DOES VIOLENCE BEGET VIOLENCE? FACTORS MODERATING TRAJECTORIES OF YOUTH AGGRESSION IN A CONTEXT OF POLITICAL CONFLICT

A Dissertation

Submitted to the Graduate School
of the University of Notre Dame
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy

by

Laura K. Taylor

E. Mark Cummings, Director

Graduate Program in Psychology and Peace Studies

Notre Dame, Indiana

April 2013
DOES VIOLENCE BEGET VIOLENCE? FACTORS MODERATING TRAJECTORIES OF YOUTH AGGRESSION IN A CONTEXT OF POLITICAL CONFLICT

Abstract

by

Laura K. Taylor

A common assumption is that a violent environment produces violent youth; this project interrogated this assertion in two ways: examining if exposure to intergroup antisocial behavior increases youth aggression, and in turn, if changes in general youth aggression are related to participation in intergroup conflict. Improving on past work, the current study utilized four waves of a prospective, longitudinal dataset of mother/child dyads (N=820; 51% female; ages 10 to 20 years old) in Northern Ireland. Hierarchical linear modeling (HLM) addressed new questions about inter-individual differences in intra-individual change in a setting of protracted political conflict. Although boys were higher than girls in initial aggression, there were no significant gender differences in the average trajectory or linear change in aggression from 10 to 20 years old. As a risk factor, experience with sectarian antisocial behavior predicted greater aggression problems; however, that effect weakened with age and was buffered by a cohesive family environment. Regarding the continuation of intergroup conflict,
being female and having a more cohesive family negatively predicted youth participation in sectarian acts, whereas the trajectory of general aggression (i.e., intercepts and linear slopes) predicted significantly more youth engagement in out-group antisocial behavior. On an individual level, the findings identify ways the family environment serves to protect youth from greater aggression and from engaging in out-group hostility; at a societal level, the project suggests multiple ways to decrease the potential for youth mobilization in protracted conflict.
This dissertation is dedicated to:

The memory of Ed Cairns and John Darby: As two pioneers in the field, they were tremendous mentors and always made time for emerging scholars with insatiable questions.

And my family: Alex, Sophie, Mom and Dad. Thank you for always being there for me, and reading almost every word... twice.
# CONTENTS

Figures ........................................................................................................ v

Tables ........................................................................................................ vi

Preface ........................................................................................................ vii

Acknowledgments ...................................................................................... viii

Chapter 1: Introduction .............................................................................. 1
  1.1 Overview ............................................................................................. 1
  1.2 Developmental Psychopathology and the Social Ecological Framework .... 4
    1.2.1 Guiding theories ........................................................................... 5
  1.3 Adolescent Aggression ......................................................................... 8
  1.4 Political Violence and Adolescent Aggression .................................... 9
  1.5 Community Violence, Adolescent Aggression, and Family Environment ..... 12
  1.6 Northern Ireland: A Setting of Protracted Political Conflict .............. 15
  1.7 Youth and On-going Sectarianism ................................................... 17
  1.8 Current Study .................................................................................. 20

Chapter 2: Method .................................................................................... 23
  2.1 Participants ....................................................................................... 23
  2.2 Procedures: Neighborhood and Family Selection ............................. 25
  2.3 Measures .......................................................................................... 26
    2.3.1 Aggression scale (AGR) ................................................................. 26
    2.3.2 Experience with sectarian antisocial behavior (expSAB) .......... 27
    2.3.3 Family cohesion (FES) ................................................................. 27
    2.3.4 Participation in sectarian antisocial behavior (pSAB) ............... 28
  2.4 Data Analytic Plan ............................................................................. 29
    2.4.1 Model building ........................................................................... 33
    2.4.2 Fixed and random effects ......................................................... 35
  2.5 Proposed Model Tests ....................................................................... 36

Chapter 3: Results ..................................................................................... 39
  3.1 Preliminary Analyses .......................................................................... 39
  3.2 Unconditional Models ....................................................................... 43
3.3 Conditional Models ........................................................................................................ 51
3.4 Predicting Participation in Sectarian Antisocial Behavior ........................................ 55

Chapter 4: Discussion ......................................................................................................... 57
  4.1 Trajectories of Aggression ............................................................................................. 60
  4.2 Protective Role of the Family ......................................................................................... 62
  4.3 Participation in Sectarian Antisocial Behavior ............................................................. 64
  4.4 Limitations and Future Research .................................................................................. 66
  4.5 Implications .................................................................................................................... 68

Bibliography ......................................................................................................................... 72
FIGURES

Figure 3.2.1 Hierarchical linear modeling (HLM) two-way interaction plot of experience with sectarian antisocial behavior (expSAB) and age on youth aggression. Youth age is centered on the grand mean (15 years old). Lines are plotted at the mean, and one standard deviation above and below, of expSAB. As youth age, the positive link between expSAB and aggression weakens. ........................................... 50

Figure 3.3.1: HLM two-way interaction plot of gender and age on youth aggression. Youth age is centered on the grand mean (15 years old). Lines are plotted for boys and girls. Boys are significantly higher in aggression initially, but there are no gender differences in the linear slope. ....................................................... 52

Figure 3.3.2 HLM two-way interaction plot of family cohesion (FES) and experience with sectarian antisocial behavior (expSAB) on youth aggression. Lines are plotted at the mean and one standard deviation above and below of FES. Family cohesion buffers youth from the positive link between expSAB and aggression. ............. 54
TABLES

Table 2.1 Percentages for Different Patterns of Participant Retention across Four Time Points ........................................................................................................................................ 24

Table 3.1 Means, Standard Deviations, and Correlations among All Study Variables ..... 40

Table 3.2 Estimates of Multilevel Models of Change in Aggression among Youth in Belfast (N=820) ........................................................................................................................................ 45

Table 3.4 Multiple Regression Predicting Participation in Sectarian Antisocial Behavior (N = 566) ........................................................................................................................................ 56
PREFACE

On the 15th anniversary of the Belfast/Good Friday Agreement, Northern Ireland has come a long way and has strong plans to foster cohesion, sharing, and integration. Yet, despite the hard work and good will of many citizens, non-governmental organizations, and some political leaders, sectarianism remains a part of daily life. Young people, at times, are at the forefront of continued protests. Yet, they are also leading efforts toward decreasing intergroup animosity and building a ‘shared future.’
ACKNOWLEDGMENTS

I would like to thank the many families in Northern Ireland who have participated in the project, and the project staff, graduate students, and undergraduate students at the University of Notre Dame and the University of Ulster. My committee has been an incredible support throughout this process; I’m indebted to Mark Cummings, Scott Maxwell, Dan Lapsley, John Darby, and John Paul Lederach.

This research was support by National Institute of Child Health and Human Development Grant R01 HD046933 to E. Mark Cummings.
CHAPTER 1:
INTRODUCTION

1.1 Overview

During the past decade, more than two million youth\(^1\) have been killed and over six million disabled by internal conflict (United Nations, 2006). Youth exposed to political violence also face psychosocial risks, such as developing externalizing problems and aggressive behaviors (Cairns, 1996; Kerestes, 2006; Merrilees et al., in press; Muldoon, Trew, & Kilpatrick, 2000; Qouta, Punamaki, Miller, & El-Sarraj, 2008; van der Merwe & Dawes, 2007). In these contexts, children and adolescents may be active perpetrators of violence by participating as child soldiers (Betancourt et al., 2010; Blattmann & Annan, 2010) and joining armed groups (Barber, 2009; Humphreys & Weinstein, 2008), or may be supportive bystanders by condoning harmful retaliation when provoked (Ardila-Rey, Killen, & Brenick, 2009) or supporting aggression against the out-group (Victoroff et al., 2010). Yet, the links between exposure to conflict and the psychosocial antecedents of participation in political violence are not well understood (Barber, 2009; Cummings, ___)

---

\(^1\) For this dissertation project, ‘youth’ and ‘young people’ will predominantly be used to discuss the ages relevant to the current sample (e.g., 10 to 20 years old). The ‘transition through adolescence’ will be used to describe the period from middle childhood, through the teen years, and into emerging adulthood. When referring to family relationships, ‘children’ may be used to describe the connection to mothers. The difficulty in labeling this age range in a meaningful way across cultures and contexts is not new (see Barber, 2009; McEvoy-Levy, 2006).
Goeke-Morey, Schermerhorn, Merrilees, & Cairns, 2009; Dubow, Huesmann, & Boxer, 2009; Punamäki, 2009; Humphreys & Weinstein, 2008). This raises the question: under what conditions does violence beget violence?

Adolescent aggression may serve as a key factor in the pathway linking experience with political violence and youth participation in the continuation of that conflict (de Rivera, 2003; Punamäki, 2009; Qouta et al., 2008). Studying the role of aggression in the cycle of violence is important on an individual level because aggressive behaviors and beliefs in adolescence have a number of short- and long-term costs, such as low academic performance, peer problems, and adult criminality (Henrich, Brookmeyer, Shahar, & Kidd, 2005; Overstreet & Braun, 1999; Salzinger, Feldman, Stockhammer, & Hood, 2002). From a societal perspective, these aggressive acts and emotions, such as anger, may also perpetuate political violence (de Rivera, 2003; Jarman & O’Halloran, 2001; Petersen & Zukerman, 2010). Yet, not all youth exposed to community and political violence become more aggressive (Barber, 1999; Macksoud & Aber, 1996). Contradictory findings about whether exposure to violence leads to aggression may be due, in part, to methodological limitations such as cross-sectional or retrospective data which may be biased by recall and memory effects (Barber 2009; Blattmann & Annan, 2010; Kerestes, 2006; McAloney, McCrystal, Percy, & McCartan, 2009; Qouta et al., 2008). These limitations point to a need for prospective, longitudinal data and moderation tests to better understand for which children and under what conditions there is an increased risk of developing aggression.
This study improves on past work to address the question, \textit{does violence beget violence}, by identifying risk and protective factors that predict and moderate \textit{between-person differences} in \textit{within-person change} of adolescent aggression in a setting of protracted conflict (Cicchetti & Toth, 1997; Singer & Willet, 2003; Yule, 2000). Specifically, the \textit{intra-individual (within-person) change} this paper identifies is how experience with sectarian, or political, antisocial behavior affects aggression in the years spanning from middle childhood through adolescence into emerging adulthood. As part of the resilience process, the study also considers \textit{inter-individual (between-person) factors}, such as if a supportive family environment can help protect youth from increased aggression, especially in the face of sectarian threat. The role of adolescent gender in these processes is also examined. Finally, toward understanding the societal impact of youth aggression, the paper explores how these within- and between-person factors relate to participation in sectarian antisocial behavior.

Using multilevel modeling on a prospective, four-wave data set with mother and youth reporters, this study asks new questions about inter-individual differences in intra-individual change in aggression during the transition through adolescence which have not previously been addressed in a setting of political conflict. The findings from this dissertation may be relevant to prevention and intervention programs by suggesting ways to protect youth from developing increased aggression on an individual level and ways to decrease the potential for wide-spread mobilization of intergroup conflict at a societal level (Peltonen & Punamäki, 2010). Given the increasing number of internal armed conflicts (Harborm & Wallensteen, 2007) and the growing youth populations in
conflict-affected countries (Nordas & Davenport, 2011), these findings may have more wide-spread relevance.

The dissertation is developed in the following sections. The rest of Introduction presents two complementary theories within developmental psychopathology that frame the current project, a background of how normative aggression develops in the transition through adolescence, mixed findings on political violence and youth aggression, and relevant research from the community violence literature. The Introduction concludes with a brief description of the conflict in Northern Ireland and presents the specific research questions and hypotheses guiding this project. The Method section includes the description of participants, data collection, and survey measures, followed by the Proposed Analyses and Results. The paper concludes with the Discussion which summarizes the main findings in light of the current literature, outlines limitations and areas for future research, and suggests how these findings may be relevant to future interventions designed to enhance resilience processes for youth in settings of political conflict.

1.2 Developmental Psychopathology and the Social Ecological Framework

Developmental psychopathology is the longitudinal study of risk (maladaptive) and resilience (adaptive) processes and outcomes, such as aggression. A key assumption of this approach is that psychosocial processes are not uniform across people or over time (Cummings, Davies, & Campbell, 2000). This assumption generates a number of research questions which are best addressed by studies that measure inter-individual
differences in intra-individual change through prospective, longitudinal designs (Sroufe, 1997). Moderation tests are particularly relevant to the study of risk and resilience because they identify for whom and under what conditions the link between risks and outcomes is stronger. This approach can also help identify which subgroups of a population may be particularly vulnerable to risk factors in the social ecology and should be screened for in future interventions (Cummings et al., 2000).

