotions, thoughts, and behaviors in the event of a stressful or strained environment (Compas et al. 2001; Pargament 1990, 1997). Thus, coping is an active response to dealing with stress or strain. Likewise, the practice of religious beliefs can also guide the pathway an adolescent chooses to follow. Those who are religious may be less likely to participate in certain behaviors their religion denounces, such as violence.

Religious coping involves a "unique form of motivation" to abstain from certain behaviors, such as violence (Pargament 2005: 298-99). Teens who practice religion are more likely to refrain from engaging in violent crimes because their religion tells them it is wrong and because of their associations with religious others (Smith and Denton 2005). This motivation to abstain from negative

behaviors is perpetuated by the support received from the relationships that religion establishes or strengthens, such as support from family, friends, and teachers (Pargament and Maton 2000). This theory is similar in scope to the ideas of Hirschi's social control/bond theory, as adolescents who form strong positive social bonds to parents, peers, and teachers are less likely to be involved in violence (Agnew 1993; Cernkovich and Giordano 1992). Pargament (1997) also suggests that religion is unique because of the unity among those in religious groups. This community provides additional resources for individuals who may not have access to particular means (i.e., social capital) that help them deal with strain (Pargament and Maton 2000).

A contrary perspective on the relationship between religion and strain/stress is that religiosity might actually intensify the positive relationship between economic disadvantage and delinquency. Religious adolescents may perceive that God is punishing them or feel abandoned by God when they are under stressful circumstances. These feelings are examples of negative religious coping (Pargament 1997; Pargament and Mahoney 2005). If religious adolescents feel abandoned by God, they may in turn feel justified in committing acts of violence. Another possible explanation for why religious adolescents engage in violence may be that they do not believe the behavior they are committing is morally wrong (Burkett and Ward 1993; Curry 1996; Desmond et al. 2009; Stark 2001). In many Judeo-Christian religious sects, there are justifications for violence towards another person. For instance, war may justify violence. Juergensmeyer (2003: 94) argues that in some Judeo-Christian and even some other religious sects, violence is justifiable if it is outlined in religious texts as the appropriate punishment for sins/wrongs. In addition, another body of literature suggests that some more fundamentalist sects of Christianity accept that the wife and children need to submit to the authority of the husband/man of the household. Disobedience of this law may result in physical altercations (Gunnoe, Hetherington, and Reiss 1999; Koch and Ramirez 2009). Aside from the religious perspective, it may be the case that there are dissimilar moral/religious beliefs between a child and other members of the household (Ellison, Bartkowski, and Anderson 1999; Pearce and Haynie 2004; Stokes and Regnerus 2009). Religious discord tends to lower the quality of the parent-teen relationship (Stokes and Regnerus 2009) primarily because the strained relationship is directly related to parental attachment and thus neutralizes religious coping as a mechanism of social control. Despite this line of reasoning, the weight of evidence from prior research suggests a more beneficial role of religion vis-à-vis economic disadvantage and delinquency.

CURRENT STUDY

The picture painted by the current research suggests that there are gaps in our understanding of the relationship between economic disadvantage, violence, and religiosity. Much of the research pertaining to economic disadvantage and violence focuses on why violence occurs rather than why it does not occur. The current investigation hopes to shed further light on these associations.

This study seeks to make two contributions to the field of sociology. First, the findings on the economic disadvantage and violence relationship are inconsistent, which may be a function of how economic disadvantage is operationalized. Earlier studies indicate a direct correlation between the two, and some suggest that the relationship is causal and due to a myriad of social-psychological and structural mediators (Tittle and Meier 1990; Wright et al. 1999). As suggested by some researchers, these differences may also be due to how economic disadvantage is measured (Baron 2006; Ford, Bearman, and Moody 1999; Messner and South 1986).[3] This study therefore attempts to consider multiple dimensions of economic disadvantage by creating a scale comprising the many different aspects of economic disadvantage, such as household income, education level, job/profession, struggling to pay bills, government assistance, and neighborhood economic disadvantage so as to determine better the status of the economic disadvantage-violence relationship.

