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ORIGINAL PAPER

Exploring the Social-Ecological Determinants of Physical Fighting in U.S. Schools: What about Youth in Immigrant Families?

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Abstract
Background Despite the growing presence of immigrant families in the US, little is known about physical fighting in school among youth from those families.
Objective The present study examines the social-ecological determinants of school physical fighting among youth in immigrant families. Implications for practice are also discussed.
Method Using the Children of Immigrants Longitudinal Study data set, the study sample consisted of 4288 immigrant students in 9th–12th grade. Models were estimated using

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multivariate logistic regression. Variables in the individual, family, friend/peer, and school contexts were included by fitting four hierarchical logistic models to the data.
Results Results indicated that youth in immigrant families who are males, in lower grade level, racial/ethnic minorities, and of low family socio-economic status (individual) were likely to engage in physical fights. Youth in immigrant families who feel detached from their parents (family); speak another language with friends (friend/peer); and perceive school discipline to be unfair, feel discriminated against by teachers, and who perceive school crimes to be a problem (school) are also at an elevated risk of physical fights.
Conclusion Findings from the study contribute to a growing body of research on youth in immigrant families.

Keywords Adolescents · Fighting · Immigrants · Social-ecological framework · Youth

Introduction

Physical fights among youth constitute a serious problem in schools. Students who fight are also at a heightened danger of injury, risky behavior, and mental health problems (Pickett et al. 2005; Substance Abuse and Mental Health Services Administration 2008). Fighting can also impede youths' academic success and increase the likelihood of truancy and dropout (Cotten et al. 1994; Everett and Price 1995). Results from the 2011 Youth Risk Behavior Surveillance of the Centers for Disease Control and Prevention indicate that 32.8 % of students in grade 9–12 had reported to have engaged in fights (Eaton et al. 2012). Another nationwide survey also reported that in 2011, 33 % of US students in grades 9–12 reported being involved in a school fight at least once in the previous year (Robers et al. 2014).

Over the years, researchers have examined fighting behavior among children and adolescents (e.g., Ferguson and Meehan 2010) and most notably, youth residing in urban areas (e.g., Foney and Cunningham 2002). Despite the significant research advances made, little is known about fighting involvement among youth in immigrant families, although, according to the US Census Bureau (2010), 25 % of all students in US school districts currently have at least one immigrant parent and that percentage is estimated to increase to 33 % by 2040. Despite the increase of immigrant youth in US schools, little research has focused on these youths' involvement in fighting, despite the fact that these youth are frequently confronted with anti-immigrant sentiment, discriminatory treatment, peer harassment, and social exclusion by their peers and teachers (Qin et al. 2008; Rosenbloom and Way 2004). Likewise, these youth are likely to attend schools in neighborhoods where crime, delinquency, and antisocial behaviors are prevalent, adding to their propensity toward fighting and aggressive behavior (Ness 2004).

Studies have shown that foreign-born youth are less likely to engage in antisocial and delinquent behaviors than are US-born and assimilated youth (e.g., Bersani et al. 2014; Nagasawa et al. 2001; Vaughn et al. 2014). As theorized by Portes and Zhou (1993) in their Segmented Assimilation Theory, children of immigrants may remain connected to their ethnic identity and ethnic communities, helping them gain social mobility through access to available resources. As a result, these youth are more likely to perform well in school and less likely to exhibit behavior problems. In a sample of Asian and Pacific Islander youth, Nagasawa et al. (2001) found that speaking the native language can be protective, while speaking English can contribute to dissonant assimilation, possibly increasing the risk of delinquency.

A more recent study by Bersani et al. (2014) also reported that first-generation immigrants are less likely to be involved in delinquency, than are their second-generation peers.

A growing number of researchers have also revealed a phenomenon called the "Immigrant Paradox": the counterintuitive finding that adapting to US cultural and social norms may result in detrimental outcomes, such as exposure to and engagement in fighting and violence (Peguero 2008, 2009, 2011; Rumbaut and Ewing 2007; Suárez-Orozco et al. 2008). Prior research reports that high levels of physical and social disorder, crime and violence, poverty, and educational disruptions are quite prevalent in the schools that immigrant youth attend (Peguero 2008, 2009, 2011; Suárez-Orozco et al. 2009).

Applying the social-ecological framework, our study aims to fill the existing research gap by investigating the determinants of in-school fights among these youth within individual, interpersonal, and social-environmental contexts.

A Social-Ecological Theoretical Framework

The field of health has often been criticized for its primary focus on individual behavior rather than contextual factors that influence or inhibit risk behaviors (Golden and Earp 2012). In response, the social-ecological framework emerged during the mid-1960s and early 1970s, recognizing that individual behaviors are embedded within multiple social systems and depicting the interactive characteristics of individuals and environments that underlie behaviors (Sallis et al. 2008). Building on Bronfenbrenner's (1977) ecological systems theory, which articulated a multi-dimensional perspective, the social-ecological framework was developed further to enhance our understanding of the interrelations among various individual (e.g., grade level, biological sex, race/ethnicity, family socio-economic disadvantage), interpersonal (e.g., relationship with parents and friends/peers), and environmental (e.g., home, school) contexts.

