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*The development of Mother and Father Hostile Aggressive Conflict  
during adolescence: antecedents and outcomes in early adulthood.*

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*To all the people that love me and to Patrizio,*

*I refer to you everyday.*

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# **CHAPTER I**

## **GENERAL INTRODUCTION**

## ***Introduction***

Since the early 1980s, literature on family conflict has increased and has demonstrated the association between family aggressive conflict and maladaptive outcomes over the course of adolescence and adulthood (Fantuzzo et al., 1991; Holden and Ritchie, 1991; Jaffe, Wolfe, Wilson, and Zak, 1986; Rossman and Rosenberg, 1998; Sternberg et al., 1993; Kim and Cicchetti, 2006; Widom, DuMont, and Czaja, 2007; Jaffee, Caspi, Moffitt, and Taylor, 2004).

Adolescence is considered a wide phase of development, in which is possible to identify three different phases: early adolescence (from 10 to 13 years), middle adolescence (from 14 to 17 years), and late adolescence (from 18 to 20 years) (Smetana, Campione-Barr and Metzger 2006).

During this phase of development, according to Smetana et al. (2006) changes in family relations maybe related to three main dimensions: the *autonomy* dimension is related to the level in which the adolescent is taking distance from his/her parental control; the *conflict* dimension concerns the typical hostile and contentious relationships between parents and adolescents; and the *harmony dimension* concerns the level in which parents and adolescents relationships are characterised by warmth, involvement and emotional support (Collins and Laursen, 2004; Collins and Repinski, 1994).

The common view is that adolescence is a transitional phase, characterised by deep emotional changes and numerous hostile events with their parents, although the majority of psychological research has shown the short term generalisation of this assumption (Smetana, Campione-Barr and Metzger 2006).

However, more severe forms of parent-adolescent conflict, characterised by harsh confrontation, with adults exist and may be considered exceptions. In fact the prevalence of these severe forms of conflict varies from 5% to 15% according to what reported by some studies that used different samples (Collins and Laursen 2004, Steinberg 1990).

The aim of the present dissertation was first to investigate the psychometric characteristics of the construct of Hostile Aggressive Conflict (HAC) with parents during adolescence; then to examine the role of distal and proximal variables in explaining inter-individual differences in HAC developmental growth across adolescence; finally to identify different trajectories groups, separately by adolescent' gender and parent (mother/ father). In this introductory chapter the definition of Hostile Aggressive conflict will be addressed and clarified. Furthermore, the theoretical framework and an outline of the remaining chapters will be presented.

### ***Hostile Aggressive Conflict: Definition and Consequences during Adolescence***

In this contribution we consider the *hostile aggressive conflict* (HAC) of parents toward their children, *with the aim of capturing* serious forms of behaviors related to parental verbal and physical aggression.

Historically, the study of family conflict development during adolescence has emphasized a curvilinear trend, which is characterised by a linear increase during the first adolescence with a peak in the course of the medium adolescence, followed after by a decline during the late adolescence (Collins and Laursen 2004, Holmbeck 1996, Montemayor, 1983; Smetana 1996).



Most of these studies have examined family conflict by using specific measures to assess the disagreement between parents and their children with regards to everyday domestic life as such as doing chores, dressing, or going out (Smetana, 1988).

One of the most important contributions to the study of family conflict was the meta-analysis conducted by Laursen et al., (1998), in which they showed that various trends of conflict can be found in different studies and these varieties of results may be dependent on the method used to measure this construct.

The authors have stressed the necessity to evaluate not only the incidence of the disagreements between the parent and the child, but also its intensity and affect. If intensity and affect are considered, it can be observed an increasing trend from early to middle adolescence and then its stability during late adolescence (Laursen et al, 1998). In addition, measuring hostility and aggressive family conflict type may allow identifying risky parent-children relationships that can affect adolescents' growth and their transition to adulthood (Collins e Laursen, 2004).

At this regard, several cross-sectional studies have investigated the family aggressive conflict in adolescence and they have shown a significant association with adolescent antisocial behaviors (Benda and Corwyn, 2002; Crittenden, Claussen, and Sugarman, 1994; Farber and Joseph, 1985; Kaplan et al., 1998; Williamson, Borduin, and Howe, 1991).

Moreover, longitudinal studies have shown that any form of intra-family violence during adolescence increases the risk for adolescents not only to be involved in violent and delinquent behaviors, but also to experiment a variety of internalizing problems (Ireland, Smith, and Thornberry, 2002; Thornberry, Ireland, and Smith, 2001; Smith, Ireland and Thornberry, 2005).

In this direction, robust empirical findings derive from the Rochester Youth Development Study (RYDS), a longitudinal study in which children and adolescents victims of

intra-family violence are at greater risk of becoming seriously involved in delinquent activities (Smith et al., 2005; Thornberry et al., 2001).

Similarly, Jonson-Reid and Barth (2000) in a retrospective study have analyzed records of Children Protective Service (CPS) considering the number of arrests and substantiated maltreatment cases. Findings of this study demonstrated that being victim on intra-family violence both during childhood and adolescence represents a robust risk factor for later delinquency.

In summary, these results underline one important element: not only children but also adolescents experiencing intra-family violence in this critical period of their life are susceptible to be trapped in a developmental pathway leading to delinquency.

### ***Theoretical Framework***

The studies of the present dissertation will analyze the development of Mother Hostile Aggressive Conflict (MHAC) and Father Hostile Aggressive Conflict (FHAC) considering the role of child's temperamental characteristics and the development of antisocial behaviors.

Dishion and Patterson (2006) have deeply analysed the reciprocal relations between temperamental characteristics, family conflict and antisocial behaviors. According to an interactional theory, these authors claim the importance of self-control abilities on the development of antisocial behaviors.

In the last twenty years, several studies have shown that individual temperamental characteristics, such as impulsivity and resistance to adult control can predict maladaptive and violent behaviors during adolescence (Crick and Dodge, 1994; Farrington, 1989; Bates and Bayles, 1984; Bates et al., 1998).

In particular, children's executive functions deficits and lack of inhibitory control seem to be associated to parental harsh discipline (Bronte-Tinkew et al., 2006; Walker-Barnes and Mason, 2004) and drug use (Finn, Sharkansky, Brandt, and Turcotte, 2000; Martin, Lynch, Pollock, and Clark, 2000).

Findings from longitudinal studies outcomes have documented that parents' aggressive and violent behaviors toward their children are the most important predictors of the development of antisocial behaviors (Loeber and Dishion, 1983). Children lacking in self-control are also at risk of developing hostile relationship with other adults (Dishion and Patterson, 1999, 2006).

In the *coercion theory*, Patterson's (1982) proposed an explanation of mutual influences between parents and children behaviors. In particular, the *escalation hypothesis* suggests that once aversive interaction is aroused in parent child relationships, the negativity in the expression of emotions by both parents and children is gradually intensified.

The *coercion training process* is a multistep family process that is common in the relationships between parents and their aggressive children. The first step is the parent's attempt to change a child's ongoing activity. The following step involves response by the child, through shouting, or complaining about the parent's directive. The third step is the parent's response to the child's attempt to coerce his behavior. If the parent does not enforce the directive, the child is rewarded for his coercive behavior (reinforcement). Finally, the child gives up and the parent is reinforced for his/her backing off.