Second, this study builds on Pargament's (1992, 1997, 1999, 2005) and Johnson and colleagues' work (Jang 2007; Jang and Johnson 2003, 2005; Johnson and Morris 2008; Piquero and Sealock 2004) on religiosity as a way of coping with negative life events. What is not known at this time is how adolescents use religiosity to cope with negative life events, such as economic disadvantage. Johnson and his colleagues have suggested that religiosity may condition the effects of economic disadvantage on adolescent delinquency. This study's main contribution to this line of research will be to examine whether Johnson and his colleagues were correct in their assumption that religiosity buffers the effect of economic disadvantage strain.

DATA AND METHODS

This study utilizes Waves I and II of the National Longitudinal Study of Adolescent (Add Health), which is a nationally representative sample of U.S. adolescents in grades seven through twelve that was first conducted during the

[3] While there is literature for both correlation and causation between poverty and violence, we are making an argument for a causal effect of economic disadvantage on violence. To protect against the possibility of reverse causation, we are doing an autoregressive model. In addition, the time ordering of the measures should allow us to claim that we are estimating a causal effect.

1994–1995 school year (Bearman, Jones, and Udry 1997). Add Health initially surveyed over 90,000 students from 132 schools in 80 different communities through the use of a school based clustered sample design. A subset of 20,745 adolescents completed in-home interviews during the Wave I phase that was conducted in 1994 and 1995. A total of 14,396 adolescents completed both an in-home and an in-school survey during Wave I. Wave II data were collected in 1996, in which approximately 71 percent (N =14,738) of the Wave I sample participated. It should be noted that Wave I twelfth-graders who graduated between waves were not included in Wave II. Also, those students with physical disabilities were excluded from Wave II. The cases that had valid data on all variables brought the base sample for this investigation to 10,798. The use of multiple imputation for missing data on all independent variables allowed for an increase of the base sample to 14,091 (Chantala and Tabor 1999).

MEASURES

Dependent Variable

Violent delinquency was created from eight measures from previous work that asked respondents two different sets of questions (Brookmeyer, Fanti, and Henrich 2006; Demuth and Brown 2004; Fang and Corso 2007; Haynie and Payne 2005; Johnson and Morris 2008; Resnick, Ireland, and Borowsky 2004).[4] The first four measures asked the respondent, "How often did you (a) engage in a serious physical fight; (b) hurt someone badly enough to need bandages or medical care; (c) use or threaten to use a weapon to get something from someone and; (d) take part in a fight where a group of your friends was against another group?" These four measures were coded on a scale of 0 (for never) to 3 (for 5 or more times). The second set of questions asked the respondent, "In the past 12 months did you (a) pull a knife or gun on someone; (b) shoot or stab someone; (c) carry a weapon to school, and; (d) use a weapon in a fight?" These four measures were coded 0 (for no) and 1 (for yes). The violent delinquency items were standardized because they had different measurement metrics. The eight items were then scaled to create the violent delinquency measure by taking the mean of these scores and multiplying by the number of items present. The scale created from all eight measures had a Cronbach's alpha reliability of 0.75.

[4] The dependent variable is a self-report of frequency of behavioral acts committed. Although subject to recall bias and self-serving under reporting, it is similar to the way in which several such phenomena are measured, e.g. domestic violence and other behaviors.

Key Independent Variables

Religiosity.
Private religiosity. Private religiosity includes the combination of two variables: religious importance and frequency of prayer. Religious importance is measured by a question that asks, "How important is religion to you?" Responses for this question range from 0 (for not important at all) to 3 (for very important). Frequency of prayer asks the respondent, "How often do you pray?" Responses range from 0 (for never pray) to 4 (for daily prayer or more). Since these two items had differences in measurement metrics, they were standardized. These two items were then scaled by taking the mean of the items and multiplying by two. This scale had a Cronbach's alpha reliability of 0.81.

Public religiosity. Public religiosity was measured by two variables: church/service attendance and involvement in other religious activities (Bible study, choir, youth group, etc.). Church/religious service attendance was measured by asking respondents, "In the past 12 months, how often did you attend such activities?" These responses range from 0 (for never) to 3 (for weekly or more). Participation in other church-related activities was measured by asking respondents, "Many churches, synagogues, and places of worship have special activities for teenagers, such as youth group, bible classes, or choir. In the last 12 months, how often did you participate in these activities?" Responses for this question ranged from 0 (for never) to 3 (for once a week or more). The two items were combined into a single scale. The scale had a Cronbach's alpha reliability of 0.75. This scale was then centered around the mean.