Much of the extant research has focused on the *individual*-level factors associated with youth behavior. For instance, *grade level* is a significant risk factor for school fighting among youth. Consistent with research on school bullying and aggression (Scheithauer et al. 2006), literature has documented that youth in higher grades engage in fighting behavior more frequently than those in lower grades. In a sample of 567 seventh-grade students in Massachusetts and Louisiana, Malek et al. (1998) found that who were older (i.e., >13 years old) were more likely to fight than those who were 13 or younger. *Race/ethnicity* is also another individual-level determinant of adolescent fighting, especially among racial and ethnic minority youth, particularly those residing in low-income neighborhoods (Swahn and Donovan 2006). Other studies have reported that African American youth display aggressive behavior more frequently than White youth (Patton et al. 2013). However, racial and ethnic minority students, particularly African Americans, are highly likely to be perceived as aggressive by their teachers and peers (Graham and Juvonen 2002). In addition to race/ethnicity, *biological sex* is another individual-level determinant of school fighting. Fighting is more common among males (Alikasifoglu et al. 2004; DuRant et al. 1997; Pickett et al. 2005; Rudatsikira et al. 2007). Empirical findings also substantiate that boys tend to fight more frequently than girls (Coie and Dodge 1998). Past studies also suggest that boys are more likely to engage in overt forms of aggression, (e.g., fights) while girls are involved in more subtle forms (e.g., relational aggression) (Putallaz et al. 2007). However other researchers have questioned whether boys are in fact more likely to be involved in physical aggression (Martino et al. 2008; Pepler et al. 2005).

Aside from biologically-based individual-level factors, such as grade level, race/ethnicity, and biological sex, other socio-demographic characteristics, such as the role of *English proficiency* is also related to academic performances and socialization in school for immigrant youth (Peguero 2008). Youth who speak a language other than English and those with limited English skills are at elevated risk of ridicule, social exclusion, and victimization by their peers (Peguero 2008; Yu et al. 2003), which could lead to fighting in school. Moreover, studies have also reported a significant association between *low family socio-economic status* and fighting (Malek et al. 1998; Tremblay et al. 1991). Indeed, youth living in poverty are confronted with overwhelming daily stress, exacerbating their school behavior (Jensen 2009). These youth are likely exposed to problem behaviors (Garbarino 1998) and have limited access to resources, such as social supports in their home and community (Leventhal and Brooks-Gunn 2000), which can make them more likely to engage fights.

Moving beyond the individual-level determinants, it is also important to note that youth are embedded in systems of interpersonal relations, such as relations with caregivers and peers, and in social environments, such as home and school (Bronfenbrenner 1977), which may influence or inhibit behavior problems, such as fighting. Individual behaviors are determined by both biological characteristics in individual contexts, and by adaptation to a set of social systems (Dishion and Stormshak 2007). The social-ecological perspective provides an understanding of the reciprocal transactions occurring between individuals and their social environments (Bronfenbrenner 1977). For youth, adults are the primary agents for understanding whether certain behaviors or experiences are considered inappropriate (Dishion and Stormshak 2007).

Within *family* context, relationships and interactions between the youth and their parents or guardians are relevant determinants of youths' fighting in school. Positive caregiver-youth interactions such as spending time together at home can inhibit youths' problematic behaviors outside the home (Friedman et al. 2000; Malek et al. 1998). Consistent with the Segmented Assimilation Theory, strong family ties, particularly with primary caregivers, is a form of social capital for youth in immigrant families. That social capital can facilitate positive developmental outcomes in school. Extant studies document that, for youth in immigrant families, family ties have been positively associated with social bonds at school and academic achievement (Kao 2004; Peguero et al. 2014), and negatively associated with poor academic performance and behavior problems (Marsiglia et al. 2009; Sullivan et al. 2007). Conversely, caregivers' conflictual and disinterested interactions with their children are significant predictors of youths' fighting. In a sample of 567 racially and ethnically diverse 7th graders, Malek et al. (1998) reported that students who had conflicts with their caregivers fought in school more frequently than those with sympathetic caregivers. Rudatsikira et al.'s (2007) findings from a national sample of Namibian youth also indicated that caregiver supervision mitigated involvement in fighting.

Relationships with caregivers in the home is significant in the development of youths' socialization with their friends and peers (Harris 2000). It is also important to note that in regards to *friend/peer* context, adolescence is a period of development during which youth seek autonomy from their caregivers at home and spend more time with their friends and peers (Brown 1990; Sidorowicz and Hair 2009). However, immigrant youth with limited English proficiency may find it difficult to establish friendships with native-born peers. Also prior to immigration, most youth lived in racially homogeneous societies, and may feel uncomfortable making friends with students of other ethnicities or races. In addition, given the political climate regarding bilingual education and the maintenance of English-only educational curricula, which is pervasive in many US school districts (Kao et al. 2013; Portes and Rumbaut 2014), youth who communicate with their friends in their native language might experience conflicts with other students, particularly those with anti-immigrant

sentiments, which can escalate into physical fighting. On the other hand, and in line with the Segmented Assimilation Theory, as youth assimilate, their likelihood of misbehaving or becoming victims of aggression can escalate (Ewert 2009; Peguero 2009, 2011, 2013; Peguero et al. 2015). Same-ethnic friendship, shared language and cultural beliefs, can function as a protective factor, with same ethnic peers providing social and emotional support as these youth adjust to their new communities. Moreover, such friendships can also provide youth with protection against victimization (Boulton et al. 1999).