This process leads to a mutually reinforcement of both parent and child's use of coercive tactics, thus increasing the probability that the coercive exchange will be repeated in future interactions. In addition, this pattern of interactions between parents and children may escalate, as the interaction chains increase in length and hostility. The outcome is that parents and children may repeat coercive tactics over and over within an episode until one party gives up.

As the parent might apply increasingly harsh attempts to gain compliance, on the other hand, the child may apply increasingly aversive tactics to resist his/her requests. According to this theory, the child learn that aversive tactics brings desired outcomes in the form of escape from aversive treatment by others.

In a similar vein, but slightly different, the contribution of Loeber et al. (1993) adds another piece in the work of Patterson' model.

In his *Developmental Pathways model* Loeber et al. (1993) explain the progressions of children antisocial behavior along three types of disruptive pathways: Authority Conflict Overt and Covert antisocial behaviors : a) *authority conflict pathway* is represented first by child “obstinate” behaviors (e.g. stubborn), followed by his/her disobedience and challenge toward parental behaviors, to the last step, around the age of 12, in which he/she completely avoid parental authority (e.g. running away, truancy)

2) *Overt antisocial pathway* is represented by an escalation of minor aggressive behaviors (disturbs other people, high-handedness) to more severe forms of aggression (fights) and to serious violent behaviors (e.g. rape);

3) *Covert antisocial pathway* is represented by minor covert-type behaviors (e.g. shoplifting, lying), followed by property damage (e.g. fire setting, vandalism) and finally by serious forms of thefts (e.g. breaking and entering).

Within the child abuse literature we must acknowledge to the Cycle of Violence theory (Widom, 1989, 2001)

This theoretical hypothesis claims that experiencing violence during childhood and adolescence predisposes to a high risk to perpetrate violence and predispose to delinquent behaviors (Brezina, 1998; Smith and Thornberry, 1995; Thornberry *et al.*, 2001; Widom, 1989, 1998).

The cycle of violence theory asserts that victims of violence can “be trapped” in a circular process that lead up to a more and more grave perpetuation of violence.

Curtis (1963) was the first author who opened the debate on the transmission of violent behaviors. After this first contribution, different authors in their studies have confirmed the following:

- Violence leads to violence ( Pears and Capaldi, 2001; Simons, Wu, Johnson, and Conger, 1995; Straus, 1983; Zaruvin, McMillen, DePanfilis, and Risley-Curtiss, 1996);
- Violence leads to antisocial behaviors (Smith and Thornberry, 1995; Widom and Ames, 1994);
- Violence leads to antisocial and violent behaviors ( Dodge, 1994; Ball, 2005; Smith and Thornberry, 1995; Weeks and Widom, 1998);
- Violence leads to criminal behaviors over the course of life (Rivera and Widom, 1990; Widom, 1992).

Essentially, the vast amount of studies have demonstrated that growing up in a violent and abusive environment can seriously compromise the normal child growth (Martin and Clements, 2002; McIntosh, 2002), and have a cumulative-type consequences both during adolescence and adulthood age, feeding the violence cycle (Baker et al., 2004; Holt et al.2008, Levendosky and Graham-Bermann, 1998).

### ***Genzano Longitudinal Study***

The participants were part of an ongoing Italian longitudinal project that has been conducted by Caprara, Pastorelli, and their colleagues. The longitudinal design involved four cohorts of children attending 3<sup>th</sup> grade in one elementary school of Genzano (Rome) by the time of first assessment. Cohort 1 began during the 1989-90 academic year, cohort 2 during the 1990-91academic year, cohort 3 during the 1991-92 academic year, and cohort 4 during the

1993-94 academic years. About 400 participants were annually assessed till early adolescence and then assessments were biannual during adolescence and young adulthood.

This project aimed to investigate the main determinants and pathways of successful development and maladjustment from childhood to early adulthood.

Participants were originally drawn from the two public junior high school in a community located near Rome. This sample represents a socioeconomic microcosm of the larger Italian society, composed of families of skilled workers, farmers, professionals, local merchants, and their service staff.

In particular, 16.4% of families were in professional or managerial ranks, 40.9% were merchants or employees in various types of business, 13.4% were skilled workers, 20.8% were unskilled workers, 7.1% were retired, and 1.5% were unemployed. This occupational socioeconomic distribution matches the national profile (Istituto Italiano di Statistica, 2002). The composition of the family also matches national data with regard to type of families and number of children. Most participants were from intact families (90.5%).

For the present dissertation, as we can see in Table 1, we used two cohorts assessed longitudinally from age 12-13 to age 21-22.

In particular, for the first study related to the Latent Growth Curve analysis of mother and father HAC, we used predictors based on self and parent report at Time 1 when children were 12-13 of age, while for the examination of the development of Mother and Father Hostyle Aggressive Conglict through Latent Growth Curve analysis, adolescent's self reports were available from Time 3 when adolescents where age 15-16 to Time 5 when Adolescents were age 19-20.

For study 2 and 3 in which we investigate separately for mother and father the distintive developemental pathways of Hostile Aggressive Conflicts groups through Latent Growth

Mixture Models, we used predictors at Time 1 (Age: 12-13), Time 2 (age 13-14 and Time 3 (age 15-16) based on self and parent report, while the trajectory models of mother and father HAC were base on adolescent’s self reports available from Time 3 (age 15-16) to Time 5 (age 19-20). Finally in both studies we investigate the relations of identified trajectory groups with negative outcomes in late adolescence (T5-age 19-20) and in young adulthood (Time 6- age 21-22).

**Table 1.** *General sample of the dissertation and specific samples considered across the studies*

	<b>Time 1</b>	<b>Time 2</b>	<b>Time 3</b>	<b>Time 4</b>	<b>Time 5</b>	<b>Time 6</b>
<i>Year</i>	<b>1995</b>	<b>1996</b>	<b>1998</b>	<b>2000</b>	<b>2002</b>	<b>2004</b>
<b>Cohort 1</b>	Age 12	Age 13	Age 15	Age 17	Age 19	Age 21
<b>Cohort 2</b>	Age 13	Age 14	Age 16	Age 18	Age 20	Age 22

Note: For the Study 1 we used Time 1 and Time 3 to Time 5; for the Study 2 and the Study 3 we used from Time 1 to Time 6.

***Outline of the Dissertation***

The central chapters (chapters II through IV) present empirical findings of the Genzano longitudinal sample. Chapter II aims to analyze the development of Mother and Father Hostile Aggressive Conflict from middle adolescence (15- 16 years), to late adolescence (19-20 years) with a particular focus on inter-individual differences in change trajectories explained by distal and concurrent risk factors.

Preliminarily we analyse the factorial structure and the longitudinal invariance of a modified measure of “Parent-Adolescent Disagreement Scale” developed by Honess, Charman, Zani, Cicognani, Xerri, Jackson, and Bosma (1997).