Developmental psychopathology adopts a social ecological framework which explicitly considers how different risk and protective factors in the social context affect human development (Bronfenbrenner, 1979; Cicchetti & Lynch, 1993). For example, some factors, such as exposure to violence, may exacerbate or increase the risk of developing aggression; other factors, such as family cohesion and support, may protect or buffer individuals from developing aggressive behaviors (Luthar, 1993). The social ecological framework identifies the family as an important proximal factor of the social environment (Bronfenbrenner, 1979). The utility of this framework is echoed in the policy sphere; the United Nations adopted an ecological model articulating the need for interventions to consider how the family may buffer youth from developing aggression problems when exposed to prolonged political violence (United Nations, 2006).

1.2.1 Guiding theories

There are two sets of complementary developmental psychopathology theories which emphasize different aspects of psychological functioning – cognitive and emotional – to explain adolescent aggression. Both the social-cognitive information
processing approach and emotional security theory (EST) suggest that the social ecology plays an important role in the development of aggression problems. More specifically, both theories suggest that stress or threat in the social context may increase aggressive behaviors in youth. Although both theories have similar predictions in terms of the development of aggression in adolescence, EST has two key advantages relevant to the current study. First, EST acknowledges the role of anger as an emotional component of aggression, which is largely overlooked by the cognitive approach. Second, EST explicitly emphasizes the importance of the family, which is largely treated as just one of many elements of the child’s social environment by the cognitive approach. Rather than directly try to test or differentiate between each approach, the proposed hypotheses are supported by the social-cognitive and socio-emotional theories.

Social learning theory (Bandura, 1973; 1977) suggests that children learn to be aggressive by watching and mimicking the behaviors of those around them. Stemming from social learning theory, the social-cognitive information processing model describes this ecological transaction in greater detail. This theory clarifies that behavior is not just observed and repeated, but rather, potential responses are recalled and selected from based on the anticipated consequences of those behaviors (Crick & Dodge, 1994). Relevant to the current project, social information processing predicts that in high-risk environments aggression will be related to hostile cognitions of ambiguous situations, greater attention to threatening cues, less attention to overall social cues, and elevated beliefs in the legitimacy and usefulness of aggression (Andreas & Watson, 2009; Coie & Dodge, 1998; Crick & Dodge, 1994; Lansford, Malone, Dodge, Pettit, & Bates, 2010;
Huesmann, 1988), and these social cognitive styles become relatively stable by adolescence (Guerra, Huesmann, & Spindler, 2003). However, two limitations of social learning theory and the social-cognitive information processing are that they do not specifically address how emotions or the family affects child development.

Complementing the social-cognitive information processing model, socio-emotional theories link aggressive responses to specific emotions, such as anger, fear, and frustration (Berkowitz, 1989; Petersen & Zuckerman, 2010; Tremblay, 2000). Emotional security theory (EST), in particular, incorporates many of the same mechanisms of the social-cognitive approach to describe the “overall organization and meaning of children’s emotions, behaviors, thoughts, and physiological responses” (Cummings & Davis, 1996, p. 126). According to EST, child safety and security is a set goal (Cummings & Davies, 2010); when this set goal is threatened, by sectarian antisocial behavior for example (Cummings et al., 2011), EST suggests that physiological, cognitive, emotional, such as anger, and behavioral responses, such as aggression, are activated to regain emotional security (Bar-Tal & Jacobson, 1998; Cummings, Goeke-Morey, & Papp, 2004; Cummings et al., 2009). Consistent with the social ecological framework which emphasizes the role of the family, EST also considers how the family functions as a unit, not only dyadic parent-child interactions or attachment (Cowan & Cowan, 1998; Cummings et al., 2000). Both the social-cognitive information processing and EST are used as guiding theories to understand how aggression changes during the transition through adolescence in a setting of political conflict.
1.3 Adolescent Aggression

Aggression is one of a number of externalizing behaviors that can include conduct disorders, hyperactivity, disruptive behaviors, noncompliance, antisocial behaviors, risk-taking, peer rejection, association with deviant peers, and delinquency (Tremblay, 2000; Masten & Coatsworth, 1998). In this dissertation project, aggression is defined as: “those acts that inflict bodily or mental harm on others” (Loeber & Stouthamer-Loeber, 1998, p. 242). This definition does not necessitate the aggressor’s intent to harm (Coie & Dodge, 1998; Qouta et al., 2008), and distinguishes aggression from other types of externalizing problems which may have different antecedents, such as hyperactivity, or trajectories in the transition through adolescence, such as peer rejection (Tremblay, 2000).

The transition through adolescence is a particularly important time to study changes in aggression; understanding the causes and consequences of these changes has individual and societal implications (Loeber & Stouthamer-Loeber, 1998). Adolescent aggression has clinical consequences for individual mental health and predicts violence and victimization in adulthood (Henrich et al., 2005). Adolescent propensity for aggression may also facilitate mobilization or perpetuation of political violence (Petersen & Zukerman, 2010). Previous research suggests two possible patterns of normative trajectories of aggression in adolescence, although the majority of this research was developed in cross-sectional and all-male samples. The first pattern is a rising trend in aggression onset in the transition to adolescence (Loeber & Hay, 1997; Guerra et al., 2003). As youth spend more time outside the home, they may be at
greater risk of developing aggressive behaviors because of contagion, a lack of social control in dangerous neighborhoods, and association with deviant peers (Kurlycheck, Kronh, Dong, Hall, & Lizotte, 2012; Maimon & Browning, 2010; Mayer & Jencks, 1989). The second pattern is that, on average, physical aggression decreases across this age period; exceptions include the most and least aggressive for which there was no change in the transition to adolescence (Tremblay, 2000; Andreas & Watson, 2009). A decline in aggression in adolescence may be facilitated as youth improve social skills, perspective-taking, and empathy. However, these new skills require personal, family, and community resources, which may be compromised in high-violence areas, which could delay or dampen age-related decreases (Qouta et al., 2008).

The two patterns of increasing or decreasing aggression profiles demonstrate the limitations of cross-sectional studies or those that estimate mean difference or rank order change which can obscure within-person change. The different trajectories for the most, average, and least aggressive males also suggest that moderators should be examined to explain between-person differences. This dissertation project improves on past research by using multilevel modeling to test inter-individual differences in intra-individual change in youth aggression, which may be an important factor in the continuation of political conflict.

1.4 Political Violence and Adolescent Aggression

Youth “in war zones or in areas of violent conflict often live with constant upheaval, destruction, and violence. Some respond in kind” (Hesling, Kirlic, McMaster,
As early as World War II, psychologists have found that war is a major risk factor for youth aggression (Freud & Burlingham, 1943; Cairns, 1996); yet, few empirical studies have prospectively investigated the relations between experience with political violence and adolescent aggression. Cross-sectional and retrospective studies (Barber, 1999; Blattman & Annan, 2010; Kerestes, 2006; Macksoud & Aber, 1996; Quta et al., 2008), or theoretical discussions and reviews of past work (Cairns, 1996; Punamäki, 2009) have characterized the majority of previous research on the topic. Yet, experience with political violence is not linked to aggression for all youth in all cases (Barber, 1999; Macksoud & Aber, 1996). This raises the question of why some adolescents respond to political violence with increased aggression and others do not.

There are broadly two patterns of the main effect of political violence on aggressive behaviors: positive or non-significant; within both of these sets of empirical findings there is also variation in the role of individual and family characteristics as moderators of these direct effects. In the first set, there is a positive link between exposure to political violence and adolescent aggression. Two cross-sectional studies during periods of relatively high and low political violence found that youth exposure to military violence in the Palestinian territories predicted aggression; a well-functioning family buffered this relation (Quta et al., 2008). In post-war Croatia, greater war exposure predicted higher aggression in youth across multiple reporters (children and teachers), but positive parenting was not a significant protective factor (Kerestes, 2006). In both of these papers, there were no gender differences in the link between political violence and adolescent aggression.
violence and adolescent aggression. However, in post-accord Belfast the link between current sectarian violence and youth aggression was higher for males (Merrilees et al., in press) and in the Palestinian territories males were more likely to fight with others than girls, and youth from areas with more family cohesion reported fewer aggressive behaviors (Baker, 1990). More recent studies in this region also found a direct, positive association between witnessing ethno-political violence and youth aggression and that males reported more aggression compared to females (Boxer et al., in press). This set of studies presents mixed relations with gender and family, but overall, political violence affected aggressive behavior during periods of crisis and in post-conflict contexts.

The second body of work in this area includes a limited number of studies with weak or non-significant findings for the relation between political violence and adolescent aggression. Macksoud and Aber (1996) found that increased war exposure was related to more prosocial behavior among 10 to 16 year olds in Lebanon, but not to aggression. A retrospective study with adolescents in Palestine found that personal experience of political violence did not significantly relate to aggression for either males or females (Barber, 1999). Blattmann and Annan (2010) found that formerly abducted child soldiers were slightly higher on aggressive behaviors, but no more likely to get into fights, compared to nonabductees in Uganda. Interestingly, former child soldiers reported similar levels of social support as nonabductees. Overall, this second set of studies highlights adolescent resiliency, and suggests that future research should identify which factors may have helped protect youth from the harmful impact of political violence in these cases.
Across both sets of studies, the mixed findings on gender and family environment call for more rigorous research on these potential moderating factors, consistent with the developmental psychopathology approach. These conflicting findings suggest that the relation between violence and youth prosocial behaviors may vary based on type and timing of exposure. That is, experience with different types of threats may be related to varying relations with youth aggression. Whether those threats were in the past during overt conflict or war, or are part of the daily life in a post-accord period, may also be an important factor across divergent findings. Because of the limited research and contradictory findings on this topic, the literature review also includes how adolescent aggression relates to community violence.

1.5 Community Violence, Adolescent Aggression, and Family Environment

Complementing the growing literature on political violence and adolescent aggression, there are strong, consistent findings linking experience with community violence and aggression over time (Brookmeyer, Henrich, & Schwab-Stone, 2005; Brookmeyer, Fanti, & Henrich, 2006; Gorman-Smith & Tolan, 1998; Ruchkin, Henrich, Jones, Vermeiren, & Schwab-Stone, 2007; Schwab-Stone et al., 1999). Boys and older youth were more likely to report more exposure to violence and aggressive behavior compared to girls and younger children, respectively (Brookmeyer et al., 2005; Fowler, Tompsett, Braciszewski, Jacques-Tiura, & Baltes, 2009; Schwab-Stone et al., 1999). Although the direct relation between community violence and adolescent aggression has been established, it is less clear how other factors moderate these trajectories.
A recent meta-analysis on community violence called for longitudinal tests to include time-varying covariates to understand how other variables that change with age may affect adolescent aggression (Fowler et al., 2009). More research with “large samples and based on a longitudinal perspective, especially across developmental periods, and designs incorporating constructs measured from different perspectives nested with ecological levels will be necessary” to protect children from the negative impact of community violence (Salzinger et al., 2002, p. 445).

As the most proximal and prominent influence for children in the social ecology (Bronfenbrenner, 1979; Cicchetti & Lynch, 1993; Cummings & Davies, 2010), the family environment may buffer the development of adolescent aggressive behaviors in a context of community violence. One aspect of the family environment is cohesion, which is closely linked to family support, and includes good communication, warmth, and prosocial behaviors within the family unit (Barber & Buehler, 1996; Cox & Brooks-Gunn, 1999; Moos, 1974). Studying overall family cohesion, as opposed to a single dimension within the family, such as parental warmth, behavioral control, aggression between parents, marital conflict (Merrilees et al., 2011; Cummings et al., 2004; Goeke-Morey et al., 2011), complements the guiding theories. For example, a family-wide variable, as compared to dyadic relations between parent-parent or parent-child, is consistent with the family systems approach of emotional security theory (Cowan & Cowan, 1998; Cummings & Davies, 2010). Family-wide constructs, like cohesion, can also accommodate more complex family structures, including extended families, and are
appropriate for single-parents. These diverse family structures may be more common in settings of political conflict.

Family cohesion can mitigate the impact of exposure to violence on youth aggression in a number of ways. For example, a well-functioning family can lessen the risk of developing aggressive beliefs and engaging in antisocial behavior by providing children with the emotional resources to process daily stress (Andreas & Watson, 2009; Brookmeyer et al., 2005). Positive family environments may also provide examples of good behaviors and social interactions (Bandura, 1977), and foster emotional security for children and adolescents (Cummings & Davies, 2010). Family cohesion may provide youth with the resources to develop more empathy and perspective-taking, which could buffer them from negative social contexts. At the same time, poor family environments may also increase adolescents’ perceptions that aggression is a legitimate and effective response to threat (Andreas & Watson, 2009). Compared to those from average family environments, adolescents with low initial aggression from a poor family environment significantly increase in aggressive behaviors (Andreas & Watson, 2009).

However, a good family environment is not a panacea; in high-risk environments, supportive families and exceptional parenting does not always protect adolescents from engaging in more aggressive behavior (Gorman-Smith & Tolan, 1998; Gorman-Smith, Henry, & Tolan, 2004). Consistent with the social-cognitive information processing, in high-risk settings, adolescents may have more hostile cognitions about neutral stimuli, even if the family environment is well-functioning, as they become less attentive to positive social cues. Less optimal family environments, including high conflict families,
may also predispose youth toward later aggression (Cummings et al., 2004; Miller, Wasserman, Neugebauer, Gorman-Smith, & Kamboukos, 1999). The findings from community violence research suggest that a good family environment should moderate the negative impact of political violence on adolescent aggression, but this protective effect may not hold for youth exposed to high levels of violence. Therefore, more research is needed to examine the development of aggression, and how protective and vulnerability factors function in a setting of political conflict.