Moreover, youths' relationships and conflicts with their friends and peers occur most frequently in their school (Opotow 1991); thus, it is not surprising that factors within *school* context, such as school climate can influence youths' academic, behavioral, and social outcomes (Kasen et al. 2004). Young immigrants who attend schools where use and sales of illicit substances, violence, and criminal activities are pervasive have limited opportunities for academic success and social mobility. That environment can also manifest school-related problems, such as fighting and delinquency. These youth may report feeling disconnected because they lack teacher support or have difficulty getting along with teachers (Lewis et al. 2005; Murray and Murray 2004). In a sample of 3054 high school students in Massachusetts, DuRant et al. (1997) found that students whose property were stolen or damaged in school were also frequently involved in fights.

In addition, there also appears to be an association between quality of teacher-student relations and youths' school behavior (Baker et al. 2008; Gregory and Ripski 2008). Thus, perceived discrimination by teachers plays a significant role in shaping youth behaviors and attitudes. Immigrant youth confronted with discrimination and harassment from students and teachers (Peguero 2009) are more apt to misbehave in school (Deng et al. 2010; Flores et al. 2010). In a sample of Chinese–American adolescents, Deng et al.'s (2010) findings demonstrate that adolescents' perceptions of discrimination and experiences in victimization were significantly related to behavior problems. Flores et al. (2010) also reported, from a sample of Mexican–American adolescents, that perceived discrimination was directly related to involvement in fights. In contrast, youth who reported being treated fairly by teachers were less likely to participate in fights (Resnick et al. 1997).

Research Hypotheses

In the context of the literature review, our study explores the determinants of fights in school among immigrant youth within social-ecological contexts. In accordance with the Segmented Assimilation Theory, we hypothesize that youth who are males, in higher grade, members of racial or ethnic minorities, in families with low socio-economic status (family SES), those who have negative relationships with parents, feel discriminated against by teachers, and are involved in crimes in school are more likely to fight in school. We also hypothesize that limited English proficiency, having friends who speak another language, perceived fair discipline decrease the likelihood.

Method

Sample and Procedures

We derived our data from the first survey of the Children of Immigrants Longitudinal Study (CILS, Portes and Rumbaut 1991). The original CILS is a large scale project on immigrant parents and their adolescent children in San Diego and Miami. Adolescents from more than

70 countries were interviewed. The CILS survey gathers information on national origin, family relationships, and social and psychological adaptation among a large and racially/ethnically diverse sample of immigrant children in California (San Diego) and Florida (Miami and Fort Lauderdale)—areas with a large concentration of immigrant populations. The purpose of the survey was to investigate the process of adaptation among immigrant youth with at least one foreign-born parent (Portes and Rumbaut 2001, 2008) (N = 5262) who were originally surveyed during 1992–1993 school year.

Data were collected at three waves (Wave I = 1992, Wave II = 1995, and Wave III = 2006). Wave I comprises a total sample of 5262 adolescents of 77 different nationalities who were primarily eighth and ninth graders in Miami/Ft. Lauderdale and San Diego schools. Of these adolescents, 47.6 % (N = 2503) were first interviewed in Miami, 46.0 % (N = 2420) were in San Diego, and 6.4 % (N = 339) were in Ft. Lauderdale. The majority (89.1 %, N = 4686) were originally from Asian or Latin American countries. Three years later, a follow-up survey was conducted in Wave II, which consisted of a total of 4288 students who were primarily in eleventh and twelfth grades. A final follow-up survey, Wave III, was conducted with 3613 students (who were primarily in mid-twenties) in 2001-2003. We used Wave II data, which includes 2070 males and 2218 females. The Wave II survey was conducted individually via face-to-face using paper and pencil, and the surveys comprised both the Youth Adaptation and Growth Questionnaire II, 1995 and Parent Interview Questionnaire (Portes and Rumbaut 1991). However, all of the items we selected were from the Youth Adaptation and Growth Questionnaire II.

Measures

Dependent Variable

The main outcome of interest for this study is an item: "I got into a physical fight at school". The response categories were 1 = never, 2 = once or twice, and 3 = more than twice. For the analysis the fighting variable was dichotomized as "0 = never been in a fight" and "1 = have been in at least one or more fights". The categories once or twice and more than twice were collapsed due to low frequencies.

Independent Variables

Individual Context Applying the social-ecological framework, variables representing individual, family, friend/peer, and school contexts were entered into four models. Items representing the individual context consisted of grade level ("What grade are you in?"), race/ethnicity ("Which of the races listed do you consider yourself to be?"), biological sex, country of birth, English proficiency ("How well do you speak English?"), and family SES. Grade level and race/ethnicity included an open-ended response option, and the written responses were later grouped accordingly (9th grade was the reference variable). For race/ethnicity, the responses were grouped as "Black", "Hispanic/Latino", "Asian", "Multiracial", "Other" or "White" (reference variable). Response options for biological sex were "male" or "female"; male was the reference variable. For English proficiency, response options ranged from 1 (very little) to 4 (very well), which were recoded as 1 = yes and 0 = no, with "no" being the reference variable. Birth country was assessed with the following question, "In what country were you born?" The response options were open-ended, with participants writing in their birth countries. This item was recoded as "US born" and "Foreign born" (US born was the reference variable.). Family SES asked,

"Compared to 3 years ago, do you think that your family's economic situation now is?" Response options ranged from 1 = much better to 5 = much worse (reference variable).