This study contributes to the scientific knowledge on the measurement of Hostile Aggressive conflict construct, because to our knowledge no studies have yet evaluated the

factorial structure on Italian sample through Confirmatory Factor Analyses and Longitudinal invariance. Moreover, to our knowledge, no studies have analysed the developmental growth of Mother and Father HAC from middle to late adolescence, and no studies have analysed the impact of distal and concurrent risk factors in altering the normative pattern of Mother and Father Hostile Aggressive Conflict growth.

Chapter III and chapter IV aim to identify trajectories of mother (MHAC- chapter III) and father HAC (FHAC- chapter IV) through Latent Growth Mixture Models from middle adolescence (age 15-16) to late adolescence (age 19-20) separately by gender. Moreover, the studies will investigate antecedents and consequences of MHAC and FHAC using T1-2 (age 12 to 14), Time 3 (age 15-16) and Time 5 (age 19-20) and 6 (age 21-22).

These studies contributes to the scientific knowledge, because to our knowledge no studies have analysed the f different trajectories class of Mother and Father HAC from middle to late adolescence, and no studies have analysed the antecedents and consequences of MHAC and FHAC.

In addition these studies contribute to the scientific knowledge because no studies have been conducted on this topic using Italian sample.

Please note that Chapters 2 through 4 are based on unpublished articles and they can be read independently from each other.

### ***Methodological Considerations***

The use of Innovative methodological techniques in this dissertation was possible thanks to the period spent in the Department of Psychology - Quantitative Study Program of Arizona State University.



First, we used Latent Growth Curve Modelling (LGCM), an analytical tool that can be used to represent trajectories across different phases of individuals' development.

Second, we used the LGMM approach to identify developmental trajectories of MHAC and FHAC (Muthén and Muthén 2000; Muthén and Shedden 1999) The LGMM approach can be viewed as a more general form of conventional growth curve modelling, it assumes that the population is composed of a mixture of distinct subgroups, each defined by a prototypical mean growth curve.

Because this method allows for cross-group differences in the shape of developmental trajectories, it is especially suited for identifying and modelling heterogeneity in types of developmental trajectories within a given population (Nagin and Tremblay 1999).

All analyses were conducted using Mplus 4 (Muthen and Muthen, 1998–2006).

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## **CHAPTER II**

### HOSTILE AGGRESSIVE CONFLICT DURING ADOLESCENCE

## *Hostile Aggressive Conflict Growth during Adolescence*

### *Introduction*

The nature and the quality of parents-adolescents' relationships are among the most researched topics in the adolescent literature (Smetana et al., 2006; Steinberg and Silk, 2002).

As reported in the previous chapter, the focus of the present study is Hostile Aggressive Conflict (HAC) between parents and adolescents, considering the dimensions of intensity and negative affect of parent-child conflict, as evidenced by Laursen, Coy, and Collins (1998).

For the purpose of this study we will analyze a type of hostile and aggressive parents-adolescents conflict that includes both parental verbal (e.g. He/she gets really wound up and starts shouting) and physical aggression ( e.g. He/she get really angry and hits out) toward their children.

### *The hostile aggressive conflict (HAC) during adolescence*

The studies that have examined the HAC showed that the serious family conflict extended by time is linked to delinquency during the late adolescence and the first adulthood age (Hoeve et al., 2007).

In particular, several authors have documented the association between high level of family conflict that include, or cause, violent behaviors in the family system, and the risk of developing both internalizing and externalizing problems (Herrenkohl et al., 2008; Edleson, 2004; Gewirtz, 2007).

In a recent meta-analysis, Herrenkohl et al. (2008) sustain that the worst outcomes associated to HAC are many different forms of behavioral problems, such as eating disorder,

risk of pregnancy in a premature age, school dropout, suicide attempts, delinquent and violent behaviors and drug use.

As regards the association of HAC with antisocial and delinquent behaviors, Haas et al. (2004) have investigated the experience of intra-family violence in intact and non intact families, in a sample of twenty-year-old Swiss children. Results of this study have shown that in presence of high conflict both adolescents coming from intact and non intact families are at risk of becoming delinquents.

In another study also Juby and Farrington (2001) have also identified the HAC as an important predictor of delinquent behaviors during the adolescence. Also in this case the results showed that HAC influences the level of delinquency of both adolescents from intact and non intact families.

Furthermore, other studies have shown that HAC predicts aggressive behaviors, lower school performance (Feldman and Wentzel, 1990; Melby and Conger, 1996). Recently, Eisenberg et al. (2008) confirming the need to better investigate the emotional component of parent-child relationships in order to capture more finely the intensity of hostility.

### ***Temperament, Family Hostile Aggressive Conflict and Delinquent Behaviors***

Temperamental child' characteristics, investigated from a cross-sectional perspective, have shown strong associations with externalising problems at different age groups (Barron and Earls, 1984; Earls and Jung, 1987; Fagan, 1990; Thomas and Chess, 1977; Thomas, Chess and Birch, 1968).

One of the most important contribution, both at theoretical and empirical level, to the study of children' temperament is that one coming from the Rothbart's model (Rothbart and

Bates, 2006). In this model temperament is viewed as involving two major domains, *reactivity* and *self-regulation*. *Reactivity* “refers to responsiveness to change in the external and internal environment; it includes a broad range of reactions (e.g., the emotions of fear, cardiac reactivity) and more general tendencies (e.g., negative emotionality)” (p. 100). Reactivity also includes action tendencies such as freezing, attack, and/or inhibition associated with emotion. Instead, the construct of *self-regulation* is connected with the construct of *effortful control*, defined as “the efficiency of executive attention—including the ability to inhibit a dominant response and/or to activate a subdominant response, to plan, and to detect errors” (Rothbart and Bates, 2006, p. 129). It includes the abilities to modulate (e.g., focus, shift) attention as needed (i.e., attention shifting and focusing), as well as to inhibit and activate behavior when needed, even if the individual prefers not to do so (i.e., labelled inhibitory and activational control, respectively).

Studies focusing on adolescence have shown that individual differences in effortful control and consequently in inhibitory control are moderately stable across childhood and into adolescence (e.g., Eisenberg et al., 2005; Murphy et al., 1999).

As evidenced by Eisenberg et al. (2008) adolescents with lower regulatory abilities and prone to experience intense negative emotions, such as anger, would be expected to lose control and consequently express relatively high levels of hostility in conflict-related interactions with their parents (Eisenberg et al., 2008).

The analysis of relations between parenting and delinquent behaviors has been deeply examined by Hoeve et al. (2009) in a recent meta-analysis that has considered 161 published and not published studies. Results from the meta-analysis have corroborated the association between parenting, operationalised in nine dimensions (support, authoritative control, authoritarian control, behavioral control, psychological control, general control, general

parenting, indirect parenting behavior, other parenting) and delinquent behaviors, including general delinquency, overt and covert antisocial behaviors. These findings substantially support what Patterson and colleagues indicated in their earlier studies on the basis of the coercion model (Patterson, Reid and Dishion, 1992; Patterson and Yoerger 1993).