1.6 Northern Ireland: A Setting of Protracted Political Conflict

Northern Ireland is a key area to study the psychosocial effects of political violence on children and adolescents (Cairns & Dawes, 1996). Historically, the conflict in Northern Ireland is a constitutional dispute between Catholics (Nationalists) who want to join the rest of the island of Ireland and Protestants (Unionists) who wish to remain part of the United Kingdom (Cairns & Darby, 1998). The most recent episode of political or sectarian violence, known as the Troubles, began in 1968 and officially ended in 1998 with the Belfast Agreement. During this period, approximately 3,600 people were killed, a majority of whom were civilians. Although lower in total death count than other internal conflicts, the overall population of Northern Ireland was only 1.6 million. Thus, almost everyone knew someone affected by the Troubles (MacGinty, Muldoon, & Ferguson, 2007).

The underlying constitutional dispute was largely resolved through political power-sharing outlined in the Belfast Agreement (Shirlow & Murtagh, 2006);
however, conflict is still part of the social ecology (Lederach, 2001). Youth opinions reflect this reality; significantly fewer 14 and 15 year olds said that Northern Ireland was “at peace” in 2002 compared to just prior to and following the 1994 ceasefires (Cairns, McLernon, Moore, & Hakvoort, 2006). The short-term needs, such as the 1994 ceasefire, that led to the Belfast Agreement did not adequately address the long-term vision for the divided society of Northern Ireland (Lederach, 2001). This disconnect between an elite peace accord and intergroup relations on the ground is not uncommon (Darby; 2006; Lederach, 1997), and suggests that more integrated peacebuilding approaches are needed. Many of the causes of the dispute between Catholics and Protestants – such as inequality, intercommunity relations, education and cultural traditions, security, and political representation – have yet to be fully addressed (Cairns & Darby, 1998). For example, residential segregation has only increased, and most aspects of social life have become more polarized (Hughes, Campbell, Hewstone, & Cairns, 2007; Shirlow & Murtagh, 2006). These seemingly impermeable social boundaries create additional challenges for those looking to build more peaceful or reconciled relations.

In the face these on-going challenges, there has been some peacebuilding, or fostering the “structures and processes that redefine violent relations into constructive and cooperative patterns” (Lederach, 2001, p. 847). For example, the principles and promises of the Belfast Agreement were revisited in 2005 through the Shared Future project. The goal of renewed, comprehensive governmental attention to the continued sectarian tension is one example of moving toward constructively transforming the
underlying conflict (Kriesberg, 2003). Yet, for more robust conflict transformation, the elite level governmental policies must find a way to connect with the daily lives of those in Northern Ireland. In particular, if conflict transformation requires “decade thinking” (Lederach, 2001; 2005), or long-term visions for a shared future, then the role of youth becomes particularly important. Conflicts that have evolved over centuries and have been reproduced over generations cannot be quickly addressed (Lederach, 2005). Focusing on adolescent aggression, and the implications for future interventions, is just one of the multiple, simultaneous, and interdependent policies needed for conflict transformation to connect elite decision making with the daily reality for those living in Northern Ireland.

1.7 Youth and On-going Sectarianism

Despite the signing of the 1998 Belfast Agreement, politically-motivated or sectarian conflict between Catholics and Protestants continues and is particularly harmful for youth (Jarman, 2005). The police data suggest that the number of recorded offenses is similar to rates at the signing of the peace accord (65 and 58 crimes for every 1,000 people in 1999 and 2011, respectively; PSNI, 2011a). In 2011, 68% of the total crime (70,916) targeted civilians and one in ten crime victims (6,393) was under the age of 18 (PSNI, 2011a). Sectarian crime, defined as acts perpetrated because of their victims’ perceived religion or political opinion (PSNI, 2011b), persists. In Belfast, over 1,200 sectarian incidents were reported to the police in 2009; but, these are generally the more serious crimes, “while ‘minor’ forms of sectarianism, such as verbal abuse,
harassment, visual displays, and graffiti are largely unrepresented” in police data (Jarman, 2005, p. 21). For example, studies have found that one in four adolescents is a victim of sectarian violence (Jarman, 2005) and over 80% have experienced sectarianism directly or indirectly (Byrne, Conway, & Ostermeyer, 2005; McAloney et al., 2009). Mistrust of government institutions, like the police force, complicates citizens’ responses to the low-level violence that persists (MacGinty et al., 2007). This suggests that the levels of sectarian antisocial behavior are much higher than police crime reports reflect and that youth in Northern Ireland are exposed to the “socialization” of political or sectarian violence (Cairns & Toner, 1993).

In addition to the discrepancy caused by the potential under-reporting of lower-level antisocial behavior, recent studies have also found a gap between reported and perceived sectarian crime (Shirlow, Taylor, Merrilees, Goeke-Morey, & Cummings, in press). Across low and high violence neighborhoods in Belfast, perceived sectarian crime was disproportionately larger than perceived nonsectarian crime compared to recorded crime. Moreover, the perception of sectarian crime is a significant predictor of a negative attitudes regarding police performance. That is, for respondents living in socially-deprived wards in Belfast, opinions about police performance were more influenced by sectarian crime, both perceived and recorded. This is an important finding because perceptions, rarely attended to or discussed, can destabilise the peace processes. Therefore, to understand the socio-political impact of continued sectarianism, studies should not rely on recorded crime rates alone, but rather seek individual-level perceptions and experiences of sectarian antisocial behavior.
Youth in Northern Ireland are not merely the passive victims of sectarianism, however. For example, young people engage in events around the annual marches in July (McEvoy-Levy, 2006); protests frequently turn to rioting and violence (BBC News, 2011). Two studies of youth rioting identified different motivations for participation, but both reached similar conclusions: regardless of the initial intent, by participating in these aggressive acts, adolescents perpetuated sectarian conflict (Jarman & O’Halloran, 2001; McEvoy-Levy, 2006). In the first study, boredom and lack of facilities pushed youth toward interface areas, where Catholic and Protestant territories meet. Rather than explicit political motivation, Jarman and O’Halloran (2001) describe a process of “recreational rioting” because it is initiated to relieve boredom and is seen as exciting and enjoyable. Because this form of youth aggression or antisocial behavior occurs along interface lines, it has the potential to feed wider sectarian violence. In the second study, youth motivations for participating in the annual marches and riots were largely directed at two structural barriers: personal insecurity, or vulnerability to violence, and political exclusion, or a perceived lack of youth political voice (McEvoy-Levy, 2006). When looking for an outlet to assert agency and control over their lives in response to perceived threat, sectarian rioting is often readily available and frequently socially-condoned (McEvoy-Levy, 2006). Thus, youth “participate in marches and riots, and, symbolically, their presence, their vulnerability, and their activism help crystallize adult perceptions of community solidarity and righteous self-defense” (McEvoy-Levy, 2006, p. 166). Intervention implications from these two studies would suggest more coordinated efforts to provide social services and facilities to youth (Jarman & O’Halloran, 2001), and
to create opportunities for political voice (McEvoy-Levy, 2006) to decrease the likelihood that youth will continue to aid political conflict reproduction.

1.8 Current Study

This study utilized a unique longitudinal dataset with mothers and adolescents living in Northern Ireland, a setting of protracted conflict. This project advances the study of political violence in a number of ways. First, it references psychological theories that explicitly account for emotional and cognitive changes at the individual level, factors that are often overlooked by others concerned with political violence, such as political scientists and policymakers (Petersen & Zukerman, 2010; Kaufman, 2006; Shapiro, 2010). Second, an important component of developmental psychopathology and the social ecological approach is to apply theories across a number of contexts to understand child development (Bronfenbrenner, 1979; Cummings et al., 2009). This paper extended empirical findings from the community violence literature to determine if resilience processes generalize to and function similarly for adolescents living in a setting of political conflict, an understudied area of risk. The findings from this study may also help understand and tease out how normative processes of aggression may unfold differently when immersed in contexts of chronic political conflict.

This study also offered a number of methodological strengths which may better address weak or conflicting findings in previous research. First, multiple reporters decreased the potential confound of mono-reporter bias; second, a larger sample size allowed for more statistical power to detect interaction or moderation effects; and
third, multilevel modeling with longitudinal data enabled more accurate estimates of
the development aggression with age.

More specifically, four related research questions informed multilevel analyses
of individual and family levels of the social ecology to identify predictors and
moderators of adolescent aggression and later participation in sectarian antisocial
behavior in a setting of political conflict. Two related hypotheses shaped the analyses
for the first research question: how does experience with political or sectarian antisocial
behavior relate to aggression during the transition through adolescence?

- **H1a**: More concurrent experience with sectarian antisocial behavior will predict
greater aggression; age effects in this relation will be explored.
- **H1b**: Aggression will change on average with age; the sign of the slope (positive
or negative) was not predicted based on the diversity of previous research.

The second research question investigated the role of gender as a between-
person factor of the trajectory of aggression and was related to the following
hypothesis:

- **H2a**: Males will report more aggression than females; no gender differences in
the slopes of aggression are anticipated.

Third, the role of a cohesive family environment was explored following two
hypotheses:

- **H3a**: Greater family cohesion will protect youth who experience sectarian
antisocial behavior from greater aggression problems.
• H3b: The influence of family cohesion on youth aggression may vary based on age.

Finally, the analyses addressed the fourth research question: how do within-person change in aggression and between-person characteristics (i.e., gender and family cohesion) relate to youth’s own participation in sectarian antisocial behavior?

• H4a: Higher initial aggression and greater aggression over time will predict more participation in sectarian antisocial behavior.

• H4b: Females and youth from more cohesive families will participate in fewer acts against the out-group.

These hypotheses addressed new questions about inter-individual differences in intra-individual change that have not been tested previously in the political violence literature. The results may suggest new priorities for interventions aimed to protect adolescents on an individual level and to decrease aggressive behaviors which may otherwise contribute to the continuation of political conflict in Northern Ireland. These findings could also have wider application to other areas with large youth populations mired in political conflict (Nordas & Davenport, 2011).
CHAPTER 2:

METHOD

2.1 Participants

Participants included mothers and their children who participated in at least one of four annual waves of data collection in a longitudinal study on political violence and family processes in Belfast, Northern Ireland (N=820 mother/child dyads). Adolescents in this sample were evenly divided by gender (51% female, 49% male) and the mean ages were 13.61 (SD = 1.99), 14.66 (SD = 1.96), 15.75 (SD = 1.97), and 16.83 (SD = 1.99) years old across the four time points. At Time 1, mothers were 38.58 (SD = 6.24) years old on average; 38% were married or living as married, 59% were in single-parent households, and the remaining 3% did not report their marital status. Consistent with the overall population demographics of Northern Ireland, 62% of families identified as Protestant, 37% as Catholic, 1% refused to select either affiliation, and all participants were White. Based on the 54% of mothers willing to answer the question, the median family income was less than £11,000 (approximately $17,000) and 5% earned more than £22,000 (approximately USD $34,000).

Between any two time points, 80% to 87% of the families returned. Eighty percent of the families from Time 1 participated at Time 2, 81% from Time 2 to Time 3,
and 87% from Time 3 to Time 4. These rates are at the higher end of the range of retention with high-risk samples (e.g., Betancourt et al., 2010; Browning, Burrington, Leventhal, & Brooks-Gunn, 2008; Kronenberg et al., 2010). Table 2.1 summarizes the patterns of participation across the four time points; 50% of families participated at all four time points and another 25% followed intermittent missingness, that is, returning to the study after missing a measurement occasion.