Born-again. Being a born-again Christian was measured via a single item that asked respondents, "Do you think of yourself as a Born-again Christian?" Responses for this variable were 0 (for no) and 1 (for yes). Being born-again refers to a biblical passage (John 3:1–5) where rebirth is achieved via both water and spiritual baptism. Therefore, identifying as born-again means that the respondent has a strong belief that his or her behavior needs to reflect that of Jesus Christ because it is believed that the spirit of God resides inside the person (Bielo 2004).

Economic Disadvantage Strain Measure. Much of the literature in criminology measures economic disadvantage based on a combination of income, educational level, occupation, welfare/government assistance, and concentrated disadvantage (Allison et al.1999; Anderson 1999; Bearman and Moody 2004; Elliot et al. 1996; Kasarda and Janowitz 1974; Kingston, Huizinga, and Elliott 2009; Sampson et al. 1999; Shaw and McKay 1942). It has been argued in family research, however,

that economic disadvantage is subjective depending on those contributing to the household income, the household size, and the number of children in the household (Edin and Kissane 2010; Roosa et al. 2005). Therefore, to incorporate the multidimensional aspects of economic disadvantage noted throughout both bodies of literature, the measure that operationalized economic disadvantage was created from many indicators. Each indicator was measured at Wave I and was self-reported by the parents of the adolescent.

To obtain an accurate depiction of actual economic disadvantage for each household, an economic disadvantage threshold measure was created. The economic disadvantage threshold measure includes the size of each household (number of adults and children) and the minimum income that the household would need to be considered above the economic disadvantage line (U.S. Census Bureau 1994). The household size was taken from twenty different questions that asked respondents to indicate the ages of persons in their household. In the Add Health data, responses for household size ranged from 0 to 90. Persons who were eighteen or older were counted as adults, and those seventeen and younger were counted as children. Two separate variables were created from this information so that one variable would measure the total number of adults per household, and the other variable would measure the total number of children per household. Because the data did not ask the respondent to include himself or herself, one was added to the summed number of children.

Household income was derived from a single measure that asked the respondents' parents, "About how much total income, before taxes, did your family receive in 1994? Include your own income, the income of everyone else in your household, and income from welfare benefits, dividends, and all other sources." Responses ranged from $0 to $999,000. The U.S. Census Bureau's 1994 income threshold chart was used to determine the economic disadvantage level threshold for each household by taking the number of adults, the number of children, and the minimum income that household would need to stay above economic disadvantage. These data were used to create a binary economic disadvantage threshold indicator. Households with income at or below the threshold were coded 1 to indicate economic disadvantage, while those with incomes above the threshold were coded 0 to indicate that they were not in economic disadvantage.

To account for more extreme measures of economic disadvantage, a series of questions asking the respondents' parents, "Did you or any member of your household receive…?" were also included in the analyses. These items included some form of state government assistance, such as supplemental security income (SSI), aid to families with dependent children, food stamps, unemployment, welfare, or housing subsidy/public housing. A binary variable was created to indicate if a respondent's household received one or more forms of assistance,

with yes coded as 1 and no coded as 0. An additional economic stress measure was included through the use of a single question that asked the respondents' parents, "Did you ever feel you didn't have the money to pay your bills?" This question was also coded as a binary measure (0 = no; 1 = yes).

In alignment with prior research (Bearman and Moody 2004), parents' education and employment status were combined into a scale of family socioeconomic status (fSES). The fSES variable utilizes separate measures of mother's education, father's education, mother's occupation, and father's occupation (each coded as a 5-point scale, from low to high). These four summed scores then range from 1 = low SES to 10 = high SES. This measure was then reverse coded to 1 = high SES to 10 = low SES so that it would be in the same direction as the other economic disadvantage indicators.

A neighborhood economic disadvantage measure was created using U.S. Census track data that reports the percentage of families below economic disadvantage residing in a given neighborhood. This measure is coded based on the proportions of persons with income in 1989 below the economic disadvantage level in each respondent's neighborhood. Neighborhood economic disadvantage was coded 1 (for 30 percent or more of families living at or below economic disadvantage level in the respondent's neighborhood) and 0 (for 29 percent or fewer of families living at or below economic disadvantage level in the respondent's neighborhood.