Furhermore, other findings from the meta-analysis more convincingly show that stronger associations with delinquency are evidenced when the dimensions of parent hostility and refusal are considered. This dimension explains more of 11 % of variance of delinquency. Finally, longitudinal studies, examining the development of antisociality from childhood to adult age, have confirmed the relevant contribution of impulsivity and harsh parenting to the stability of antisocial behavior (West and Farrington 1973, 1977; Farrington, 1989).

### ***The present Study***

In this contribution, on the basis of previous results that have documented the relation between intra-family violence and delinquent and antisocial behaviors (Falshaw and Browne 1997; Falshaw et al. 1996; Farrington et al. 2001; Luntz and Widom 2004; Widom 1989; Widom and White, 1997), we will first analyze the development of HAC; then on the basis of the hypothesis that HAC leads to antisocial and delinquent behaviors during adolescence, according to a mechanism of reciprocal influence, we will consider the developmental risk of mother and father hostile aggressive conflict taking into account the role of distal and proximal covariates. In fact we will examine mother and father HAC toward their children integrating a longitudinal focus on individual development and a situational focus which evaluates the concurrent effects of individual and interactional time-varying variables on short-term fluctuations around the trajectory.

In particular, following Hussong et al., (2004) we will take into consideration two kinds of

factors: the first, captured by the “launch” hypothesis and the second, for which we retain the term “snares” hypothesis.

### ***Conceptualizing the predictors: The “launch” model***

The launch method is “analogous to catapult, in which the initial forces of the contextual antecedent are the major determinants of the shape of the curve of the outcome” (Kinderman and Skinner, 1992, p. 166). In such models, launching factors serve as distal predictors of change over time under the assumption that such time-lagged influences are more salient predictors. The identification of such distal factors, although often described in causal terms, may contribute to the understanding of the early determinants of the onset of HAC.

### ***Authority conflict during early adolescence***

As Patterson and Yoerger (2002) pointed out in the coercion model, the developmental antecedents of antisocial and delinquent behaviors are thought to be a sequence that begins during early childhood with overt forms of antisocial behavior. The second stage is characterised by the emergence of high rates of covert forms of antisocial behavior during later childhood and early adolescence (Patterson and Yoerger, 1997). The additional contribution of Loeber’s Developmental Pathways model further specifies the children authority conflict pathway (Loeber et al.; 1993). Accordingly, the authority conflict behaviors occur around the age of 12, before the development of overt and covert behaviors. The authority conflict dimension includes: stubborn behaviors, defiance and disobedience.

In our study, we will control for children authority conflict behaviors at age 12-13 in order to consider previous behavioral problems that could affect the start and the development of mother and father HAC.

### ***Inhibitory control***

As already noted, the relation between child temperament and family HAC and parental practices is well established (Dodge, 1994, Dishion and Patterson, 2006). In particular, several studies have documented the association between children' low inhibitory control and parental harsh practices (Bronte-Tinkew et al., 2006; Walker-Barnes and Mason, 2004).

As reported by White et al. (1994), uncontrolled, impulsive behaviors in childhood are associated with some aspects of conduct problems and delinquency. Moreover, results of longitudinal studies have shown the association between children' poor behavioral control and antisocial behavior in adolescence (Caspi et al., 2005). Moffitt and Caspi (2001) have documented that poor capacity to regulate behaviors is one of the variables which distinguish two developmental classes of violence: *life-course persistent*, who will maintain high levels of violence during the life course, and *adolescent-limited*, who during the life course comes back into an adaptive pathway.

### ***Conceptualizing the proximal covariates: The "snares" model***

The "snares" hypothesis posits the existence of time-varying or contextual factors that acts as proximal influences on the course of development. In our study we consider adolescents overt and covert antisocial behaviors acting through a series of proximal influences on mother and father HAC, therefore producing *short-term* alterations in the course of normal development.

### ***Overt and Covert antisocial behaviors during late adolescence***

As anticipated, studies analysing the development of antisocial behaviors have shown the

importance of distinguishing the overt and covert types (Loeber and Schmalting, 1985, Loeber et al.1993 ). However it must be noted that both overt and covert behaviors are intentional behaviors that damage persons (overt) and property (covert).

An important distinction is that overt antisocial behaviors involve a direct confrontation with others, while covert antisocial behaviors aim to avoid confrontation. In addition, developmentally, overt antisocial behavior (aggression) seems to precede covert ones (stealing)

As operationalized in our study, the dimension of O-ASB includes a series of age-consistent acts such as gang fighting and acts of violence. The dimension of C-ASB includes both minor acts such as lying and more serious delinquent behaviors such as stealing, breaking and entering.

Following Loeber's model, we will analyze the effects overt antisocial behavior (O-ASB) and covert antisocial behaviors (C-ASB) on growth curve of mother and father HAC from middle to late adolescence.

### *Specific Aims*

The current study aims to analyze the development of Mother and Father HAC in the transition from middle to late adolescence (from 15-16 to 19-20 years old), with a particular focus on inter-individual differences in change trajectories.

The present study was designed to: (1) Examine the factorial structure and longitudinal invariance of mother and father HAC construct; (2) Analyze the growth model of Mother and Father HAC toward their children from middle adolescence (age: 15-16) till late adolescence (Age: 19-20); (3) Analyze the influences on growth factors of time varying predictors (on the basis of self and parent assessment) related to child temperamental characteristics and behaviors (inhibitory control and authority conflict ); (4) Analyze the alteration of Mother and Father



HAC growth due to time-varying effects of covert and overt antisocial behaviors.

### *Hypothesis*

Regarding the first aim, previous results showed by Honess et al. (1997) evidenced good internal consistency and factorial structure of the scale, then we hypothesized a mono factorial structure of the scale and we expect longitudinal full invariance for both mother and father HAC constructs.

As pertains to the second aim, based on previous research on development of conflict and violence (Laursen et al. 1998; Stewart et al., 2008), showing that the affective intensity of conflict between parents and adolescents increases from early to mid adolescence and then remains fairly constant, we assume that the HAC trajectory from 15-16 to 19-20 years old can follow a stable growth over time and that a significant inter-individual variability will characterize this trend.

As pertains to the third aim, in accord with previous studies showing the associations of temperament and antisocial behaviors with family HAC (Dodge, 1994, Dishion and Patterson, 2006), and those studies showing that the development of antisocial behaviors (Loeber et al., 1993) may depend on the previous temperamental characteristics (Bronte-Tinkew et al., 2006; Walker-Barnes and Mason, 2004), we assume that authority conflict and inhibitory control, assessed by self and parent report, at an earlier age (12-13), may have an effect at least on the starting level of Mother and Father HAC toward their children at age 15-16.