Family Context Family context probed negative relationships with parents, using these items: "My parents do not like me very much", "My parents and I often argue because we don't share the same goals", and "My parents are usually not very interested in what I say". Response options ranged from 1 = very true to 4 = not true at all, which were recoded so that higher scores indicated higher rates of negative relationships with parents.

Friend/Peer Context The friend/peer context included a single item: "In talking with your friends at school, do you sometimes use a language other than English?" Response options were 1 = yes and 2 = no, recoded so that not using a language other than English was the reference variable (1 = yes, 0 = no).

School Context School context included three categories: school discipline, school crime, and discrimination in school. The school discipline context was: "Discipline is fair". Three items for school crime include, "I had something stolen from me at school", "Someone offered to sell me drugs at school", and "Someone threatened to hurt me at school". Response options for all three ranged from 1 = agree a lot to 4 = disagree a lot and were recoded such that increasing scores indicated higher rates of fair school discipline and school crime respectively. Discrimination in school comprises one item that assessed the extent of teacher related discrimination: "Have you ever felt discriminated against by teachers?" The response option was 1 = yes and 2 = no, with "no" as the reference variable (1 = yes, 0 = no).

Analyses

We used multivariate logistic regression to analyze data, using SAS 9.3. Odds ratios refer to the odds of being in a fight in school, controlling for the other variables in the model. We fitted four hierarchical logistic models to the data. The first model included individual context variables. For the second model, family context variables were added to the individual context variables. For the third model, one friend/peer context variable was added to the individual and family context variables. For the fourth model, school context variables were added to the rest of the variables. In addition to the regression analyses, we used multiple imputation ($k = 20$) and the EM algorithm in SAS Version 9.3 (SAS Institute Inc., 2011) to address missing data. Missing data for key variables ranged from 0.4 to 1 %. With the assumption that data are missing at random, the expectation maximization algorithm gives unbiased estimates of missing data (Allison 2002; McLachlan et al. 2004). The present study was conducted using publicly available a dataset, which does not allow for identification of the respondents. Thus, there are no ethical issues with regards to informed consent/assent, and the study was exempted from Institutional Review Board oversight (Table 1).

Results

Results of the correlational analyses, as presented in Table 2, yielded a number of significant associations. Physical fighting was associated with grade level; Black, Hispanic/Latino and Other races/ethnicities; family SES; negative parent-youth relationship;

Table 1 Percentages and N or means and standard deviations for the study variables ($N = 4288$)

Variable	%/Mean	N/SD
Dependent variable		
Physical fighting in school		
Yes	87.40 %	3748
No	12.60 %	540
Independent variables		
Individual context		
Grade level		
9th grade	.20 %	9
10th grade	.90 %	39
11th grade	60.90 %	2611
12th grade	38.00 %	1629
Race/ethnicity		
White	14.30 %	613
Black	6.60 %	283
Hispanic/Latino	23.50 %	1008
Asian	25.80 %	1106
Multiracial	11.40 %	489
Other	18.40 %	789
Biological sex		
Male	48.90 %	2097
Female	51.10 %	2191
Birth country		
US born	49.98 %	2143
Foreign born	50.02 %	2145
English proficiency (Speak English)		
Well	98.40 %	4219
Not well	1.60 %	69
Family SES		
Much worse	1.00 %	43
Worse	3.10 %	133
About the same	44.80 %	1921
Better	32.10 %	1376
Much better	19.00 %	815
Family context		
Negative parent–youth relationship		
Parents don't like me (range 1–4)	1.33	.68
Argue with parents (range 1–4)	2.17	1.03
Parents uninterested (range 1–4)	1.81	.95
Friend/peer context		
Speak another language		
Yes	70.00 %	3002
No	30.00 %	1286
School context		
Fair discipline (range 1–4)	2.13	.88

Table 1 continued

Variable	%/Mean	N/SD
Teacher discrimination		
Yes	79.60 %	3413
No	20.40 %	875
School crime		
Something stolen (range 1–3)	1.54	.64
Sell drugs (range 1–3)	1.38	.68
Threatened to hurt me (range 1–3)	1.21	.48

speaking a language other than English with friends; and school crime. Physical fighting was also negatively associated with female sex, English proficiency, and school discipline.