All of the aforementioned measures (economic disadvantage threshold, extreme measures of economic disadvantage, fSES, neighborhood economic disadvantage) were then standardized since they had different measurement metrics. Once standardized, these items were then scaled by taking the mean of the items and then multiplying by the number of items. This process created one measure of economic disadvantage, a measure which includes all of the aforementioned dimensions of economic disadvantage.

Controls

Control variables were measured at Wave I and were self-reported. Prior violence was operationalized via violent behavior. This variable was measured the same way as the outcome mentioned earlier. Sociodemographic variables include race, gender, family structure, and age. Race and ethnicity were operationalized by four mutually-exclusive racial categories: White, Black, Hispanic/Latino origin, and Other. Three dummy variables were created to model these categories, with White serving as the reference category. *Gender* was coded 1 for females and 0 for males with male as the reference group. *Family structure* variables were used to account for findings in previous literature that single parents are most likely to live in economic disadvantage (Petts 2009). A series of binary measures

were created to operationalize family structure and measured whether adolescents live with two biological parents, a stepfamily, a single mother, or a single father. Two-parent biological families served as the reference category. *Age* was calculated as the number of years between birth and the Wave I interview.

Other potentially important controls as outlined by previous literature are family support/coping, parental supervision, and parents' social capital. Family support is a key aspect of adolescent delinquency, as family support provides coping strategies for adolescents when they are dealing with difficulties (Anderson 1999). A five-item index for family social support was created from the following questions: (a) how much do you feel your parent cares about you; (b) your family understands you; (c) your family gives you attention; (d) your family has fun together, and; (e) you desire to leave home. Each of these items was coded 1 (for not at all) to 5 (for very much), with the exception that desire to leave home was reverse coded so that higher numbers indicate less desire to leave home. These five items were then summed, and the scale has a Cronbach's alpha of 0.76.

Parental supervision is important for keeping adolescents' behavior on task and ensuring they are completing their responsibilities (Anderson 1999). Following Demuth and Brown (2004), a parental supervision index was created for use in the current study. The parental supervision index includes seven items concerning family processes. Six of the items were derived from the following questions: (a) how often is your mother home when you leave for school; (b) how often is your mother home when you return from school; (c) how often is your mother home when you go to bed; (d) how often is your father home when you leave for school; (e) how often is your father home when you return from school, and; (f) how often is your father home when you go to bed? These variables ranged from 0 (for never) to 4 (for always). The last item included in the index was taken from the question, "How often each week does at least one of your parents eat with you?" This question was also measured on a metric ranging from 0 (for never) to 4 (for always). These seven items were summed, and the scale has a Cronbach's alpha of 0.79

In line with Coleman's (1988) social capital description, intergenerational closure was measured with a single item that asked parents the number of their child's friends' parents they had talked to in the previous four weeks. Possible responses ranged from 0 = none to 6 = six or more.

ANALYTICAL STRATEGY

We use Tobit regression to model violence as a function of economic disadvantage and other predictors. Tobit is intended for continuous data that are censored at a certain limiting value (DeMaris 2004), as is the case in this study.

That is, our response value is censored at a lower limit of zero. For measures of self-reported offending in Add Health data, there may be some response measures (e,g. measures of violent delinquency) that are not sensitive enough to pick up lower levels of the construct measuring delinquency (Osgood, Finken, and McMorris 2002). We estimate Tobit regression models using an autoregressive approach. That is, the Wave I measure of the dependent variable was included as a control in all the models. Hence, the regressor effects can be interpreted as effects on the change in delinquency from Wave I to Wave II. First, the economic disadvantage and violence at Wave I variable was entered into the model, followed by the main religion measures (public and private religiosity), the interaction terms of religiosity measures with economic disadvantage, and lastly the control variables.

Additionally, some respondents at Wave I did not stay in school and had dropped out of the study by Wave II. This occurrence can introduce sample-selection bias into the regression estimates if characteristics associated with dropping out of the sample are also predictive of delinquency. We therefore re-ran our final model using Heckman's (1979) technique that controls for sample selectivity. It turned out that the correlation of errors in the substantive and selection equations in the Heckman model was nonsignificant (not shown). This finding implies that there are no unmeasured factors affecting both the tendency to be included in the sample and the response variable. In other words, no evidence of sample-selection bias was found in the current analyses. Hence, only the Tobit regression analyses are reported in this manuscript (Heckman results are available from the senior author upon request).