As pertain the fourth aim, based on previous studies that have documented the association between family conflict and delinquency and antisocial behaviors (Dishion and Patterson, 2006; Hoeve et al., 2008; Patterson and Stouthmer-Loeber, 1984), we assume

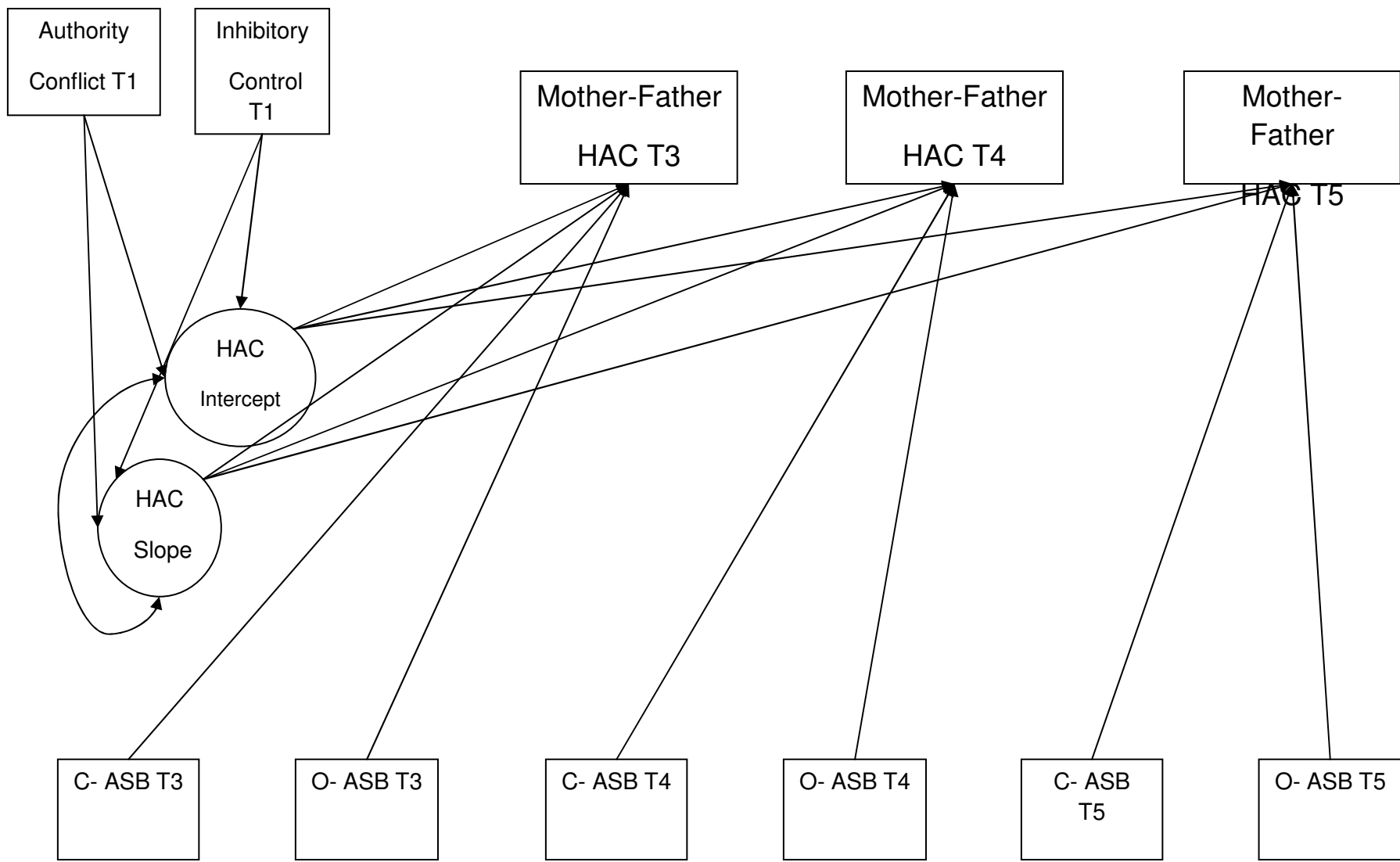
that O-ASB and C-ASB contribute through a series of proximal effects and produce short-term alterations in the course of Mother and Father HAC toward their children.

Considering O-ASB C-ASB, to our knowledge, no studies have yet analyzed the impact of these covariates on the individual growth of Mother and Father HAC over time evaluated by dynamic measures. Although previous research have identified strong associations between HAC and delinquency during late adolescence the question to be examined is whether time-varying levels of overt and covert antisocial behaviors across adolescence affect the alteration from the predicted trajectory of mother and father HAC within time (Curran and Hussong, 2002; Curran, Muthen, and Harford, 1998).

Based on previous research which showed the differential trend of O-ASB and C-ASB (Dishion and Patterson, 2006), that is the decline of overt antisocial behavior and the increase of covert antisocial behavior from adolescence to adulthood, our hypothesis considers that O-ASB will affect HAC till middle adolescence, while C-ASB will affect HAC form middle to late adolescence, given their stability until adulthood age.

As reported in Figure 1 O-ASB and C-ASB were used as time-varying covariates, with Time 3 (age 15-16) O-ASB and C-ASB predicting Time 3 (age 15-16) mother and father HAC, Time 4 (age 17-18) O-ASB and C-ASB predicting Time 4(age 17-18) mother and father HAC, Time 5 (age 19-20) O-ASB and C-ASB predicting Time 5 (age 19-20) mother and father HAC.

It should be noted that the time-varying covariates were estimated to have a direct effect on the same time of mother and father HAC indicator, and not on the latent growth factors (see Figure 1 for hypothesized model).



**Figure 1.** Hypothesized model of Latent Growth Curve Analysis of Mother and Father hostile aggressive conflict.  
 Note: T1=age 12-13- aggregate measure of parent and self report; T3=age 15-16; T4=age 17-18; T5=age 19-20. Mother- Father HAC: Mother- Father hostile aggressive conflict; C-ASB: Overt Antisocial Behaviors; O- ASB: Overt Antisocial Behaviors.

## *Method*

### *Participants*

The participants were part of an ongoing Italian longitudinal project that has been conducted by Caprara, Pastorelli, and their colleagues (Caprara et al., 1998, 2005; Pastorelli et al., 1997, 2001) since the late 80', with the aim to investigate the main determinants and pathways of successful development and maladjustment from childhood to early adulthood.

The longitudinal design will use two cohorts assessed at four different time points: participants of cohort 1 and cohort 2 were at Time 1 (T1-1995) respectively age 12 and 13. Cohort effects were previously tested and were found to be insignificant for socio-demographic and major study variables. Therefore, the data from the two cohorts were combined. Four hundred and seventy six adolescents (230 boys and 246 girls) participated in the study. For the present study we used predictors at Time 1 (T1) based on self and parent report. At time 1 (T1), participants' age was 12-13 (Mean=12.48; SD=.49), while, for Latent Growth Curve analysis of mother and father HAC adolescent's self reports were available from Time 3 (T3) to Time 5 (T5). At T3, participants' age was 15-16 (Mean=15.49; SD= .50), T4, was 17-18 (Mean=17.49; SD= .50), and finally, at T5 was 19-20 (Mean=19.47; SD= .49). The average age of the participants was 15.5 at time 3 and 19.5 at time 5. At T3 93.6% of participants attended high school, whereas at T5 81.9% attended high school and 18.4% attended university. Participants were originally drawn from the two public junior high schools in a community located near Rome. This sample represents a socioeconomic microcosm of

the larger Italian society, composed of families of skilled workers, farmers, professionals, local merchants, and their service staff.