### Table 2.1

**Percentages for Different Patterns of Participant Retention Across Four Time Points**

<table>
<thead>
<tr>
<th>Time 1</th>
<th>Time 2</th>
<th>Time 3</th>
<th>Time 4</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>52.7%</td>
</tr>
<tr>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>11.2%</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>7.8%</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>7.7%</td>
</tr>
<tr>
<td>X</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>6.7%</td>
</tr>
<tr>
<td>X</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>5.5%</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>X</td>
<td>X</td>
<td>3.0%</td>
</tr>
<tr>
<td>0</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>1.5%</td>
</tr>
<tr>
<td>X</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>1.1%</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>1.1%</td>
</tr>
<tr>
<td>X</td>
<td>0</td>
<td>0</td>
<td>X</td>
<td>1.0%</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0.5%</td>
</tr>
<tr>
<td>0</td>
<td>X</td>
<td>0</td>
<td>X</td>
<td>0.2%</td>
</tr>
<tr>
<td>0</td>
<td>X</td>
<td>0</td>
<td>0</td>
<td>0.1%</td>
</tr>
</tbody>
</table>

*Note. X = observed, 0 = missing.*
retention, of the families in the sample at Time 1, the only significant difference between families who did and did not participate at Time 2 was that families with lower cohesion scores were less likely to return ($t(750) = -2.62, p < .01$; retained: $M = 6.55, SD = 1.81$; attrited: $M = 6.11, SD = 1.88$). Among families at Time 2, there were no significant differences among families that did and did not participate at Time 3. At Time 4, families were less likely to participate if they had younger children ($t(591) = -3.22, p < .001$; retained: $M = 15.85, SD = 1.96$; attrited: $M = 15.08, SD = 1.93$), if youth were exposed to more sectarian antisocial behavior ($t(573) = -3.67, p < .001$; retained: $M = 5.54, SD = 9.05$; attrited: $M = 2.47, SD = 6.31$), and if the adolescents were more aggressive at Time 3 ($t(587) = 5.78, p < .001$; retained: $M = 4.22, SD = 8.84$; attrited: $M = 1.14, SD = 3.19$). However, including the previous time points for these families in this longitudinal model allows this data to be missing at random (MAR) by including factors that can explain possible intermittent missingness or drop-out during the course of data collection.

2.2 Procedures: Neighborhood and Family Selection

The study areas were selected to obtain a representative sample of Catholics and Protestants and variation in levels of sectarian violence, while limiting socio-economic differences. An expert demographer identified neighborhoods that were ethnically homogenous (over 90% Catholic or Protestant; NINIS, 2011), socially-deprived, and had different levels of historical and current politically-motivated violence (Shirlow & Murtagh, 2006). Within these 25 targeted neighborhoods, approximately 35 families
were contacted using stratified random sampling; families with a child between the ages of 10 and 17 years were eligible to participate. If there was more than one child in the target age range in the home, the youngest sibling interested was invited to participate. Youth in this study were born after the peace agreement, but were aware of social issues of interest (Cairns et al., 2006) and were likely to experience sectarian violence as observers, victims, or participants (Jarman, 2005).

Professional interviewers conducted in-home surveys with mothers and adolescents, which lasted approximately 1 hour and 45 minutes, respectively. Participants provided consent and assent, and families received £40 at Times 1 and 2 and £50 at Times 3 and 4 to encourage retention. The study was approved by the Institutional Review Boards at all participating universities.

2.3 Measures

2.3.1 Aggression scale (AGR)

This scale was developed to measure overt and direct acts of physical and psychological aggression in early adolescence (Orpinas & Frankowski, 2001). The 11-item scale includes examples such as *I fought back when someone hit me first, I encouraged other students to fight,* and *I got into a physical fight because I was angry.* To reduce recall bias participants indicate how many times those statements apply to them over the last week on a 7-point Likert scale (0 = “none” to 6 = “more than 6”). The scale has content and construct validity, high internal consistency and test-retest stability, and these properties do not vary by gender, ethnicity, or grade. In this sample the internal
consistency was good to excellent across the four time points (Cronbach’s α = .90, .89, .89, and .80).

2.3.2 Experience with sectarian antisocial behavior (expSAB)

The experience with sectarian antisocial behavior scale was developed in a culturally-informed manner through focus groups (Taylor et al., 2011) and a two-wave pilot test in Northern Ireland (Goeke-Morey et al., 2009). The expSAB scale includes politically-motivated events such as *name calling by people from the other community*, *stones or objects thrown over walls*, and *deaths or serious injury caused by the other community*. Youth report on the frequency of 12 items over the past three months using a 5-point Likert scale (0 = “*not in the last 3 months*” to 4 = “*every day*”). Internal consistency of this scale was excellent in the original sample (α = .94) and the current study (α = .96, .98, .94, and .91).

2.3.3 Family cohesion (FES)

Mothers reported perceived family cohesion on the Family Environment Scale (FES: Moos & Moos, 1994). This scale evaluates the strengths and weaknesses of the family unit, with well-established psychometric properties. Participants responded whether statements were 1 = “*true*” or 0 = “*false*” on a 9-item subscale of family cohesion. Sample items include: *people in my family really help and support one another* and *people in my family really back each other up*. Composite scores summed mother reports within each time point and averaged across all available measurement occasions.
for the family. The internal consistency for this ambient measure of family cohesion was acceptable (Cronbach’s α = .74).

2.3.4 Participation in sectarian antisocial behavior (pSAB)

To understand how adolescents may contribute to the continuation of political conflict, a contextually-relevant list of possible sectarian acts was developed from three sources (Goeke-Morey et al., 2009; McCrystal, Percy, & Higgins, 2007; Taylor et al., 2011). These previous studies conducted qualitative and quantitative investigations about delinquency and problem behaviors among youth in Belfast; items were adapted to directly tap perpetrating acts, as compared to witnessing or being the victims of such acts. Across the two sets of scales and focus group interviews, similar items were combined or reworded to distinguish different types of antisocial behavior. A range of intensities of sectarian acts were included because previous studies have suggested that low-level teasing or name-calling can escalate into stone throwing and even rioting (Jarman & O’Halloran, 2001). Past research also suggests that although base rates may be low, adolescents do report having committed delinquent and sectarian acts (Goeke-Morey et al., 2011; McCrystal et al., 2007; Merrilees et al., 2011). For this scale, participants were asked to indicate how often in the past year they had done of each of the target items to “get at someone from the other community.” Possible responses were on a 4-point Likert scale from 0 = “rarely” to 3 = “very often”. Sample items included wear a football jersey to taunt/provoke people from the other community and
throw stones or other objects over walls (see Appendix A). Adolescents reported on this scale at Time 4 with good internal consistency (Cronbach’s α = .86).

2.4 Data Analytic Plan

With repeated measures, or longitudinal, data there are two primary approaches to modeling change: auto-regressive models and multilevel models. Auto-regressive models examine between-person differences. Change over time is conceptualized as each time point being dependent on the individual’s score on the previous time point; it is estimated with lagged effects or auto-regressive controls (Curran & Bollen, 2001). However, multilevel modeling is often a preferred method of analyzing longitudinal data because it accounts for the hierarchical structure of repeated measures; if the nesting of time points within persons is not taken into consideration, the assumption of independence of observations in a traditional ordinary least squares approach is violated. The multilevel model approach specifically models the hierarchical structure of the data to yield accurate parameter estimates and standard errors (Raudenbush & Bryk, 2002). This approach also allows for the study of inter-individual differences in intra-individual change (Singer & Willet, 2003). In addition to longitudinal designs, multilevel modeling can also handle clustered designs, such as when individuals are nested within classrooms, neighborhoods, or schools (Muthén & Asparouhov, 2011).

There are two main multilevel approaches: hierarchical linear modeling (HLM) and latent variable growth curve models (LVGCM). In both of these multilevel approaches, change over time is conceptualized as each individual having a underlying
true trajectory which can be measured using observed, or manifest, variables to estimate the latent, or unobserved, patterns and relations among constructs (Loehlin, 2004). The true change trajectory can be estimated by individual growth parameters such as the intercept, linear slope, and quadratic slope. In the HLM approach, all constructs are modeled with manifest variables (Raudenbush, Bryk, Cheong, & Congdon, 2004). In the LVGCM approach, however, constructs can be modeled as latent variables with measurement error; estimating measurement error can reduce bias if constructs are not measured perfectly (Muthén & Asparouhov, 2011). There is no single best approach to model repeated measures or nested designs; rather, researchers must decide which approach best fits the theoretical questions, assumptions about change, and format of the data (Curran & Bollen, 2001).

In the HLM framework, the Level 1 variables represent the within-person constructs; in this case those that vary over time with age. The Level 2 equations represent the between-person elements. The coefficients from Level 1 are regressed onto the Level 2 predictors; this cross-level interaction examines if between-person factors can explain differences in within-person change. That is, with longitudinal designs, the growth trajectory or within-person change, may interact with the participant’s other characteristics, such as gender or family environment. The HLM approach clearly allows for modeling of inter-individual differences in intra-individual change.

A Monte Carlo simulation of a multilevel model with moderate cross-level interaction compared the performance of HLM and LVGCM approaches (Zhang, 2007).
The simulations found that HLM was more efficient at estimating cross-level effects, while the LVGCM had more power to detect main effects, across a range of sample sizes (e.g., 300 to 25,500). That pattern continued under non-normality; HLM produced larger standard errors for the main effects and smaller standard errors for the cross-level interactions than LVGCM. Both approaches had similar bias effects for first-order predictors and cross-level interactions when normality conditions were violated (Zhang, 2007). Overall, this set of findings suggest that HLM may have an advantage over LVGCM in terms of detecting cross-level effects, and perform in a similar fashion with regard to bias for multilevel models.

For the current study, the HLM approach was chosen for two reasons. First, because of the complexity of the proposed model, the number of latent variables in a LVGCM with a latent variable interaction would have become unruly. Moreover, the good internal consistencies on the scales over time described in the Method section also suggested that measurement error may not be as much of a concern with the constructs used in the proposed model. Second, HLM has the capacity to easily test and interpret cross-level effects; that is, the interaction of between-person characteristics and within-person growth. Given the hypotheses that gender will moderate the trajectories of aggression themselves and that family cohesion will moderate the impact of sectarian antisocial behavior on aggression, both cross-level interactions, HLM should facilitate interpretation of these findings.

The HLM statistical software (version 6.06; Raudenbush et al., 2004) was used to test whether experience with sectarian antisocial behavior affects aggression among
adolescents, as well as cross-level interaction effects, such as whether gender and family environment have an impact on these relations. The HLM software employs full information maximum likelihood (FILM) estimation which accurately estimates parameters with missing data under the assumption that data are MAR (i.e., when the potential cause of missingness is included in the model and is not dependent on the would-be values; Enders, 2011; Graham, 2009). In longitudinal research, intermittent missingness is most likely to be MAR (Muthén, 2009). With regard to how HLM handles missing data at Level 2 (or the between-person variables), Gibson and Olejnik (2003) conducted a simulation which found that list-wise deletion, group mean substitution, and the EM algorithm all performed equally well for the variable having missing values. And, except for when Level 2 sample size was small with large missingness (e.g., 30 per group with 40% missing data), list-wise deletion also correctly estimated random effects.

The HLM software also produces robust standard errors, which can compensate for possible violations of the non-normality assumption in maximum likelihood estimation in multilevel modeling. Although robust standard errors tend to be larger than the traditional approach, which may result in a loss of power, with a sufficient number of groups at Level 2 this loss may be minimal (Newsom, 2013). It should be noted that the coefficient estimates produced are the same under the two methods of calculating standard errors and the two often yield highly similar results. However, with certain exceptions, the robust standard errors should be used when there is concern about the degree of non-normality in the outcome of interest (Newsom, 2013).
Finally, to understand how general aggression may contribute to the continuation of intergroup conflict, the effects of the individual growth parameters on youth participation in sectarian antisocial behavior will be tested using multiple regression in SPSS 20.

2.4.1 Model building

Due to the scarcity of longitudinal studies covering this wide age range, as well as the novelty of sectarian antisocial behavior as a time-varying covariate, a model comparison approach (Singer & Willet, 2003) will be used to determine the most appropriate base model of change in aggression across the ages 10 to 20 years for youth in Belfast. For this approach, the models must use identical data and be nested. Nested models are those in which the full (more complex) model can be made identical to the restricted (less complex) model by placing constraints (e.g., setting parameter values to 0). Following the proposed hypotheses, the deviance statistic (−2LL) will be used in model comparison. The deviance statistic estimates the difference between the log-likelihood of proposed model and the saturated model (i.e., one that fits the data perfectly). In essence, this approach evaluates how much worse the proposed model fits the data compared to the perfect fit of the saturated model.

\[^2\] In order to ensure the models used identical data, HLM files were assembled to account for missing data when they were created, rather than at each stage in the analysis. Those deviance scores are reported in Table 1. To ensure that did not change the results, a second set of HLM files were assembled that accounted for missing data in the analysis phase. Estimates were quite close in all cases and all of the substantive results were the same.
Using FIML, the model maximizes the sample data allowing for the comparison of any set of parameters, fixed effects, or variance components across nested models. The difference of two deviance statistics asymptotically follows a chi-square distribution with degrees of freedom determined by the difference in parameters between the full and restricted models. This property allows us to compare the calculated difference in deviance between two models to a critical value to evaluate the null hypothesis that the two models are the same, that is, that the reduced model fits the data as well as the full model does. If the difference between the full and restricted models does not surpass the critical value determined by the difference in the number of parameters, the restricted model is retained due to the preference for parsimony.