RESULTS

Table 1 presents the descriptive statistics for all the variables used in the analysis. This table includes respondents from Waves I and II. Adolescent violence was the sum of the standardized items. On average, the mean score of 2.429 suggests that respondents were publicly involved in religiosity on at least a monthly basis. The mean for private religiosity is zero because this measure is the mean of the sum of standardized items. About 27 percent of respondents identify as born-again. The sociodemographic characteristics of this sample indicate that approximately 52 percent of respondents in the sample were female, 54 percent were White, 22 percent were Black, 16 percent were Hispanic/Latino, and 8 percent were from other racial or ethnic classifications. Average age of respondents was 15.275 years old. About 50 percent of the respondents were residing with both biological parents, 16 percent were residing in step families, 25 percent were residing in single mother households, 4 percent were residing in single father households, and 6 percent were residing in other family structures.

Table 1: Descriptive Statistics

Variable	Mean	Std. Dev.	Min.	Max.
Violence Wave 2	0.000	5.231	-3.007	44.81
Economic Disadvantage	0.000	5.190	-5.896	24.492
Violence Wave 1	0.000	2.920	-2.926	44.81
Public Religiosity	2.429	2.166	0	6
Private Religiosity	0.000	1.849	-3.935	1.796
Born-Again	0.267	0.442	0	1
Performing Arts	0.331	0.408	0	1
Female	0.510	0.499	0	1
Age	15.275	1.423	11	17
White	0.536	0.499	0	1
Black	0.220	0.419	0	1
Hispanic	0.164	0.369	0	1
Other	0.079	0.273	0	1
Biological Parents	0.495	0.499	0	1
Stepfamilies	0.163	0.369	0	1
Single Mom	0.248	0.432	0	1
Single Dad	0.035	0.183	0	1
Other Parent	0.058	0.234	0	1
Family Support	19.829	3.510	5	25
Parental Supervision	9.943	2.214	0	14
Social Capital	2.076	1.753	0	6

$N = 14{,}091$

Multivariate Results: Religiosity as Moderation

Table 2 presents the Tobit regression results. Model 1 establishes a baseline for further analysis of the relationship between economic disadvantage and violence by controlling for Wave I violence. When examining the economic

disadvantage effect, Model 1 shows that economic disadvantage has a positive and statistically significant effect on violence. Model 2 adds the religiosity dimensions of public religiosity, private religiosity, and born-again religious identification. The second model suggests that public religiosity and born-again status are non-significant predictors of violence. Private religiosity is negatively associated with violence at an alpha level of 0.05. Private religiosity is associated with 0.034 less violence. That is to say, the more privately religious the respondent is, the less he or she will engage in violent behavior.

Table 2: Tobit Regression Coefficient Estimates (Standard Errors) for Models of Economic Disadvantage, Religiosity, and Violence

Predictors	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
Intercept	-2.687	(.086)***	-2.493	(.096)***	-2.499	(.097)***	2.365	(.441)***
Economic Disadvantage	0.051	(.020)**	0.046	(.020)*	0.048	(.025)*	0.121	(.037)***
Violence Wave 1	0.826	(.014)***	0.856	(.015)***	0.856	(.015)***	0.764	(.016)***
Public Religiosity			-0.018	(.019)	-0.039	(.023)	-0.067	(.023)**
Private Religiosity			-0.035	(.017)*	-0.034	(.016)*	-0.024	(.018)
Born-Again			-0.079	(.076)	-0.077	(.076)	-0.109	(.084)
Public Religiosity*Economic Disadvantage					0.020	(.013)	0.047	(.017)**
Private Religiosity*Economic Disadvantage					-0.009	(.011)	-0.028	(.015)+
Born-Again*Economic Disadvantage					0.004	(.052)	-0.013	(.073)
Female							-0.957	(.666)***
Age at Wave 1							-0.203	(.021)***
Black							0.440	(.085)***
Hispanic							0.382	(.089)***
Other Race							0.196	(.340)
Step Family							0.196	(.092)*
Single Mother							0.216	(.084)**
Single Father							0.466	(.196)*
Other Family Structure							0.567	(.153)***
Family Support							-0.078	(.009)***
Parental Supervision							0.012	(.016)
Parent Social Capital							0.001	(.017)
R^2	0.1001		0.1003		0.1006		0.1106	