Results of the multivariate logistic regression analysis are displayed in Table 3. Model 1 included individual context variables consisting of youths' grade levels, races/ethnicities, biological sex, birth country, English proficiency, and family SES. For grade level, only 11th grade was significant (OR = .44; 95 % CI = .13–1.55; $p < .05$). That is, youth in the 11th grade reported fewer fights in school than did youth in the 9th grade. For the race/ethnicity variables, we found that Blacks (OR = 4.44; 95 % CI = 2.98–6.61; $p < .001$), Hispanic/Latinos (OR = 2.90; 95 % CI = 2.14–3.93; $p < .001$), Asians (OR = 2.31; 95 % CI = 1.70–3.15; $p < .001$), multiracial youth (OR = 2.73; 95 % CI = 1.92–3.90; $p < .001$), and "other" youth (OR = 3.56; 95 % CI = 2.63–4.83; $p < .001$) reported significantly higher rates of fighting, compared to Whites. More specifically, the odds of reporting school fights was 4.44 times higher for Blacks, 2.90 times higher for Hispanic/Latinos, 2.31 times higher for Asians, 2.73 times higher for multiracial youth, and 3.56 times higher for youth identified as "other," compared to White youth. Females were less likely to report fights, compared to males (OR = .25; 95 % CI = .21–.31; $p < .001$). For family SES, youth who reported that their family SES stayed "about the same" (OR = .30; 95 % CI = .15–.58; $p < .001$) or "better" (OR = .40; 95 % CI = .20–.76; $p < .05$) also reported fewer fights in school, compared to those whose family SES was "much worse". Compared to family SES that stayed "about the same", individuals who reported that their family SES got "much worse" had 3.33 times higher odds of reporting being in a fight, and compared to the "much better" group, the "much worse" group had 2.5 times higher odds of reporting being in a fight.

Model 2 added family context variables that assessed negative relations with parents (change in −2 log likelihood = 37.12, df = 3, $p < .001$). Individual context variables, such as 11th grade, Black, Hispanic/Latino, Asian, multiracial, "other," female, and family SES ("about the same") remained statistically significant in Model 2. However, family SES ("better") was no longer significant. For family context variables, "My parents are usually not very interested in what I say" was significantly associated with school fighting (OR = 1.26; 95 % CI = 1.13–1.41; $p < .001$). A one unit increase in "My parents are usually not very interested in what I say" was associated with a 1.26 times higher odds of reporting school fights.

Model 3 added a friend/peer context variable that assessed the extent to which the participant spoke another language with friends at school (change in −2 log likelihood = 11.10, df = 1, $p < .001$). Individual context variables, such as 11th grade, Black, Hispanic/Latino, Asian, multiracial, "other", female sex, and family SES ("about the same"), and family context variable (i.e., "parents uninterested") all remained significant in Model 3. For the friend/peer context variable, youth who reported speaking a different

language with friends at school had 1.40 times higher odds of fights in school, compared to those who did not report speaking a different language with friends at school (OR = 1.40; 95 % CI = 1.15–1.71; $p < .001$).

Model 4 added school context variables that assessed fair discipline, teacher discrimination, and three school crime items (change in −2 log likelihood = 305.52, df = 5, $p < .001$). Individual context variables, such as Black, Hispanic/Latino, Asian, multiracial, "other", female sex, and family SES ("about the same") all remained significant, although 11th grade was no longer significant. However, English proficiency was found to be negatively associated with fighting in Model 4. Family context (i.e., "parents uninterested") and friend/peer context variables (i.e., "speaking a different language with friends") both remained statistically significant in Model 4. For the school context variables, fair discipline had a significant negative relationship with school fights (OR = .60; 95 % CI = .49–.73; $p < .001$). That is, youth who reported unfair discipline in school had 1.67 times higher odds of school fighting than those who reported fair discipline practices. Teacher discrimination was also found to be significantly related to fights in school (OR = 1.61; 95 % CI = 1.31–1.99; $p < .001$). Youth who reported being discriminated against by a teacher had 1.61 times higher odds of fights, compared to those who reported not being discriminated against by a teacher. School crime items, such as "having something stolen at school" (OR = 1.34; 95 % CI = 1.15–1.55; $p < .001$), "someone offered to sell me drugs at school" (OR = 1.30; 95 % CI = 1.14–1.49; $p < .001$), and "someone threatened to hurt me at school" (OR = 2.39; 95 % CI = 2.02–2.83; $p < .001$) were all significantly associated with fights. Youth who reported a one-unit increase in having something stolen had 1.34 times higher odds of being in fights. Youth who reported a one-unit increase in "someone offering to sell them drugs in school" were 1.30 times more likely to engage in fights. A one-unit increase in someone threatening harm at school showed 2.39 times higher odds of school fights.

Discussion

Our goal was to investigate the social-ecological determinants of school fighting by immigrant youth. Understanding the determinants of school fighting is vital because schools are institutions of education and socialization. However, these educational and socialization processes are intensified for immigrant youth, because school is where these youth learn about US values, beliefs, and behaviors but also is the avenue for adapting to cultural and social expectations (Peguero 2009, 2011; Suárez-Orozco et al. 2008).

At the individual context, 11th graders were less likely than 9th graders to participate in physical fights in school, a finding that is inconsistent with our hypothesis and prior research, which documented that children in higher grade levels are more likely to fight than those in lower grade (Malek et al. 1998). It is plausible that the frequency of fights and conflicts with peers in school decrease as youth mature. However, congruent with our hypotheses and research findings, racial and ethnic minority youth are at a greater risk of physical fights and conflicts, compared to White youth. We should note, however, that our results, which report a higher level of physical fighting among Asians than Whites, is inconsistent with the stereotypical, "model minority" myth. It is plausible that exposure to violence, discrimination, and language and cultural barriers are considerably higher among Asian and other minority youth than they are among White youth. As a consequence, immigrant youth are at a higher risk of being involved in school fights than are their mainstream classmates and peers.