The model building approach proposes successive tests of nested unconditional and conditional models to determine if the inclusion of additional predictors significantly improves model fit. By first fitting an unconditional means model, this allows for the partitioning the total variation in the outcome to between- and within-person factors. This step permits the calculation of the intra-class correlation (ICC) or the relative proportion of variance in the outcome attributable to between-person differences. This step indicates if there is sufficient between-person variation to warrant multilevel modeling. The intercept-only, or “no change”, model also tests if the grand mean, or the estimated true mean of the population, differs from zero, and if there is significant variation, that is whether an individual’s true mean differs significantly from the grand mean.
The second step models linear change and is compared to the intercept-only model. The linear change model includes time as the sole predictor of the outcome and allows each individual to have a unique intercept and slope. If the linear model fits significantly better than the intercept-only model and the coefficient is significant, this suggests that there is significant average growth or decline across the sample. Finally, with four time points, we can model quadratic change for the time variable. By including the quadratic term we can assess curvature of change; the linear slope parameter can be interpreted as the instantaneous rate of change and the quadratic parameter can be interpreted as the changing rate of change. The sign of the quadratic parameter indicates whether the curvature is concave or convex. If the quadratic growth model fits significantly better than the linear change model, this suggests that the magnitude of change is variable across time.

The primary advantage of using a model building approach is that it can help to identify if a more parsimonious structural growth model is appropriate for the data (e.g., that the linear change model fits as well as the quadratic growth model). Along with the number of data points collected, a more parsimonious shape to the trajectory may allow for substantive within-person variables to be modeled as random effects.

2.4.2 Fixed and random effects

A fixed effect can be interpreted as systematic inter-individual differences in change and a random effect can be interpreted as the degree to which an individual’s scores are randomly distributed around his or her true trajectory (Singer & Willet, 2003).
Given the interest in inter-individual differences in intra-individual change, whether a parameter is random or fixed determines whether that parameter can be estimated for each individual or must be constrained to be equal across people. With four time points of data, only three random effects can be estimated. Therefore, in a quadratic change model, all three growth parameters (intercept, instantaneous rate of range, and curvature) may be estimated as random effects, allowing each individual to have a unique estimate of his/her true growth trajectory. Any other factors that may explain an intra-individual trajectory must be fixed. However, if in the model building approach, a linear trend is the best fit to the data, this could allow an additional parameter, such as a time-varying covariate discussed below, to be freed.

2.5 Proposed Model Tests

Time is modeled as age due to interest in change in aggression during the transition through adolescence. The growth parameters represent the within-person change, that is, intra-individual trajectories are modeled by an adolescent’s initial level of aggression (intercept), change in aggression with age (linear slope), and curvature of change (quadratic slope), and experience with sectarian antisocial behavior (expSAB; time-varying covariate). The effect of experience with sectarian antisocial behavior on aggression is estimated within each time point, which is recommended for variables like sectarian acts that are expected to change with time, but not necessarily in a linear fashion. As noted above, the three growth parameters can be modeled as random; therefore, the effect of experience with sectarian antisocial behavior on adolescent
aggression is modeled as a fixed-but-varying parameter (Singer & Willet, 2003; Skinner, Zimmer-Gembeck, Connell, Eccles, & Wellborn, 1998). That is, the influence of experience with sectarian antisocial behavior on aggression can vary within-person, but is constrained to be equal across participants. As random effects, the intercept, slope, and quadratic parameters can be estimated for each person in the study. By including experience with sectarian antisocial behavior as fixed-but-varying parameter, this model assumes that relation is the same across adolescents. To facilitate interpretation of the parameters, age will be centered on the grand mean and experience with sectarian antisocial behavior will be centered on the individual’s mean (Singer & Willet, 2003).

To explain between-person differences, family cohesion and gender will be included as potential moderators of intra-individual changes in aggression through adolescence. Adolescent gender will be added to the conditional model as a time-invariant dichotomous predictor and family environment is conceptualized as a stable ambient predictor based on mother reports (Skinner et al., 1998).

Equation 1 represents the parameters for the proposed full model test.

Proposed Model

**Level 1:** $AGR_i = \beta_{0i} + \beta_{1i}AGE_i + \beta_{2i}AGE\_SQ_i + \beta_{3i}\exp\_SAB_i + \epsilon_i$  

**Level 2:** $eta_{0i} = \gamma_{00} + \gamma_{01}\text{GEN} + \gamma_{02}\text{FES} + \zeta_{0i}$

$\beta_{1i} = \gamma_{10} + \gamma_{11}\text{GEN} + \gamma_{12}\text{FES} + \zeta_{1i}$

$\beta_{2i} = \gamma_{20} + \gamma_{21}\text{GEN} + \gamma_{22}\text{FES} + \zeta_{2i}$

$\beta_{3i} = \gamma_{30} + \gamma_{31}\text{GEN} + \gamma_{32}\text{FES}$
Although no specific predictions were made about direction of change in aggression (H1b), the sign of \( \gamma_{10} \) parameter will indicate whether, on average, aggression is increasing or decreasing with age. The \( \gamma_{20} \) parameter suggests if there is significant average change in the curvature, or magnitude of change, across adolescents. Relevant to the first research question, if more experience with sectarian antisocial behavior predicts more adolescent aggression the \( \beta_3 \) parameter will be positive and significant (H1a). Relevant to the second research question, the gender moderation effect can be seen in \( \gamma_{01}, \gamma_{11} \) and \( \gamma_{21} \) and coefficients, which indicate if boys are significantly higher on average in initial aggression, instantaneous rate of change, or curvature of change compared to girls (H2a). The buffering role of family cohesion on adolescents’ trajectory of aggression for youth exposed to sectarian antisocial behavior is measured by \( \gamma_{32} \) coefficient (H3a); any age-related variation of family cohesion on aggression will be seen in \( \gamma_{02}, \gamma_{12} \), and \( \gamma_{22} \) (H3b). A multiple regression test (equation 2) will control for gender and family cohesion to examine if higher initial aggression and greater aggression over time will predict more participation in sectarian antisocial behavior (H4a, H4b).

\[
pSAB = \beta_0 + \beta_1\text{GEN} + \beta_2\text{FES} + \beta_3\text{AGR}_\text{lin} + \beta_4\text{AGR}_\text{quad} + \varepsilon_j \tag{2}
\]
3.1 Preliminary Analyses

Table 3.1 contains the means, standard deviations, and bivariate correlations among all manifest study variables and scales. Across the age range of 10 to 20 years old, male youth only reported greater experience with sectarian antisocial behavior at ages 14 and 17 ($r = -0.15, p < 0.01$ for both), and there was no significant differences in family cohesion by gender. However, male youth were more likely to report participating in out-group acts ($r = -0.41, p < 0.001$).
TABLE 3.1
MEANS, STANDARD DEVIATIONS, AND CORR ELLATIONS AMONG ALL STUDY VARIABLES

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>c10SAB</td>
<td>48</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>c11SAB</td>
<td>81</td>
<td>.75***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>c12SAB</td>
<td>196</td>
<td>.88***</td>
<td>.76***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>c13SAB</td>
<td>278</td>
<td>.03</td>
<td>.64***</td>
<td>.259**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>c14SAB</td>
<td>353</td>
<td></td>
<td>.08</td>
<td>.48***</td>
<td>.69***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>c15SAB</td>
<td>391</td>
<td></td>
<td></td>
<td>.12</td>
<td>.70***</td>
<td>.63***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>c16SAB</td>
<td>353</td>
<td></td>
<td></td>
<td></td>
<td>.43***</td>
<td>.39***</td>
<td>.69***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>c17SAB</td>
<td>302</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.18</td>
<td>.31***</td>
<td>.40***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9.</td>
<td>c18SAB</td>
<td>209</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.55***</td>
<td>.47***</td>
<td>.50***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10.</td>
<td>c19SAB</td>
<td>145</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.27*</td>
<td>.35***</td>
<td>.47***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>c20SAB</td>
<td>57</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.36*</td>
<td>.25</td>
<td>.64***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12.</td>
<td>c10AGR</td>
<td>49</td>
<td>.12</td>
<td>-.07</td>
<td>-.10</td>
<td>.29</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>c11AGR</td>
<td>85</td>
<td>-.053</td>
<td>.38***</td>
<td>.45***</td>
<td>.03</td>
<td>.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14.</td>
<td>c12AGR</td>
<td>221</td>
<td>-.09</td>
<td>.27*</td>
<td>.48***</td>
<td>.07</td>
<td>.16</td>
<td>-.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15.</td>
<td>c13AGR</td>
<td>313</td>
<td>-.06</td>
<td>-.01</td>
<td>-.06</td>
<td>.40***</td>
<td>.31***</td>
<td>.33***</td>
<td>.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16.</td>
<td>c14AGR</td>
<td>383</td>
<td>-.05</td>
<td>.09</td>
<td>.43***</td>
<td>.52***</td>
<td>.37***</td>
<td>.24**</td>
<td>.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17.</td>
<td>c15AGR</td>
<td>406</td>
<td></td>
<td>-.00</td>
<td>.35***</td>
<td>.29***</td>
<td>.29***</td>
<td>.16*</td>
<td>-.05</td>
<td>.02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18.</td>
<td>c16AGR</td>
<td>375</td>
<td></td>
<td></td>
<td>-.04</td>
<td>.31***</td>
<td>.22**</td>
<td>.28***</td>
<td>.16*</td>
<td>.10</td>
<td>-.13</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19.</td>
<td>c17AGR</td>
<td>308</td>
<td></td>
<td></td>
<td>-.03</td>
<td>.05</td>
<td>.16*</td>
<td>.24***</td>
<td>.09</td>
<td>-.01</td>
<td>.32*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20.</td>
<td>c18AGR</td>
<td>216</td>
<td></td>
<td></td>
<td></td>
<td>.20</td>
<td>.11</td>
<td>.07</td>
<td>.01</td>
<td>.31*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21.</td>
<td>c19AGR</td>
<td>146</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.05</td>
<td>.19</td>
<td>.24**</td>
<td>.11</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22.</td>
<td>c20AGR</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.05</td>
<td>.19</td>
<td>.24**</td>
<td>.11</td>
<td>.14</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23.</td>
<td>c6psab</td>
<td>586</td>
<td>-.09</td>
<td>-.15</td>
<td>-.04</td>
<td>.12</td>
<td>.15*</td>
<td>.03</td>
<td>.17***</td>
<td>.18**</td>
<td>.12</td>
<td>.04</td>
<td>-.11</td>
<td>-.07</td>
<td>-.09</td>
</tr>
<tr>
<td>24.</td>
<td>mFES</td>
<td>815</td>
<td>-.11</td>
<td>.12</td>
<td>-.10</td>
<td>-.01</td>
<td>-.03</td>
<td>.02</td>
<td>.11*</td>
<td>.07</td>
<td>.11</td>
<td>.13</td>
<td>-.11</td>
<td>.19</td>
<td>-.09</td>
</tr>
<tr>
<td>25. Female</td>
<td>820</td>
<td>-.01</td>
<td>.15</td>
<td>-.03</td>
<td>-.11</td>
<td>.15**</td>
<td>-.07</td>
<td>-.10</td>
<td>-.15**</td>
<td>-.09</td>
<td>-.14</td>
<td>-.11</td>
<td>-.06</td>
<td>.12</td>
<td>-.06</td>
</tr>
</tbody>
</table>

\[ M \]

\[ SD \]

\[ 2.2 \]

\[ 8.85 \]

\[ 4.3 \]

\[ 4.3 \]

\[ 4.3 \]

\[ 4.3 \]

\[ 3.87 \]

\[ 3.77 \]

\[ 2.36 \]

\[ 1.40 \]

\[ 4.14 \]

\[ 4.12 \]

\[ 4.12 \]

\[ 4.12 \]

\[ 5.92 \]

\[ 5.92 \]

\[ 5.92 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 8.85 \]

\[ 8.44 \]

\[ 8.48 \]

\[ 7.61 \]

\[ 7.57 \]

\[ 5.92 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]

\[ 4.14 \]
**TABLE 3.1 (CONT)**

<table>
<thead>
<tr>
<th>Variables</th>
<th>N</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>15. c13AGR</td>
<td>313</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. c14AGR</td>
<td>383</td>
<td>.516</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. c15AGR</td>
<td>406</td>
<td>.29***</td>
<td>.54***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. c16AGR</td>
<td>375</td>
<td>.01</td>
<td>.40***</td>
<td>.65***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. c17AGR</td>
<td>308</td>
<td>-</td>
<td>-.02</td>
<td>.10</td>
<td>.35***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. c18AGR</td>
<td>216</td>
<td>-</td>
<td>-</td>
<td>.13</td>
<td>.11</td>
<td>.71***</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>21. c19AGR</td>
<td>146</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.32**</td>
<td>.19*</td>
<td>-.04</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>22. c20AGR</td>
<td>59</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>.39*</td>
<td>.35*</td>
<td>-.05</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>23. c6psab</td>
<td>586</td>
<td>.05</td>
<td>.01</td>
<td>.26***</td>
<td>.37***</td>
<td>.05</td>
<td>.04</td>
<td>.03</td>
<td>-.11</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24. mFES</td>
<td>815</td>
<td>.01</td>
<td>-.05</td>
<td>.03</td>
<td>.00</td>
<td>.04</td>
<td>-.02</td>
<td>-.12</td>
<td>-.18</td>
<td>-.19***</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>25. Female</td>
<td>820</td>
<td>-.16**</td>
<td>-.16**</td>
<td>-.20***</td>
<td>-.19***</td>
<td>-.14*</td>
<td>-.17*</td>
<td>-.13</td>
<td>-.18</td>
<td>-.41***</td>
<td>.06</td>
<td>1</td>
</tr>
<tr>
<td>M</td>
<td></td>
<td>2.72</td>
<td>3.64</td>
<td>2.75</td>
<td>2.56</td>
<td>1.00</td>
<td>.57</td>
<td>.45</td>
<td>.29</td>
<td>2.78</td>
<td>6.61</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td></td>
<td>5.35</td>
<td>7.08</td>
<td>5.83</td>
<td>4.99</td>
<td>3.18</td>
<td>2.82</td>
<td>2.06</td>
<td>1.18</td>
<td>4.53</td>
<td>1.39</td>
<td></td>
</tr>
</tbody>
</table>
For the unconditional growth models, manifest scales of child-report variables at each age were used for aggression and experience with sectarian antisocial behavior. Both experience with and participation in sectarian antisocial behavior were designed to capture frequencies of exposure and actual behaviors, and therefore were included as observed variables, rather than indicators of underlying constructs.