N = 14,091 respondents; * p < 0.05, ** p < 0.01, *** p < 0.001, + p < 0.1000

Model 3 adds the interaction effects of each religiosity dimension with economic disadvantage. None of these effects were statistically significant. Model 4 adds the statistical controls of gender, age, race and ethnicity, family structure, family support, parental supervision, and social capital. The results show that economic disadvantage remains a statistically significant and positive predictor of violence in Model 4. The interaction effects become significant once the controls are in the model. The effect of economic disadvantage is 0.121 for those with mean public and private religiosity; it gets stronger by 0.046 with each unit increment in public religiosity and weaker by 0.028 with private religiosity. In addition, being female, older, and having family support will lower the amount of violence perpetrated by respondents. In contrast, being Black, Hispanic, being in a step-family, having a single mother, and having some other type of family structure will increase a participant's level of violence.[5]

DISCUSSION AND CONCLUSION

The results of our analyses show that with respect to the relationship between economic disadvantage and violence, economic disadvantage does increase the amount of violence among teens in the sample, net of other factors. Our finding aligns with some of the previous literature pertaining to strain theory on the relationship between economic disadvantage and delinquency (Allison et al. 1999; Anderson 1999; Baron 2006; Braithwaite 1981; Messner and South 1986; Webber 2008). In alignment with this work, we found that economic disadvantage is associated with more violence, net of controls. This finding is not surprising given that the economic disadvantage measure was operationalized to include the multiple dimensions of income disadvantage. This finding is also not surprising when one considers the fact that economic disadvantage is cumulative in nature, insofar as one dimension of economic disadvantage can lead to another (Agnew 2001). Nonetheless, it is important to acknowledge the magnitude of this finding,

[5] Additional data analyses (not shown) were run with the models for separate measures of prayer, religious importance, church attendance, and involvement in church activities. These results indicated that religious importance and prayer were non-significant. Church attendance was negatively related to violence, and religious activities were positively related to violence at 0.05. When the interactions are added in model 3, however, none are statistically significant. When the control variables are added in model 4, religious activity involvement and poverty interaction is statistically significant; no other interactions were statistically significant. Items were added together to create the public and private religiosity and the born-again measures to get at different aspects of religiosity and the cumulative effect of being involved in more than one aspect as previous work suggests (Jang 2007; Jang and Johnson 2003, 2005; Johnson and Morris 2008; Pargament 1997, 1999; Pargament et al. 1992; Pargament and Mahoney 2005; Smith and Denton 2005).

as there has been much debate over the economic disadvantage/violence relationship in the literature (Braithwaite 1981; Tittle and Meier 1991; Wright et al. 1999).

Results also illustrate that private religiosity moderates the economic disadvantage/violence relationship, meaning that private religiosity acts as a buffer to the relationship between economic disadvantage and violence. That is to say, poorer youth who self-report more private religiosity engage in less violence. While this result was only marginally significant, this relatively weak effect may be due to measurement limitations. It may be the case that the private religiosity measure we employed does incorporate some aspect of one's private relationship with God, but it does not provide enough information about the depth of that relationship. Pargament (1997) argues that individuals who believe their faith to be a sacred, significant, and on-going connection with God are more likely to cope with stressful situations than someone who may just pray and attend church. This measurement limitation is one of the drawbacks of our study that will be discussed later pertaining to the use of global indicators of religiosity rather than measures which aim at drawing out the strength of how close an individual feels to God (Pargament 1997, 1999; Pargament et al. 1992; Pargament and Mahoney 2005).

Contrary to the expectation put forth in our study, it was also found that public religiosity amplifies the relationship between economic disadvantage and violence. Due to the nature of the data, however, we do not have the measures that would allow us to untangle the dynamics behind this finding. It may simply be the case that the more violent youth are more publicly involved at their churches at the request of their parents or court officials.