In particular, 16.4% of families were in professional or managerial ranks, 40.9% were merchants or employees in various types of business, 13.4% were skilled workers, 20.8% were unskilled workers, 7.1% were retired, and 1.5% were unemployed. This occupational socioeconomic distribution matches the national profile (Istituto Italiano di Statistica, 2002). The composition of the family also matches national data with regard to type of families and number of children. Most participants were from intact families (90.5%), 51% of mothers and 2% of fathers were unemployed, 3% of mothers were housewife. Mother and father without high school education were respectively 53% and 55%, while 47% of mother and 45% of father had college degree or higher. Parents employed in managerial/professional jobs were 14% of mothers and 14% of fathers, while 11% of mothers and 27% of fathers were workers.

The participation rate was high during the longitudinal data collection: 83% from T1 to T%. Univariate analysis of variance (ANOVA), carried out separately for mother and father HAC, revealed that there were no statistically significant differences on the means of the variables of interest such as mother and father HAC (respectively:  $F(1, 383) = 2.410$  n.s.;  $F(1, 383) = .485$  n.s.) between the participants who provided complete data for the present study and the ones who dropped out over the years.

### ***Procedures***

For this longitudinal study researchers followed a stringent consent procedure for the conduct of research in the schools. Each research proposal must be approved by a school council composed of parent and teacher representatives at the junior high and

high school levels. In addition, parents must give consent, and children are free to decline to take part if they so choose. The study was structured to the parents and the children as a project designed to gain a better understanding of child development.

At time1, two assistant researchers administered the scales in the classroom. The researchers explained that responses to the questionnaires would be confidential. When necessary, they offered the children clarifications on the dimensions being measured. In these years also the parents participant at the research; parents were asked to complete a booklet of several measures for his/her child in their class. The administration took several months. Almost 87% of parents' adolescent at Time1 and Time 2 agreed to participate in this longitudinal study.

At time 2, time 3 and time 4 participants were contacted by phone and invited to participate in the study for which they received a small payment. After obtaining their parental and personal consent, the administration occurred individually in small groups in rooms provided by a school.

## ***Measures***

### ***Time 1(Age12-13) Measures***

#### ***Predictors of Mother and Father Hostile Conflict***

***Aggregate Measure of Authority Conflict and inhibitory control: Self and Parent report Self and Parent Report of Authority conflict.*** Authority conflict was measured using self and parent report of Youth Self Report and Child Behavior Checklist (YSR, Achenbach e Edelbrock, 1987; CBCL; Achenbach TM, Edelbrock CS, 1979).

Authority conflict pathway prior to age 12 was measured as defined by Loeber et al. (1993). It consists of a sequence of stubborn behavior, defiance, and authority avoidance

(eg. truancy, running away, and staying out late at night). Seven items were used measured on a 3-point scale (from 0= *not true* to 2= *very true or often true*) which the respondent answers about him/herself or his/her child based on behavior, thoughts or emotions during the past 6 months. Cronbach' Alpha for self and parent was respectively .60 .79 and correlation between informant was .28. Based on these preliminary steps, we first standardized the scores and then we aggregate the two informants. Higher scores represent higher levels of authority conflict.

*Self and Parent report of Inhibitory control.* The construct of *Inhibitory Control* was developed originally by Rothbart et al. (2001) and defined as the “capacity to plan and to suppress inappropriate approach responses under instructions or in novel or uncertain situations (page 1406)”. In this study we followed the operationalization provided by Pears, Capaldi and Owen (2007), in which they define inhibitory control as the “ability to inhibit one’s impulses and response tendencies and is a component of higher order mental functions known as the executive functions” (page 2).

Similarly to Pears et al. (2007), in this study low Inhibitory control was measured using self and parent report on the Youth Self Report and Child Behavior Checklist (YSR, Achenbach e Edelbrock, 1987; CBCL; Achenbach TM, Edelbrock CS, 1979) at ages 12-13 (T1). Eight items from the YSR and from CBCL were used (e.g.; Repeats certain acts over and over; impulsive or acts without thinking). The adolescents and parents rated the items for how well they describe him or her or his/her child at present or during the past 6 months on a 3-point scale (from 0= *not true* to 2= *very true or often true*) . Cronbach' Alpha for self and parent was respectively .55 .67 and correlation between informant was .29. Based these preliminary steps, we first standardized the

scores and then the two informants measures were aggregated. Higher scores represent lower inhibitory control.

### ***Time 3 (Age 15-16) to Time 5(Age 19-20) Measures***

#### *Self report*

*Mother and Father hostile aggressive conflict toward their children.* The degree to which serious disagreements between children and parents were managed in aggressive or hostile ways was measured by a revised version of “Parent-Adolescent Disagreement Scale” developed by Honess, Charman, Zani, Cicognani, Xerri, Jackson, and Bosma (1997). Five items were exactly the same as previous versions (“He/she gets really wound up and starts shouting”; “He/she says or do something to hurt my feelings”; “The more we talk the more wound up he/she become”; “He/she get really angry and hits out”; “He/she takes a long time to get over feeling wound up”). One item was inserted longitudinally in our version of scale: “He/she wound up and he/she throw me objects”. For each of six items, adolescents rated on a 4-point scale, ranging from 1 = *not at all* to 4 = *very well*, the extent to which the statements described behaviors occurring during disagreements about important issues in his or her life. Examples of items are: “He/she gets really irritated and he/she throws me some objects” and “He/she get really angry and hit out.” The  $\alpha$  coefficient for the scale was .81 for mother HAC and .79 for father HAC.

*Overt Antisocial Behaviors.* O- ASB were assessed using the *Violence/abuse Scale* (Caprara, Mazzotti, and Prezza, 1990). The measure includes 4 items assessing the extent to which participants engage in violent conduct as attacking someone and fighting behaviors as gang fighting. For each item, participants rate on a 5-point scale (from 1 =



*never/almost never* to 5 = *almost always/always*) how often they have been involved in violent actions. The Cronbach reliability coefficient ranged from .83 to .88.

*Covert Antisocial Behaviors*. C-ASB were assessed using a measure developed at Oregon Social Learning Center (OSLC) by Capaldi and Patterson, (1989). The 7 items used measure the frequency with which participants lie and steal in different social contexts on a 5-point scale (from 1 = *never/almost never* to 5 = *very often*). The measure includes minor C-ASB as lying and serious delinquency as breaking and entering. The Cronbach reliability coefficient ranged from .78 to .83.

### ***Analytical Approach***

The present study assesses the factorial structure of a revised version of the “Parent-Adolescent Disagreement Scale” developed by Honess, Charman, Zani, Cicognani, Xerri, Jackson, and Bosma (1997) to assess aggressive - angry style of conflict between parents and adolescents. The scale assessed both perpetrated and received behaviors from parents (i.e. “How well does each of the following statements describe your father/mother when you and he/she disagree about something which is important to both of you?”, and also “How well does each of the following statements describe you when you and your father/mother disagree about something which is important to both of you?”). For the present study we will focus only on the perpetration form from parents of HAC.