For the conditional models, gender was included as a binary variable and the average level of mother’s report of family cohesion was added for each family at Level 2. Modeling family cohesion in this way assumed an ambient-level approach to the hypothesized buffering role of this protective factor. Skinner and colleagues (1998) describe how this assumption is “especially useful as accounts of the influence of social contexts or social context transitions on individual development... [in which] favorable early environment is not sufficient to support a positive trajectory over time unless the environment continues to provide at least a threshold level of subsequent support” (p. 31). Moreover, the use of the average level of family cohesion across the four time points measured was supported by an empirical examination of the study data; the linear slope of FES was non-significant which suggests there is no significant systematic within-person change in family cohesion on average. Finally, including child report of aggression and mother report of family cohesion reduces mono-reporter bias, or the shared variance within a single reporter on survey data.
3.2 Unconditional Models

A series of unconditional models was fit to the Level 1 variables, or those constructs that vary by age and represent the intra-individual change in aggression. Model A depicts the unconditional means, or the intercept-only, model which hypothesized that there was no change in aggression with age, but allowed for variation in the levels of aggression for each individual in the study.

Model A:  
Level 1: \( AGR_{ij} = \beta_{0i} + \epsilon_{ij} \)  

Level 2: \( \beta_{0i} = \gamma_{00} + \zeta_{0i} \)

This model also estimated the grand mean \( (\gamma_{00}) \), or the overall average intercept of aggression across all of the participants. Moreover, we can assess the within- and between-person variance to determine if there is sufficient variability to add other predictors to the model to enhance explanation of the outcome of interest. The intra-class correlation coefficient (ICC) provides a numerical assessment of the magnitude of the relative proportion of the between-person variation \( (\sigma_0^2) \) compared to the total variation (between + within, or \( [\sigma_0^2 + \sigma_z^2] \)). The ICC provides for the outcome variable aggression, was calculated: \( ICC = \sigma_0^2 / ([\sigma_0^2 + \sigma_z^2]) = 12.789 / (12.789 + 17.704) = .42. \)

This suggests that approximately 40% of the variance is due to between-person differences. In small group and family research an ICC=.30 is considered large (Hox, 2002), indicating there was sufficient between-person variation to proceed to explore multilevel models.
Model B depicts the unconditional growth, or the linear change, model which fit significantly better than the unconditional means model (Table 3.2).

Model B: 

\[ AGR_{ij} = \beta_{0i} + \beta_{1i} AGE_{ij} + \epsilon_{ij} \]  
(4)

Level 1:  
\[ \beta_{0i} = \gamma_{00} + \zeta_{0i} \]
\[ \beta_{1i} = \gamma_{10} + \zeta_{1i} \]

In this step, time was added to the model using the metric of child and adolescent age (range 10 to 20 years old). The linear change trajectory added a parameter that estimated each individual’s growth or decline in aggression over the four ages he/she was evaluated. To increase interpretability of the parameter estimate, the age variable was centered at the grand mean (the average aged youth in the study). Both the intercept and the linear slope parameters were random; that is, the Level 2 variability was estimated and free-to-vary across people. The linear slope parameter \( \gamma_{10} = -0.582, p < .001 \) represents the average change in aggression for all adolescents in the study. This suggests that from ages 10 to 20 years old there was a negative slope, or an average decline in aggression through adolescence and into emerging adulthood. The significant variability in the linear slope \( \zeta_{1i} = 1.003, p < .001 \) also suggested that including additional Level 1 predictors might help explain within-person changes in aggression.
### TABLE 3.2

ESTIMATES OF MULTILEVEL MODELS OF CHANGE IN AGGRESSION AMONG YOUTH IN BELFAST (N=820)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Model A</th>
<th>Model B</th>
<th>Model C</th>
<th>Model D</th>
<th>Model E</th>
<th>Model F</th>
<th>Model G</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial Status (β₀ᵢ)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>γ₀₀</td>
<td>3.44***</td>
<td>2.541***</td>
<td>2.339***</td>
<td>2.545***</td>
<td>2.554***</td>
<td>3.293***</td>
<td>3.463***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.160)</td>
<td>(0.144)</td>
<td>(0.163)</td>
<td>(.164)</td>
<td>(0.232)</td>
<td>(0.931)</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>γ₀₁</td>
<td>-1.454***</td>
<td>-1.458***</td>
<td>-1.454***</td>
<td>-1.458***</td>
<td>-1.454***</td>
<td>-1.458***</td>
<td>-1.458***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.324)</td>
<td>(0.325)</td>
<td>(0.324)</td>
<td>(0.325)</td>
<td>(0.324)</td>
<td>(0.325)</td>
<td>(0.325)</td>
</tr>
<tr>
<td>Cohesion</td>
<td>γ₀₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Rate of Change (β₁ᵢ)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>γ₁₀</td>
<td>-0.582***</td>
<td>1.638**</td>
<td>-0.544***</td>
<td>-0.554***</td>
<td>-0.605***</td>
<td>-0.444t</td>
<td>-0.444t</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.054)</td>
<td>(0.552)</td>
<td>(0.051)</td>
<td>(0.052)</td>
<td>(0.080)</td>
<td>(0.258)</td>
<td>(0.258)</td>
</tr>
<tr>
<td>Female</td>
<td>γ₁₁</td>
<td>0.112</td>
<td>0.128</td>
<td>0.112</td>
<td>0.128</td>
<td>0.112</td>
<td>0.128</td>
<td>0.128</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.111)</td>
<td>(0.110)</td>
<td>(0.111)</td>
<td>(0.110)</td>
<td>(0.111)</td>
<td>(0.110)</td>
<td>(0.110)</td>
</tr>
<tr>
<td>Cohesion</td>
<td>γ₁₂</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Curvature of Change (β₂ᵢ)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>γ₂a₀</td>
<td>-0.068***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.017)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### TABLE 3.2 (CONT)

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Level 2</th>
<th>Model A</th>
<th>Model B</th>
<th>Model C</th>
<th>Model D</th>
<th>Model E</th>
<th>Model F</th>
<th>Model G</th>
</tr>
</thead>
<tbody>
<tr>
<td>expSAB as Fixed-but-varying Covariate ($\beta_2$)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intercept</td>
<td>$\gamma_{20}$</td>
<td></td>
<td></td>
<td></td>
<td>0.209***</td>
<td>0.195</td>
<td>0.220***</td>
<td>.766**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(.033)</td>
<td>(.032)</td>
<td>(0.026)</td>
<td>(0.231)</td>
</tr>
<tr>
<td>Female</td>
<td>$\gamma_{21}$</td>
<td></td>
<td></td>
<td></td>
<td>-0.051</td>
<td>-0.070</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.038)</td>
<td>(0.060)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cohesion</td>
<td>$\gamma_{22}$</td>
<td></td>
<td></td>
<td></td>
<td>-0.076*</td>
<td></td>
<td></td>
<td>(0.030)</td>
</tr>
</tbody>
</table>
Third, a quadratic time variable was added at Level 1 (Model C). This step allowed for curvature in the trajectory of aggression across the span of adolescence.

Model C:  
Level 1:  \[ AGR_j = \beta_0i + \beta_{1i}AGE_j + \beta_{2ai}AGE_2 SQ_{ij} + \epsilon_j \]  
\[ \text{(5)} \]
Level 2:  
\[ \beta_{0i} = \gamma_{0i} + \zeta_{0i} \]
\[ \beta_{1i} = \gamma_{1i} + \zeta_{1i} \]
\[ \beta_{2ai} = \gamma_{2ai} + \zeta_{2ai} \]

The squared-age of each individual, centered on the grand mean, was added to the previous model. Because of the four time points, this quadratic term was added as a random variable with the between-person variance estimated at Level 2. However, although the quadratic growth term is significant at Level 1, the overall model fits significantly less well than the linear slope only (Model B). Therefore, the linear model with random intercept and slope parameters was retained as the base model for change in aggression.

Next, substantive predictors were added to Level 1 linear model to test how these person-level factors explained changes in aggression. Following the proposed hypotheses, frequency of youth experience with sectarian antisocial behavior (expSAB) in the three months prior to the annual data collection was added as a time-varying covariate (Model D).

Model D:  
Level 1:  \[ AGR_j = \beta_0i + \beta_{1i}AGE_j + \beta_{2expSAB_j} + \epsilon_j \]  
\[ \text{(6)} \]
Level 2:  
\[ \beta_{0i} = \gamma_{0i} + \zeta_{0i} \]
\[ \beta_{1i} = \gamma_{1i} + \zeta_{1i} \]
This model included the age-specific level of experience with sectarian antisocial behavior that corresponded with the time variable; however, it was centered on the individual average, rather than the grand mean. This parameter could be interpreted as the strength of the relation between individual’s own average level of experience with sectarian antisocial behavior and aggression. It should also be noted that experience with sectarian antisocial behavior was added as a fixed-but-varying covariate; that is, it is included in the model as a fixed effect. This strategy assumed that the impact of experience with sectarian antisocial behavior on aggression was the same for each person in the study; although this may not be the case, the reality of the relatively few number of data points for each person (i.e., four) limited the practicality of estimating this additional variance component for each individual. Singer and Willet (2003) recommend this fixed-but-varying approach to time-varying covariates when there is insufficient data to provide reliable estimates of the between-person variance at Level 2. The positive and significant sign of this parameter ($\beta_2 = 0.209, p < .001$) suggested that, on average, the more sectarian threat a child was exposed to the higher their level of aggression at a given age. This model fit significantly better than the linear growth model (Model B) and was retained.

To examine if the impact of experience with sectarian antisocial behavior on aggression was the same across different ages for a particular individual, the \text{expSAB*Age} interaction was added to the model at Level 1 (Model E).

Model E: \[ AGR_{ij} = \beta_0 + \beta_1 AGE_{ij} + \beta_2 \text{expSAB}_{ij} + \beta_3 \text{expSAB}_{ij} * AGE_{ij} + \epsilon_{ij} \] (7)
Model E tested the hypothesis that for a given person, the influence of sectarian threat was stronger or weaker on aggression as he/she aged. The interaction term was calculated by the product term of the individual-centered experience with sectarian antisocial behavior and age scores for each person in the study and was included as a fixed effect. The negative sign of the interaction parameter ($\beta_3 = -0.021$, $p < .10$), significant at the trend level, can be interpreted as the average impact of experience with sectarian antisocial behavior on aggression decreasing with age; that is, through adolescence the strength of the positive relation between experiencing out-group threat and aggression is diminished. Comparing the deviance statistics suggests that this model fit significantly better than Model D, which included the experience with sectarian antisocial behavior as a fixed-but-varying covariate in the linear growth model. In summary, Model E suggested that for the average-aged child in the study, the level of aggression decreases with age and that the positive relation between a child’s average level of experience with sectarian antisocial behavior and aggression within a given time point weakens with age. Figure 3.2.1 shows this significant interaction, graphing the three lines at the average level of experience with sectarian antisocial behavior and one standard deviation above and below the mean. The X-axis displays the grand mean centered ages for youth in the study (i.e., spanning from -5 (10 years old) to +5 (20 years old)).
old). However, there remained significant variability in the intercepts ($\zeta_{0i} = 15.470, p < .001$) and slopes ($\zeta_{1i} = 0.900, p < .001$) of these estimated within-person trajectories.

Figure 3.2.1 Hierarchical linear modeling (HLM) two-way interaction plot of experience with sectarian antisocial behavior (expSAB) and age on youth aggression. Youth age is centered on the grand mean (15 years old). Lines are plotted at the mean, and one standard deviation above and below, of expSAB. As youth age, the positive link between expSAB and aggression weakens.
3.3 Conditional Models

With Model E as the best fitting unconditional model for intra-individual change in aggression across adolescence, variables were added to Level 2 to assess possible between-person differences in this within-person change. Child gender (boys=0, girls=1) was added as a Level 2 predictor for all of the Level 1 variables.