Within the social control theory religiosity literature, there is much debate on whether or not religiosity effectively decreases delinquency (Eggebeen and Dew 2009; Hirschi and Stark 1969; Johnson et al. 2001; Tittle and Welch 1983). Scholars who used a single indicator of church attendance did not find much of an impact (Hirschi and Stark 1969) as compared to researchers who used several indicators to capture the multiple dimensions of religiosity (Chu 2007; Cochran et al. 1994; Desmond et al. 2009; Jang and Johnson 2001; Mason and Windle 2002; Wallace et al. 2007). As expected, this line of thought that religiosity is multidimensional supported the previously hypothesized buffering relationship that private religiosity will be more negatively related to delinquency than other dimensions of religiosity.

STUDY LIMITATIONS

There are a few limitations in this study that are worth noting. First, it should be acknowledged that the Add Health dataset is a school-based questionnaire. The

school-based design of Add Health creates a potential sample selection bias because it may exclude the most disadvantaged groups of individuals who were incarcerated or dropped out of school for various reasons before the data were collected. Participation of these groups is essential to a study of this nature, and their exclusion may have resulted in conservative estimates of the moderation of religiosity on the association between economic disadvantage and violence. We did attempt to address some of the selection issues via use of the Heckman sample selection correction. This approach was only applied to possible selection that may have occurred between Waves I and II, however, and not prior to data collection.

There are some measurement issues that also need to be addressed. The primary purpose of this study was to assess the moderation of religiosity on the economic disadvantage/violence association. There were a number of shortcomings with regard to the operationalization of religiosity. The most prominent weakness of the religiosity measures employed in this study is the lack of a denominational measure. Research consistently indicates (Burdette et al. 2007) that there is considerable variation across denominations in the adherence to religious prescriptions and proscriptions regarding a litany of delinquent behaviors (e.g. alcohol use and drug use). It is therefore highly plausible that the conditioning effects of religiosity are potentially a result of denominational affiliation. It could also be argued that the moderating effects of religiosity are more likely to be in operation among a religious denomination that is known for its fundamental principles (i.e. evangelical Protestants). While adopting a general classification for religious denomination may appear to be straightforward, there is considerable empirical debate as to the correct classification of individual denominations (Blanchard et al. 2008; Burdette et al. 2007; Streensland et al. 2000) into broader categories based on some dimension of conservatism. The resulting ambiguity from this debate in the empirical religious literature makes classification a difficult task, and based on this lack of consensus within the scientific community (as well as the convoluted coding schemes of religious denomination in the Add Health dataset), a measure of religious denomination was not included in this investigation. Taking this limitation into account, it must be acknowledged that the lack of an indicator of denominational affiliation may have had a deleterious impact on the results of our study.

Our study examined religiosity in terms of more global measures, i.e., church attendance, other church activities, prayer, and religious importance. There is research that suggests that when individuals seek to understand their circumstances from a religious (i.e. Godly) perspective, they may interpret their suffering as spiritual warfare, punishment by God, or as a test or trial by God (Pargament et al. 1992; Pargament 1999; Pargament and Mahoney 2005). Estimating these aspects of religiosity was beyond the capabilities of the Add

Health dataset. Nevertheless, measuring these more esoteric aspects of religiosity may allow for a greater potential to discover relationships than when more common global measures of religiosity are used. Pargament and colleagues (1992, 1997, 1999, 2005) measure religious coping through a series of indices asking individuals about their relationship with or closeness to God, God's control in situations, responsiveness of God to prayers or meditations, and living a more godly life. Their work suggests that measuring religiousness in this context addresses the individual's inner spirituality and connectedness to God. Unfortunately, global indicators of religiosity were the only types of measures available aside from religious affiliation in the Add Health dataset in Waves I and II.

Despite these limitations, the findings of this study contribute to the augmentation of existing research that assesses the potential moderation effects of religiosity on the economic disadvantage-delinquency relationship. This study extended the line of inquiry established by other researchers (Allport 1971 [1954]; Eggebeen and Dew 2009; Jang and Johnson 2003) through an improvement in the economic disadvantage and religiosity measures used in this investigation. Most specifically, this study contributed to the body of literature in two areas. First, the moderating effect of religiosity does depend on the dimension of religiosity (e.g. public, private, born-again). Our study demonstrates religiosity does condition the association between economic disadvantage and violence. Second, the elaboration of Agnew's strain theory as having potential conditioning factors related to social control is useful in helping to understanding and potentially reducing violence among poor teens.

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