Table 2 Correlations among study variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Grade	–													
White	.05**	–												
Black	.05**	−.09**	–											
Hispanic	.05**	−.18**	−.12**	–										
Asian	.13**	−.19**	−.12**	−.25**	–									
Multiracial	.06**	−.12**	−.08**	−.16**	−.17**	–								
Other	.07**	−.15**	−.10**	−.21**	−.22**	−.14**	–							
Sex	.02	−.00	.07**	.04**	.01	−.01	−.06**	–						
English	−.02	.02	.01	.04**	−.11**	.02	−.01	.02	–					
Birth	.03	−.10**	.01	−.02	.19**	−.10**	−.04*	.02	−.08**	–				
Family SES	.13**	.08**	.10**	.16**	−.01	.06**	.11**	−.00	.02	.04**	–			
Don't like	−.01	−.07**	−.01	−.09**	.11**	.05**	.00	.02	−.06**	.04**	−.11**	–		
Argue	.00	.00	.32*	−.04**	.01	.03	−.01	−.03	−.03	−.03**	−.07**	.37**	–	
Uninterested	−.02	−.09**	.04*	−.10**	.13**	.03	.00	−.03*	−.05**	.01	−.12**	.49**	.49**	–
Speak	−.04*	−.00	−.12**	.21**	−.16**	−.03*	.06**	.01	−.04**	.14**	.06**	−.00	.00	−.04*
Fair	−.13**	−.04**	−.05**	−.09**	−.01	−.08**	−.05**	.01	.01	.05**	−.10**	−.10**	−.12**	−.12**
Teacher	.10**	−.01	.08**	.07**	.05**	.04**	.06**	−.00	.02	−.02	.12**	.07**	.11**	.11**
Stolen	−.01	.00	.03*	.03*	−.03	.03	−.05**	−.08**	.03	.00	.02	.09**	.11**	.12**
Sell drugs	−.05**	.02	−.07**	.04**	−.01**	.05**	.05**	−.24**	.04**	−.13**	.01	.11**	.16**	.12**
Threatened	−.01	−.03*	.02	−.03*	−.00	.04**	.02	−.15**	−.00	−.03*	−.02	.13**	.11**	.13**
Fight	.05**	.01	.05**	.04*	.01	.03	.09**	−.20**	−.03*	.01	.09**	.07**	.09**	.09**

Table 2 continued

	15	16	17	18	19	20	21
Grade							
White							
Black							
Hispanic							
Asian							
Multiracial							
Other							
Sex							
English							
Birth							
Family SES							
Don't like							
Argue							
Uninterested							
Speak	–						
Fair	−.03	–					
Teacher	.05**	−.25**	–				
Stolen	.03*	−.11**	.15**	–			
Sell drugs	−.05**	−.15**	.18**	.20**	–		
Threatened	−.01	−.10**	.17**	.25**	.27**	–	
Fight	.07**	−.16**	.18**	.18**	.23**	.32**	–

* $p < .05$; ** $p < .01$; *** $p < .001$

Table 3 Multivariate logistic regression analysis of physical fighting in school ($N = 4288$)