Model F: Level 1: 
\[ AGR_i = \beta_{0i} + \beta_{1i}AGE_i + \beta_{2i}\expSAB_i + \beta_{3i}\expSAB_i \cdot AGE_i + \varepsilon_i \]  
(8)

Level 2: 
\[ \beta_{0i} = \gamma_{00} + \gamma_{01}GEN_i + \zeta_{0i} \]
\[ \beta_{1i} = \gamma_{10} + \gamma_{11}GEN_i + \zeta_{1i} \]
\[ \beta_{2i} = \gamma_{20} + \gamma_{21}GEN_i \]
\[ \beta_{3i} = \gamma_{30} + \gamma_{31}GEN_i \]

In Model F there were systematic differences in the intercepts, or estimated level of aggression at age 10, between boys and girls (\(\gamma_{01} = -1.454, p < .001\)). The negative sign of the coefficient suggested that boys were higher in initial aggression compared to girls. This cross-level interaction was probed following the traditional techniques in multiple regression to help interpret how the between-group factors affected the Level 1 predictors of change over time (Figure 3.3.1; Curran, Bauer, & Willoughby, 2006).

However, gender did not significantly predict between-group differences in linear trajectories, the impact of experience with sectarian antisocial behavior on aggression, or the interaction term of \(\expSAB\cdot\text{Age}\). It should be noted that after adding the Level 2 predictors, the impact of the interaction term of \(\expSAB\cdot\text{Age}\) on child aggression
became significant at the $p < .05$ level; the other growth parameters remained significant. Model F fit significantly better than the prior unconditional model.

Figure 3.3.1: HLM two-way interaction plot of gender and age on youth aggression. Youth age is centered on the grand mean (15 years old). Lines are plotted for boys and girls. Boys are significantly higher in aggression initially, but there are no gender differences in the linear slope.
The final between-person variable in the proposed hypotheses, family cohesion, was added as a second Level 2 predictor (Model G).

Model G: 

Level 1: \[ AGR_{ij} = \beta_{0i} + \beta_{1i}AGE_{ij} + \beta_{2i}expSAB_{ij} + \beta_{3i}expSAB_{ij}^{*}AGE_{ij} + \epsilon_{ij} \] (9) 

Level 2: \[ \beta_{0i} = \gamma_{00} + \gamma_{01}GEN_{i} + \gamma_{02}FES_{i} + \zeta_{0i} \]
\[ \beta_{1i} = \gamma_{10} + \gamma_{11}GEN_{i} + \gamma_{12}FES_{i} + \zeta_{1i} \]
\[ \beta_{2i} = \gamma_{20} + \gamma_{21}GEN_{i} + \gamma_{22}FES_{i} \]
\[ \beta_{3i} = \gamma_{30} + \gamma_{31}GEN_{i} + \gamma_{32}FES_{i} \]

The average of family cohesion across the four time points of measurement, as reported by mothers and centered on the grand mean, was a significant moderator of the impact of experience with sectarian antisocial behavior on aggression \((\gamma_{22} = -0.076, p < .05)\). The negative sign of this coefficient suggested that compared to those with less cohesion, in families with greater cohesion there was a weaker relation between exposure to sectarian antisocial behavior and youth aggression. Figure 3.3.2 depicts this significant moderation effect, graphing the three lines at the average level and one standard deviation above and below the mean of family cohesion across the sample. Family cohesion did not significantly affect the strength of any of the other Level 1 predictors, such as age or the interaction term of expSAB*Age. In Model F, with the addition of family cohesion at Level 2, the linear trajectory or decline in aggression with age became significantly at only the trend level.\(^3\) In summary, the series of conditional model tests

\(^3\) Model G was also conducted without the expSAB*Age interaction term at Level 1 and the pattern of results was the same.
support the overall decline in aggression on average for both boys and girls, despite
higher levels for boys on average at age 10, and the buffering role of family cohesion on
the link between experience with sectarian antisocial behavior and youth aggression.

Figure 3.3.2 HLM two-way interaction plot of family cohesion (FES) and experience with sectarian antisocial behavior (expSAB) on youth aggression. Lines are plotted at the mean and one standard deviation above and below of FES. Family cohesion buffers youth from the positive link between expSAB and aggression.
3.4 Predicting Participation in Sectarian Antisocial Behavior

To address the hypothesis that trajectories in aggression would predict participation in sectarian antisocial behavior (pSAB), the residuals from the final HLM analyses (Model G) were saved in an SPSS file. Two parts of the residuals were used to calculate an individual’s own predicted trajectory. The ordinary least squares residuals for each person were combined with the overall estimates of the intercepts and slopes (i.e., the averages across all individuals in the study). This computation generated the person-specific estimate of change in aggression by age for the time points the individual was observed in the dataset. A multiple regression test was conducted to predict the composite score of participation in sectarian antisocial behavior controlling for ambient family cohesion and child gender ($F(4, 562) = 37.82, p < .001$; Table 3.4). On average, greater family cohesion ($\beta = .16, p < .001$) and being a girl ($\beta = .38, p < .001$) decreased the number of times a young person participated in acts against the other group at the final time point of measurement. Regarding the trajectories of aggression, the intercept ($\beta = .13, p < .001$) and the slope ($\beta = .10, p < .05$) both significantly predicted greater participation in sectarian antisocial behavior. That is, youth with higher initial levels of aggression, and those with either more positive slopes in aggression or less steep declines with age, participated in more violent or disruptive acts against the out-group. This finding suggested that normative changes in aggression with age had implications for intergroup conflict in a setting or prolonged conflict.
TABLE 3.4

MULTIPLE REGRESSION PREDICTING PARTICIPATION IN SECTARIAN ANTISOCIAL BEHAVIOR (N = 566)

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE B</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>8.46</td>
<td>0.97</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>-3.50</td>
<td>0.35</td>
<td>-0.38***</td>
</tr>
<tr>
<td>Family Cohesion</td>
<td>0.60</td>
<td>0.14</td>
<td>-0.16***</td>
</tr>
<tr>
<td>Intercept of Aggression</td>
<td>0.10</td>
<td>0.03</td>
<td>0.13***</td>
</tr>
<tr>
<td>Linear Slope of Aggression</td>
<td>0.17</td>
<td>0.07</td>
<td>0.10*</td>
</tr>
</tbody>
</table>

R² 0.21
F 37.82***

Note. *p < .05; **p < .01; ***p < .001.
CHAPTER 4:
DISCUSSION

This dissertation investigated the conditions under which a violent environment produces violent youth, and how youth in turn, may prolong intergroup conflict. The existing research on this topic often uses cross-sectional or retrospective data which may be biased by recall and memory effects (Barber 2009; Blattmann & Annan, 2010; Kerestes, 2006; McAloney et al., 2009; Qouta et al., 2008) and lags behind resilience theories that suggest ways to protect youth who are exposed to violence from perpetuating it (Gorman-Smith et al., 2004; Masten & Coatsworth, 1998). Improving on this previous work, the current study utilized a unique longitudinal dataset with multiple reporters which enabled the use of advanced statistical models and opened the possibility of asking new questions about inter-individual differences in intra-individual change in a setting of protracted political conflict. Following calls from the study of community violence (Fowler et al., 2009; Salzinger et al., 2002), this dissertation project prospectively investigated the relation between experience with sectarian violence and aggression in adolescence. It then considered how these trajectories of aggression were influenced by different individual and family factors in the social ecology, and how the
trajectories in turn related to youth participation in sectarian antisocial behaviors, which may fuel intergroup conflict.

With respect to the first set of hypotheses, the results confirmed there was a positive, concurrent relation between experience with sectarian antisocial behavior and greater aggression across adolescence. However, the influence of exposure to intergroup tension weakened with age into emerging adulthood. This interaction effect, perhaps, captures the average overall, linear decline in self-reported aggressive behaviors among the young people ages 10 to 20 years. This average decline was the same for boys and girls; however, gender did influence the estimated intercept of aggression at age 10. Consistent with previous studies, boys were more likely to engage in aggressive acts compared to girls in a setting of on-going intergroup violence (Boxer et al., 2009). This set of findings offers an optimistic outlook that on average, with developmental age, youth are better able to refrain from committing aggressive acts. This lends support to the proposition that the increased social skills and regulatory behaviors acquired with age could be at work for young people in Belfast. Yet, there was significant variability around the linear change, and an examination of individual slopes suggested that there may be different patterns of change. And, despite this average decline through adolescence, those individuals exposed to sectarian antisocial behavior were still at greater risk for aggressive acts.

The study also found that the family environment, specifically a cohesive family in which members support and care for one another, provides a buffer from the environmental stressor of intergroup violence. Although family cohesion was not a
significant moderator of the intercepts or slopes of aggression in general, the cross-level analyses identified family cohesion as a significant buffer of the link between experiences with sectarian antisocial behavior and concurrent aggression. This conceptualization of the family environment as an ambient-measure of the youth’s social context is consistent with the development of emotion regulation and improved cognitive skills needed to deal with intergroup threat (Andreas & Watson, 2009; Brookmeyer et al., 2005). If maintained over time, the ambient-protective factor of a strongly-knit and emotionally-supportive family was an effective buffer from the adolescent’s risky surroundings (Skinner et al., 1998).

Regarding the final outcome of interest, youth’s own participation in sectarian antisocial behaviors that prolong intergroup conflict, all of the hypotheses were supported. First, boys were more likely than girls to participate in out-group antisocial acts. Second, youth living in a more cohesive family environment were less likely to act out against the ‘other’ community. Finally, the initial level and rate of change in aggression significantly predicted greater out-group aggression. That is, general aggression (i.e., which could be directed at any target) was specifically related to greater out-group acts of violence and threat. Each of these sets of findings will be reviewed in greater detail, followed by the limitations of the current project and recommendations for future research, concluding with intervention implications for young people raised in settings of entrenched intergroup conflict.
4.1 Trajectories of Aggression

Toward investigating the question *does violence beget violence*, a recent paper tested the mediational process of microsystem violence (i.e., family and school violence) in the link between witnessing ethno-political violence and youth aggression in Israel/Palestinian territories (Boxer et al., in press). This study followed youth for three years, and by testing mean level, between-person changes it found that boys were more aggressive than girls and that the older youth (i.e., ages 14-16 vs. 8-11 year olds) were exposed to more political violence but were not necessarily more aggressive, consistent with earlier cross-sectional work. In fact, the impact of violence was strongest for their youngest cohort. The current study reinforces these findings; boys are higher in initial levels of aggression compared to girls, there is a positive relation between exposure to sectarian antisocial behavior and concurrent aggression, and yet this impact weakens with age through the adolescent years. Regarding age effects, Boxer’s study follows the work of Tremblay and others who suggest that aggression peaks in late childhood and then decreases or stabilizes as youth acquire greater social-cognitive information processing skills (Garbarino & Kostelny, 1996; Guerra & Huesmann, 2004; Nansel et al., 2001; Tremblay, 2000). This line of reasoning was supported by this dissertation project; the average level of aggression declined through adolescence, and in fact, with the addition of two between-person predictors, became significant at the trend level.

On the other hand, the current findings question another of Boxer and colleagues’ conclusions that violence “seems more likely to be unidirectional from context to person” (p. 12). In contrast, this study investigated not only general
aggression, but also specifically participation in antisocial behaviors against the out-group. Our results support the line of research that has documented personal-contextual transactions through development (Cicchetti, 1993; Cicchetti & Toth, 1997; Sameroff, 2000), that is, in which the individual also exerts influence over his/her social surroundings. This finding highlights the destructive impact that young people can have in the world around them; they are not merely passive individuals being acted up by external forces. By participating in sectarian antisocial behaviors, intentionally or unintentionally, youth are reproducing intergroup conflict (Jarman & O’Halloran, 2001; McEvoy-Levy, 2006).