The revised version of HAC includes both physical and verbal aggressive conflict, and then Confirmatory Factor Analyses were conducted in order to assess the best fitting model for mother and father HAC: mono-dimensional and bi-dimensional measurement models were tested.

### ***Longitudinal Invariance***

Separately for mother and father HAC the following two models, from less restricted models to more restricted models, were tested (Meredith, 1993; Muthen and Muthen, 2006, Vandenberg and Lance, 2000).

Factorial invariance is established by a sequence of nested models, from the unconstrained model *Configural invariance* (the same factor structure is maintained across time), to *Metric invariance* (the respective loadings of the indicators are equated across time), and finally to *Scalar invariance* (both loadings and origins are constrained to be equal across time). The evidence for factorial invariance is tested through the significance of difference in the  $\chi^2$  value between two nested models. Using MLR estimator, Satorra-Bentler Scaled (mean-adjusted) Chi-square (Satorra, 2000) has to be used for this purpose

### ***Latent Growth Curve Analysis***

The data were analyzed using latent growth curve modelling (LGCM), an analytical tool that can be used to represent trajectories across different phases of individuals 'development. All analyses were conducted using Mplus 4 (Muthen and Muthen, 1998–2006). The current data set included some missing data, and the Mplus estimation procedure handles missing data through full-information maximum likelihood (FIML) imputation, enabling us to include all available data in the analyses. Missing data are a potential source of concern for all longitudinal studies, and FIML is one of the preferred methods to allow generalization of results to the population and the use of all available data. FIML does not estimate the missing data, as is the case with

mean- or regression-based imputation techniques. Rather, it fits the covariance structure model directly to the observed (and available) raw data for each participant (Enders, 2001). FIML assumes that the missing data are either missing completely at random or missing at random (MAR). All models were carried out by specifying maximum likelihood estimation with robust standard errors (MLR), a chi-square test statistic that are robust to non-normality of variables. Recommended cut-off points for these measures are: for RMSEA the cut-off is .08 (Brown, Cudek, 1993) or .06 (Hu, Bentler, 1998); for CFI the cut-off is .90 (Bollen, 1989) or .95 (Hu, Bentler, 1998).

In the results to follow, we first describe results for the unconditional growth models for mother and father HAC. In the second section of the results, we detail the full model with effects of time invariant and time variant covariates.

## ***Results***

### *Descriptive Statistics*

Zero-order correlations among the constructs of mother and father HAC and all covariates of interest, observed means and standard deviations across the three time points (from T3-age 15-16 to T5- age 19-20) are reported in Table 1. We also included gender and socio-demographic characteristics which showed no significant correlations with the variables of interest and not included in further analysis (see Table 1) Univariate analysis of variance (ANOVA) demonstrated no gender differences among constructs of interest, then we estimated models using total sample.

**Table1.** Correlations, means and standard deviations of the measures of Mother and Father hostile aggressive conflict and all covariates.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
<b>1. Mother HAC T3</b>	1																		
<b>2. Mother HAC T4</b>	.38 **	1																	
<b>3. Mother HAC T5</b>	.35 **	.48 **	1																
<b>4. Father HAC T3</b>	.71 **	.25**	.27**	1															
<b>5. Father HAC T4</b>	.17 *	.70**	.43**	.41 **	1														
<b>6. Father HAC T5</b>	.21**	.32**	.64**	.36**	.52**	1													
<b>7. Gender</b>	-.04	.07	-.07	-.04	.10	-.09	1												
<b>8. Father Education</b>	.02	-.06	.01	-.01	-.08	-.04	-.12	1											
<b>9. Job father</b>	.04	.04	.05	.07	.03	.06	.14*	-.58**	1										
<b>10. Mother Education</b>	-.01	.01	.02	-.06	.03	.01	-.01	.53**	-.48**	1									
<b>11. Job mother</b>	.05	-.04	.04	.09	.01	.03	-.06	-.30**	.36**	-.48**	1								
<b>12. Authority Conflict T1</b>	.12*	.08*	.28**	.11*	.10*	.28**	-.16**	.13	-.05	.03	.03	1							
<b>13. Inhibitory Control T1</b>	.11*	.11*	.18*	.13*	.11*	.25**	-.01	.17*	-.10	.21**	-.11	.40**	1						
<b>14. C- ASB T3</b>	.35**	.29**	.24**	.32**	.32**	.27**	-.12	-.02	.05	-.08	.12	.14*	.07	1					
<b>15. C- ASB T4</b>	.12*	.34**	.34**	.13*	.40**	.33**	-.16*	.03	.04	.07	.08	.18*	.11	.57**	1				
<b>16. C- ASB T5</b>	.17*	.25**	.54**	.21**	.35**	.45**	-.23**	.04	-.06	.05	.09	.32**	.19*	.47**	.58**	1			
<b>17. O- ASB T3</b>	.30**	.12*	.24**	.29**	.10	.23**	-.30**	-.08	.07	-.18**	.15*	.19**	.04	.52**	.36**	.32**	1		
<b>18. O- ASB T4</b>	.14*	.30**	.24**	.17*	.33**	.23**	-.39**	.02	-.03	.05	.09	.14	.06	.52**	.53**	.51**	.45**	1	
<b>19. O- ASB T5</b>	.18*	.19*	.38**	.18*	.25**	.34**	-.40**	.04	-.05	.02	.09	.26**	.11	.48**	.55**	.66**	.49**	.64**	1
<b>Mean</b>	1.52	1.56	1.51	1.50	1.54	1.57	1.43	2.40	4.08	2.36	5.86	-.01	.01	1.70	1.73	1.67	1.39	1.36	1.32
<b>SD</b>	.58	.58	.56	.57	.59	.58	.50	.90	.89	1.00	.78	.68	.30	.57	.58	.59	.57	.57	.58

Note: T1=age 12-13- aggregate measure of parent and self report; T3=age 15-16; T4=age 17-18; T5=age 19-20. Mother- Father HAC: Mother- Father hostile aggressive conflict; C-ASB: Overt Antisocial Behaviors; O- ASB: Overt Antisocial Behaviors.

**Table2.** Means and standard deviations of the items of Mother and Father Hostile Aggressive conflict toward their sons. Note: T3=age 15-16; T4=age 17-18; T5=age 19-20.