Variable	Model 1		Model 2		Model 3		Model 4	
	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)
Intercept	−1.00* (.45)	–	−1.79*** (.48)	–	−2.08*** (.49)	–	−3.41*** (.55)	–
Individual context								
Grade level (9th)								
10th grade	.27 (.30)	.87 (.21–3.55)	.21 (.30)	.82 (.20–3.40)	.21 (.30)	.81 (.20–3.32)	.36 (.32)	1.31 (.29–6.03)
11th grade	−.41* (.19)	.44 (.13–1.55)	−.39* (.19)	.45 (.13–1.59)	−.40* (.19)	.44 (.13–1.55)	−.31 (.20)	.68 (.17–2.64)
12th grade	−.28 (.19)	.50 (.14–1.77)	−.24 (.19)	.52 (.15–1.86)	−.23 (.19)	.52 (.15–1.84)	−.15 (.20)	.79 (.20–3.09)
Race/ethnicity (White)								
Black	1.49*** (.20)	4.44 (2.98–6.62)	1.44*** (.21)	4.20 (2.80–6.31)	1.57*** (.21)	4.78 (3.16–7.24)	1.71*** (.23)	5.52 (3.51–8.66)
Hispanic/Latino	1.07*** (.16)	2.90 (2.1–3.9)	1.11*** (.16)	3.03 (2.22–4.13)	1.11*** (.16)	3.02 (2.21–4.12)	1.23*** (.17)	3.42 (2.43–4.80)
Asian	.83*** (.16)	2.31 (1.70–3.15)	.80*** (.16)	2.24 (1.63–3.06)	.90*** (.17)	2.46 (1.78–3.40)	1.13*** (.18)	3.10 (2.18–4.40)
Multiracial	1.01*** (.18)	2.73 (1.92–3.90)	.97*** (.18)	2.63 (1.84–3.78)	1.03*** (.19)	2.79 (1.94–4.01)	1.09*** (.20)	3.00 (2.00–4.39)
Other	1.27*** (.16)	3.56 (2.63–4.83)	1.27*** (.16)	3.57 (2.62–4.87)	1.31*** (.16)	3.69 (2.70–5.04)	1.51*** (.17)	4.52 (3.22–6.34)
Biological sex (Male)								
Female	−1.38*** (.10)	.25 (.21–.31)	−1.37*** (.10)	.25 (.21–.31)	−1.38*** (.10)	.25 (.21–.31)	−1.18*** (.10)	.31 (.25–.38)
Birth country (US)	.02 (.09)	1.02 (.86–1.22)	.02 (.09)	1.02 (.86–1.22)	−.02 (.09)	.98 (.82–1.17)	.09 (.10)	1.09 (.90–1.32)
English proficiency (No)	−.68 (.38)	.51 (.24–1.06)	−.58 (.38)	.56 (.27–1.17)	−.51 (.38)	.60 (.29–1.26)	−.89* (.40)	.41 (.19–.89)
Family SES (Much worse)								
Worse	−.030 (.19)	.47 (.22–1.03)	−.06 (.19)	.50 (.23–1.10)	−.03 (.19)	.60 (.24–1.16)	.04 (.21)	.68 (.30–1.56)
About the same	−.50*** (.11)	.30 (.15–.58)	−.50*** (.11)	.33 (.17–.64)	−.52*** (.11)	.32 (.16–.64)	−.52*** (.12)	.39 (.19–.79)
Better	−.21* (.10)	.40 (.20–.76)	−.16 (.10)	.46 (.23–.89)	−.17 (.10)	.46 (.23–.90)	−.09 (.11)	.60 (.29–1.21)
Much better	.03 (.11)	.50 (.26–.98)	.10 (.11)	.60 (.30–1.17)	.11 (.11)	.60 (.30–1.20)	.15 (.12)	.76 (.37–1.55)

Table 3 continued

Variable	Model 1		Model 2		Model 3		Model 4	
	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)	β(SE)	OR (95 % CI)
Family context								
Negative parent–youth								
Parents don't like me			.01 (.07)	1.01 (.87–1.16)	−.00 (.07)	1.00 (.87–1.15)	−.13 (.08)	.87 (.75–1.02)
Argue with parents			.08 (.05)	1.08 (.98–1.20)	.07 (.05)	1.08 (.97–1.19)	−.02 (.06)	.98 (.88–1.09)
Parents uninterested			.23*** (.06)	1.26 (1.13–1.41)	.24*** (.06)	1.27 (1.13–1.42)	.16** (.06)	1.17 (1.04–1.33)
Friend/peer context								
Speak another lang. (No)					.34*** (.10)	1.40 (1.15–1.71)	.31*** (.11)	1.36 (1.10–1.68)
School context								
Fair discipline							−.52*** (.10)	.60 (.49–.73)
Teacher discrimination							.48*** (.11)	1.61 (1.31–1.99)
School crime								
Something stolen							.29*** (.08)	1.34 (1.15–1.55)
Sell drugs							.26*** (.07)	1.30 (1.14–1.49)
Threatened to hurt me							.87*** (.09)	2.39 (2.02–2.83)
−2LL	3561.53		3524.41		3513.31		3207.79	
R^2	.08		.08		.09		.14	
df	15		18		19		24	

* $p < .05$. ** $p < .01$. *** $p < .001$

For Model 2, change in −2LL = 37.12, $df = 3$ $p < .001$; Model 3, change in −2LL = 11.10, $df = 1$, $p < .001$; and for Model 4, change in −2LL = 305.52, $df = 5$, $p < .001$

Also consistent with our hypotheses and previous studies (Alikasifoglu et al. 2004; Pickett et al. 2005; Rudatsikira et al. 2007), males are more likely to fight in school than females. As empirical evidence points out, externalizing problems, such as aggression and fighting are higher for males than for females (Coie and Dodge 1998). Furthermore, as hypothesized, youth who reported that their family SES is "about the same" or "better" were less likely to fight in school. Youth with low family SES may experience high levels of stress in their home and in their neighborhood, which negatively impact their academic achievement and relations with their peers (Jensen 2009), thereby contributing to behavior problems, such as fighting.

At the family context, our results suggest that parents' detachment is significantly related to youths' involvement in school fighting, which is consistent with our hypothesis and previous research findings (Malek et al. 1998). Family is where youth develop attitudes and conducts that can influence their behavior (Bronfenbrenner 1977). As hypothesized by the Segmented Assimilation Theory, a strong bond with caregivers is a form of positive social capital for immigrant youth, which can mitigate problems experienced in school. Also, youth with secure attachment to their parents tend to behave better and feel better psychosocially, and therefore less likely to misbehave or experience social problems in school (Liu 2008; Vivona 2000).