The findings in this paper point to the need for within-person changes, to clarify between-person differences. Even as social and physical aggression may decrease on average in the transition from middle childhood to adolescence (Underwood, Beron, & Rosen, 2009), there can be a diversity of developmental trajectories of aggression (Andreas & Watson, 2009; Vazsonyi & Keiley 2007). Family factors are increasingly recognized as important moderating factors; high-risk youth with more family cohesion and less conflict were less likely to develop aggression (Andreas & Watson, 2009). Emerging adolescents exposed to permissive parenting, on the other hand, were more likely to demonstrate increases in aggression (Underwood et al., 2009). Although these studies did not specifically measure exposure to violence, these findings point to the importance of identifying the conditions which may promote or diminish the intra-individual development of aggression for youth in settings of political violence (Punamäki, 2009).
4.2 Protective Role of the Family

In the face of political violence, family cohesion may play an important moderating role in buffering youth from aggression problems through three possible, complementary processes: positive parenting, social support for youth, and broader neighborhood integration. More cohesive families may be achieved through more optimal or positive parenting. Constructive parenting strategies, such as behavioral control, have been found to help protect youth from future exposure to violence (Merrilees et al., 2011), to buffer them from increased internalizing problems in the face of political violence (Dubow et al., 2012), and to protect them from greater aggression (Barber, 1999; Qouta et al., 2008). Increased adult monitoring has also been shown to reduce the incidence of bullying for middle-school aged youth that have expressed other forms of externalizing problems (Totura et al., 2009). Moreover, parental supervision has been shown to link family cohesion and anger regulation among youth exposed to violence in middle childhood and early adolescence (Houltberg, Henry, & Morris, 2012). Greater emotion regulation may facilitate behavioral control and decreased aggression among adolescents. These findings support the line of research that states family interactions, such as cohesion and positive parenting, are important moderators protecting youth living in high-risk environments (Proctor, 2006). Moreover, the results suggest that the protective aspects of family cohesion are increased with higher levels of youth experience with sectarian antisocial behavior; this diverges from the community violence literature in which a good family environment could not buffer the highest risk youth from adjustment problems.
More parental supervision has also been linked to greater perceived parental support among youth living in high-risk communities (Houltberg et al., 2012). Youth who reported more maternal support were also less likely to be engaged in bullying, either as the aggressor or the victim (Holt & Espelage, 2007). Parental support was directly related to fewer aggressive symptoms for adolescents in the Palestinian territories (Barber, 1999). Greater parental acceptance also moderated the impact of Intifada experience on youth antisocial behaviors (Barber, 2001) and had direct effects on fewer aggressive behaviors for former child soldiers in Sierra Leone (Betancourt et al., 2010).

In addition, social support mobilization, among parents and important adult figures, has been shown to be an important protective factor for broader youth adjustment in other settings of political violence (Layne et al., 2009; Slone & Shoshani, 2008). Families that express good communication and prosocial behaviors within the family unit may also be more likely to live and participate in communities that have greater cohesion and efficacy. When parents are integrated into their communities, high-risk youth may be less likely to exhibit violent outcomes (Kurlycheck et al., 2012). Parental involvement in the community may be related to greater collective monitoring of youth; even when outside of the home, youth in neighborhoods with greater social efficacy may be less likely to engage in violent victimization (Maimon & Browning, 2010). In addition, community acceptance has been shown to promote positive post-war development among former child soldiers, suggesting that a supportive community can have a buffering effect on adjustment (Betancourt et al., 2010). Thus, neighborhood
effects over and above family dynamics are a key area for future research in settings of political violence and protracted conflict (see Cummings, Merrilees, et al., in press-a).

Finally, it is important to clarify that family cohesion is not the same construct as enmeshment (Barber & Buehler, 1996). Cohesive families are marked by higher shared affect, support, helpfulness and caring (Moos, 1974), whereas enmeshed families are more likely to have fusion across psychological and emotional domains, limiting autonomy and individualization of children (Barber & Buehler, 1996). This distinction is important because the definition of family cohesion operationalized in the current study is related to aspects for support, not intrusiveness. The former is more likely to equip developing children and adolescents with the social skills needed to navigate difficult situations, whereas the latter is more likely to deprive young people of these same emotional and cognitive resources. Along these lines, family cohesion, as found in the current study, is related to fewer aggressive behaviors, while enmeshment is related to greater adolescent aggression and delinquent acts (Barber & Buehler, 1996). This pattern may be more pronounced in settings of intergroup conflict where youth feel loyal to family members harmed by the violence and may support acts of revenge against the out-group (Victoroff et al., 2010), and based on experience of violence themselves, may condone violent retaliation if provoked (Ardila-Rey et al., 2009).

4.3 Participation in Sectarian Antisocial Behavior

One of the critical advances of this dissertation project is the explicit measurement of participation in out-group antisocial behavior. Past studies have found
that experience of political violence and a feeling of being treated unjustly increased male adolescent support for aggression against the conflict group (Al-Krenawi & Graham, 2012). During political transition, youth may also be more likely to use violence for political action when part of a close-knit friend group (Kuhn, 2004). And, although there is increasing attention to the role of general aggression among adolescents in settings of political violence (e.g., Boxer et al., in press; Qouta et al., 2008), few studies have explicitly measured out-group aggressive behaviors. Two notable exceptions include Merrilees and colleagues (in press), which that found stronger identification with the in-group increased the positive link between experiencing intergroup threat and acting out against the ‘other’ group in Northern Ireland, and McCouch’s (2009) work in which youth exposed to political violence were more likely to participate in antisocial criminal acts in post-war Bosnia. These behaviors have the potential to prevent youth from becoming productive members of the post-accord society and may undermine overall social reconstruction efforts by fueling intergroup mistrust (Biro et al., 2004).

Thus, the current study extends previous research on aggressive attitudes and general aggression to try to explain which youth may be more likely to engage in antisocial behaviors that contribute to protracted conflict. Toward the “decade thinking” approach called for by Lederach (2001; 2005), the findings from this project highlight the importance of focusing on youth experiences, attitudes, and behaviors in settings of on-going conflict. To promote their constructive engagement in society, domestic leaders and the international community must work to ensure that young people can act as ‘peacemakers not troublemakers’ (McEvoy-Levy, 2006).
4.4 Limitations and Future Research

Although this dissertation project has a number of methodological and statistical advantages over past work, there are still constraints on the generalizability of the findings and areas of future research that could strengthen the current project. First, youth participation in sectarian antisocial behavior was only asked at the final time point of measurement, which limits the ability to include an auto-regressive control for previous participation. Second, although multiple reporters were used in the model test, future research could look to replicate findings with additional reporters, such as teachers or peers. Third, because of the heterogeneity of developmental processes underlying different aspects of externalizing problems, future research could look at the co-morbidity of aggression along with delinquency, substance use, criminality, or other forms of psychopathology. Fourth, due to the non-normality of the primary outcome of interest, other distributions may be explored for modeling the data such as censored or two-part models (Brown et al., 2005; Olsen & Schafer, 2001; Petras, Nieuwbeerta, & Pirquero, 2009). Finally, the sample is representative of at-risk adolescents in urban areas, so similar work should be conducted in rural areas of Northern Ireland.

Future research may try to address some of the constraints for the current study, and to extend the findings in a number of important ways. First, peers become increasingly important in adolescence; consideration of how association with deviant or prosocial peers may affect the development of aggression could complement the current study (Kuhn, 2004; Zimmerman & Messner, 2011). Second, given the increase in common crime, or nonsectarian antisocial behavior (Monaghan & McLaughlin, 2006),
and the distress it causes families and communities (Taylor et al., 2011), future research could examine how youth aggression contributes toward their participation in nonsectarian antisocial acts as well.

Third, to complement the study of family cohesion, other family processes may also help predict the risk for developing aggression problems. Specifically, past research has found that parenting, such as behavioral control and warmth, marital conflict, parental aggression, and maternal mental health, and adolescent’s emotional insecurity about family or community may all play a role in youth externalizing and broader adjustment problems (Boxer et al., in press; Cummings et al., 2004; Cummings et al., 2010a, 2010b, 2011; Cummings, Taylor et al., in press-b; Goeke-Morey et al., 2011; Merrilees et al., 2011; Taylor et al., in press). Family or parental ideology and history of activism or participation in sectarian antisocial behavior may also be a fruitful area of research (Kuhn, 2004; Laor et al., 2006; Punamäki, 1996). Fourth, the ecological framework suggests that more distal factors in the social environment, such as the school context or neighborhood dynamics, may also affect the development of psychopathology (Aber, Jones, Brown, Chaudry, & Samples, 1998; Bennett, Elliot, & Peters, 2005; Bronfenbrenner, 1979; Dubow et al., 2012; Cummings, Merrilees et al., in press; Leventhal & Brooks-Gunn, 2000). This type of expansion is consistent with the emphasis on structural violence (Galtung, 1969), such as poverty, unemployment, and other forms of social-deprivation.

Fifth, the measures of sectarian antisocial behavior were developed specifically for the context of political or sectarian conflict in Northern Ireland. Comparative studies
that use similar or related measures may indicate more robust, cross-cultural processes (Cummings et al., 2009). Sixth, this study prospectively followed youth who remained in the setting of on-going tension; future research may also consider similar questions with refugee and immigrant youth and how they adjust to their new national contexts (see Montgomery, 2008). Finally, recent meta-analytic and review papers of the impact of community violence on youth (Fowler et al., 2009; Salzinger et al., 2002) could be extended to define the overarching relation between exposure to intergroup threat and adolescent adjustment, specifically that which may mitigate or prolong political conflict.

4.5 Implications

This study is timely given the increase of political conflict around the globe (Harborm & Wallensteen, 2007), the expanding youth populations in these contexts (Nordas & Davenport, 2011), and the growing literature on prevention and intervention programs aimed at decreasing adolescent aggression in the context of political violence (Betancourt et al., 2010; Clayton, Balif-Spanvill, & Hunsaker, 2001; Tol et al., 2010). “For adolescents embroiled in conflict and emergency situations, a lack of peace and security exacerbates the difficulties of growing into adulthood... [and] there is simply insufficient data to adequately assess the circumstances of the world’s children” (United Nations, 2011, p. 10). This dissertation project provided empirical support to guide interventions which may involve the family to help buffer youth from prolonged exposure to political violence (United Nations, 2006).
More specifically, the inclusion of the time-varying covariate and between-person moderators helps identify subgroups in the population that may be the most vulnerable to increased aggression in the transition through adolescence. This is important because aggression in adolescence has been linked to individual risks, such as school trouble and adult criminality (Overstreet & Braun, 1999; Salzinger et al., 2002), and societal risks, such as continued political conflict (de Rivera, 2003; Petersen & Zukerman, 2010). The lingering intergroup tension and violence that youth are exposed to in post-accord Belfast are not only related to general aggression among youth, but that aggression in turn is linked to committing sectarian acts against the ‘other’ community. Thus, a generation born after the peace accord is still socialized in an environment of threat and contributes to the perpetuation of intergroup conflict in Northern Ireland.

These findings support a more integrated intervention approach that includes strengthening families to help children and adolescents cope with stressors such as sectarian antisocial behavior (Campbell, Pierce, Moore, Marakovitz, & Newby, 1996). These family-focused studies have been shown to be a cost-effective form of violence prevention (Greenwood, 2004). Promoting family cohesion, or increased parental support (Slone & Shoshani, 2008), may help to buffer youth from political violence. However, universal programs that focus on the different dimensions of aggression and its emotional antecedents, such as anger, may have only modest effects in supportive peer contexts (Aber et al., 1998). Greater distinction between targeted and universal
programs for children affected by political violence has also been called for with regard to internalizing problems (Tol et al., 2010).

Toward more targeted interventions, the findings from this paper identified some subgroups of young people that may be more vulnerable to developing aggression problems (Loeber & Stouthamer-Loeber, 1998). Given the support for the proposed hypotheses, boys, youth with greater experience with sectarian antisocial behavior, and those from families with less cohesion may be at greater risk for aggression and more likely to participate in sectarian antisocial behavior. For example, prevention and intervention programs could target youth who are more likely to be exposed to intergroup threat, such as those living alongside interface zones or in neighborhoods that experienced high death rates during the Troubles (Cummings et al., 2010a, 2010b).

Thus, these findings support a critical examination of the principles of prevention described by Cummings and colleagues (2000) when designing programs that are both comprehensive and targeted. The importance of finely tuning intervention programs for the most vulnerable young people also highlights the need to work in collaboration with local community partners familiar with local dynamics (see Qouta & El-Sarraj, 2002). The hope is that the knowledge generated from this study may inform future interventions, both with youth and with families, that can reduce adolescent aggression, which may prolong intergroup conflict, particularly in settings of political conflict (de Rivera, 2003; Peltonen & Punamäki, 2010; Punamäki, 2009; Qouta et al., 2008; Yule, 2000).
APPENDIX A:
YOUTH PARTICIPATION IN SECTARIAN ANTISOCIAL BEHAVIOR

Below is a list of behaviours that people do to get at someone from the other community. Please tell us how often you have done the following to get at the other community in the past year:

<table>
<thead>
<tr>
<th>Question</th>
<th>Rarely (1)</th>
<th>Sometimes (2)</th>
<th>Often (3)</th>
<th>Very often (4)</th>
<th>Don’t know (5)</th>
<th>Refuse (6)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Fly flags</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Wear a football jersey to taunt/provoke people from the other community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Sing or chant songs about the other community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Use text messaging, instant messaging, or other forms of communication like facebook to taunt or tease someone from the other community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Threaten, shout at, or call someone from the other community names</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Take part in protests or demonstrations (against the other community)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Chase someone from the other community in the street</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8 Throw stones or other objects over walls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 Damage or spray paint on property of the other community (e.g., windows, cars, streetlights, bus shelter)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 Beat up (hit, punch, or kick) someone from the other community</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


PSNI - Police Service of Northern Ireland (2011a). *Police Reported Crime in Northern Ireland*, retrieved from