At the friend/peer context, our results show that youth who speak another language with their friends at school are more likely to fight, which contradicts our hypothesis and the Segmented Assimilation Theory. Immigrant youth may turn to friends and peers with the same language and cultural backgrounds. Although same-ethnic peers can be a protective factor, as suggested by the Segmented Assimilation Theory, it is also possible that youth who speak another language might be taunted by their native-born classmates and peers, which could escalate into fighting or other conflicts.

At the school context, we found that youth who perceive school disciplinary measures as fair are less likely to engage in fights. On the contrary, youth who experience being discriminated against by their teacher and those who report being victims of crimes in school are more likely to fight. These results are also consistent with our hypotheses and other research findings (Flores et al. 2010; Peguero 2009). Also consistent with social control theorists, youth who reported fair treatment by school authorities are more likely to bond with their school (Hirschi 1969), which can reduce the likelihood of behavior problems and conflicts there. On the other hand, perceived unfair treatment by school authorities and criminal activities in school can disrupt youths' bond to their school, heightening their risk of engaging in problematic behaviors, including fights.

Limitations

Our study has several limitations, which need to be acknowledged. First, it is correlational and cross-sectional, only suggesting associations, rather than inferring causality. A second shortcoming is the outcome variable, due to the CILS dataset. We measured fighting in school using only one item, precluding a more in-depth understanding of the factors that might differentially impact various types of fighting. Another limitation of this study is the potential method bias. All of the findings were based on self-reported data, and although that is a widely used approach, the associations could possibly be inflated and there may be errors related to inaccurate reports. In addition, because the main outcome variable was dichotomized, we were unable to disentangle the characteristics of youth who regularly

fight from those who fought infrequently. Also, given the nature of the sample, we were unable to compare youth in immigrant families to native-born youth attending the same school. Moreover, this study does not include other relevant variables in the family and friend/peer contexts, such as family cohesion, parenting practices, and family and peer support, which were unavailable in the dataset. Further, this study did not include variables at community/neighborhood context or other broader level contexts (e.g., cultural, political), which were also unavailable in the dataset. And finally, we should also note the limitation in terms of generalization. The sample in this study was selected from specific geographic areas and it is unclear whether our findings can be generalizable to youth in immigrant families residing in other US regions.

Practice Implications

There is no "single" best approach to addressing externalizing problems in youth, and efficacious approaches tend to be multimodal in nature (Brazão et al. 2013; Maddux and Winstead 2012). Given the social-ecological focus and our findings, practitioners need to consider multilevel and multimodal approaches to assess the problem among immigrant youth and provide effective strategies for correcting it. Any approaches should take into account the socio-cultural, environment as well as the individual characteristics of the youth, and consider three components: *parent training*, *psycho-educational strategies*, and *cognitive-behavioral anger management*.

Our findings also suggest that parents' detachment is significantly related school fighting. Other research has shown that parental involvement reduces externalizing problems. For instance, in a study of 120 school-age youth at-risk of externalizing problems, Pardini et al. (2007) found that warm and involved parenting significantly reduced aggressive and antisocial behaviors. Consequently, we suggest that parent training should be an essential component in initiatives to reduce school fighting among immigrant youth. The training should focus on assisting parents to increase their level of involvement with their children and improve the quality of their attachment.

Another practice implication informed by our findings is psycho-educational strategies (Ando et al. 2007; Cummings et al. 2004). Given the socio-ecological nature of the risk factors we identified, we propose that these strategies should target students, teachers and other school staff in order to increase awareness of cultural adaptations and other challenges faced by immigrant youth in schools, reduce discriminatory and biased attitudes, and promote fair treatment by school authorities.

In addition, perceived unfair treatment by school authorities has been found to be linked to disruptions in the youths' bond to their school and heightened risk of fighting. Moreover, studies suggest that such perceptions of unfair treatment have been linked to increased anger (Kassinove and Sukhodolsky 1995; Potegal and Novaco 2010; Wranik and Scherer 2010); and increased anger has been identified as a risk factor for aggressive behavior, but also as a characteristic of violent individuals (Eckhardt et al. 2008; Lundeberg et al. 2004). Concurrently, cognitive-behavioral approaches have been found to be effective in reducing anger and aggression in youth (Sukhodolsky et al. 2004, for a review). For these reasons, practitioners might consider integrating cognitive-behavioral strategies aimed at improving social cognition, conflict-resolution skills, critical reasoning and information processing, and problem-solving skills to empower these youth to gain a greater sense of emotional and behavioral control and self-efficacy and thus help reduce incidents of school fighting.

Conclusion

Despite the growing amount of research indicating that as immigrants adapt to US cultural and social values, the likelihood of engaging in problem behavior within their schools is higher, little was known about whether or how a social-ecological theoretical framework could explain the determinants of fights among immigrant youth. The present study findings contribute to a growing body of research (Peguero 2008, 2009, 2011; Suárez-Orozco et al. 2008, 2009) that demonstrate that negative parent-youth relationship, weak interpersonal peer and teacher relationships, and biased or discriminatory treatment at school are potential barriers against development of healthy pro-social behavior, positive peer relationships, and educational progress for these youth. The number of immigrant youth is expected to grow exponentially within school systems. Thus, it is imperative to address school systems that sustain detrimental school environments, thereby creating barriers to pro-social development, educational progress, and well-being.

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