	<i>Mother</i> <b>T3</b>		<i>Father</i> <b>T3</b>		<i>Mother</i> <b>T4</b>		<i>Father</i> <b>T4</b>		<i>Mother</i> <b>T5</b>		<i>Father</i> <b>T5</b>	
	M	DS	M	DS	M	DS	M	DS	M	DS	M	DS
1.He/she gets really wound up and starts shouting	1.89	0.92	1.77	0.88	2.04	0.93	1.84	0.93	1.95	0.93	1.91	0.88
2.The more we talk the more wound up he/she become	1.92	0.95	1.93	0.96	2.08	1.01	2.10	0.99	1.89	0.91	2.10	0.98
3.He/she says or do something to hurt my feelings	1.58	0.87	1.62	0.87	1.68	0.95	1.71	0.95	1.62	0.83	1.76	0.88
4.He/she takes a long time to get over feeling wound up	1.77	0.89	1.73	0.84	1.73	0.88	1.67	0.82	1.75	0.83	1.68	0.79
5.He/she get really angry and hits out	1.26	0.62	1.24	0.62	1.17	0.52	1.22	0.59	1.15	0.44	1.21	0.54
6. He/she wound up and he/she throw me something	1.21	0.59	1.15	0.52	1.18	0.55	1.17	0.55	1.18	0.55	1.15	0.49

### ***Confirmatory factorial analysis and Longitudinal Invariance***

Table 3 presents comparison of the goodness-of-fit indices for single group models tested for mother and father HAC separately. Three models were tested in order to examine first the mono-dimensional structure, then to verify alternative models in which two dimensions could be identified (verbal and physical conflict or mild and severe forms of conflict). Model 1 is a single factor model with all six items loadings on one factor. Model 2 is a two factors model (see Table 3): items 1 to 4 were indicators of Verbal conflict and items 5 and 6 were indicators of Physical conflict. Model 3 is a two factors model (see Table 3): items 1 to 3 were indicators of Minor Verbal conflict and items 4 to 6 were indicators of Severe Physical and Verbal conflict. The comparison between mono-dimensional and bi-dimensional solution

(Table 3) showed that mono-dimensional solution was more appropriate considering chi square difference and at high correlation between two latent factors (.67 for Mother HAC and .64 for Father HAC).

### ***Longitudinal factorial Invariance***

Longitudinal Factorial Analysis on Mother and Father HAC construct was carried out in order to test if the respective indicators are representing the same underlying constructs over time. In longitudinal research constructs can change in meaning or importance as one passes different developmental phases. Testing and establishing longitudinal factorial invariance constitutes a requisite to modeling change over time because provides empirical evidence that the fundamental meaning of the construct has not changed across the different developmental periods (Vandenberg and Lance, 2000). Results of full factorial invariance is shown in Table 4.

**Table 3.** Fit Indices for Confirmatory Factor Analysis

		<b><i>Mother</i></b>			<b><i>Father</i></b>		
	Model	$\chi^2$ diff	Df	p	$\chi^2$ diff	Df	p
Age 15-16	Model 1 <sup>a</sup>						
	Model 2 <sup>b</sup>	76.10	1	0,00	137.43	1	0,00
	Model 3 <sup>c</sup>	31.03	1	0,00	61.25	1	0,00
Age 17-18	Model 1 <sup>a</sup>						
	Model 2 <sup>b</sup>	99.64	1	0,00	108.02	1	0,00
	Model 3 <sup>c</sup>	35.92	1	0,00	27.31	1	0,00
Age 19-20	Model 1 <sup>a</sup>						
	Model 2 <sup>b</sup>	381.17	1	0,00	126.69	1	0,00
	Model 3 <sup>c</sup>	185.68	1	0,00	61.25	1	0,00

*Note:* a Model 1: mono-dimensional solution; b Model 2: bi-dimensional solution: F1: 1-2-3-4; F2: 5-6.; c Model 3: bi-dimensional solution: F1: 1-2-3-; F2: 4-5-6.

**Table4.** Fit Indices for Longitudinal Measurement Invariance Analysis

	<i>Mother</i>		<i>Father</i>	
	$\chi^2$	<i>Df</i>	$\chi^2$	<i>df</i>
Step 1 – Configural	1044.913	132	790.268	132
Step 2- Metric	1057.588	142	543.360	142
Satorra-Bentler scaled difference	p value diff 0.44		p value diff 0.25	
Step 3- Scalar	1175.404	154	908.549	154
Satorra-Bentler scaled difference	p value diff 4.16		p value diff 1.55	

### ***Latent Growth Models***

The analysis of mother and father HAC development was conducted within a latent variable framework. Two latent variables were specified from multiple indicators that is the three repeated measures of mother and HAC (from T3 to T5). The first factor is the intercept and it represents the baseline of mother and father HAC (T3). The second factor is the slope or the shape of the trajectory over time and its mean gives the growth rate of mother and father HAC.

The following equation shows the mathematical representation of the growth model:

$$y_t = \eta_{0+} \zeta_1 x_t + \hat{\alpha}t; t=1. 2. 3;$$

where  $y_t$  is the observed score at time  $t$ .  $\zeta_0$  is the unobserved score for the intercept factor,  $\zeta_1$  is the unobserved score for the growth rate factor and  $x_t$  is the factor loading relating  $y_t$  to latent growth variables. Because factor loadings of the slope give the shape of the growth alternative models were tested and compared with each other. We could establish the parameterization that provided the best fit to the data.

We fixed the starting point for mother and father HAC at T2 at 0 for all the models. To determine which Latent Growth Model (LGM) best fit the data, three unconditional LGM were modelled for each construct of interest: intercept only, linear (intercept and linear slope) and nonlinear (intercept and a nonlinear slope; Meredith and Tisak. 1990). For both mother and father HAC, the linear model was best fitting (see Table 5). Furthermore, all longitudinally measured constructs exhibited significant variability in both the intercept and the slope, indicating the presence of meaningful individual differences in study constructs in both the initial level (at approximate age 15-16) and the rate of change over the study period.

**Table 5**

<i>Model</i>	<i>Model <math>\chi^2</math></i>	<i>Df</i>	<i>Correction factor<sup>c</sup></i>	<i><math>\chi^2</math> difference</i>	<i>df Difference</i>
<i>Mother HAC</i>					
Intercept only	10.460	6	1.06		
Linear <sup>a</sup>	3.516	3	1.03	6.85*	3
Nonlinear <sup>b</sup>	5.153	2	0.69	0.04	1
<i>Father HAC</i>					
Intercept only	15.915	6	1.08		
Linear	2.575	3	1.00	12.62***	3
Nonlinear	3.039	2	.85	0.007	1

Note: <sup>a</sup> Comparison for the chi-square difference test is between intercept and linear models.

<sup>b</sup> Comparison is between nonlinear and linear models.

<sup>c</sup> Correction factor was used to conduct the Satorra-Bentler scaled chi-square difference tests.

\* $p < .05$ . \*\* $p .001$ .



***Mother and father hostile aggressive conflict models.***

The respective linear univariate LGM for mother and father HAC demonstrated excellent fit to the data: Mother  $\chi^2$  (N= 387= 3.516. p= 0.31), comparative fit index (CFI) = .99, root-mean-square error of approximation (RMSEA) = .02, standardized root-mean-square residual (SRMR) =.01; father  $\chi^2$  (N= 388= 2.575. p= 0.46), comparative fit index (CFI)= 1.00, root-mean-square error of approximation (RMSEA) = .00, standardized root-mean-square residual (SRMR) =.05.

***Mother and Father Conditional Growth Model: Time – Invariant Covariates and Time-Varying Covariates.***

The full LGM with time-varying and time-invariant covariates examining mother and father HAC fit the data well (respectively:  $\chi^2 = 19.64$  16 df.  $p = .24$   $n = 382$ ; RMSEA = 0.03; CFI = 0.98; SRMR = 0.04;  $\chi^2 = 18.68$ . 16 df.  $p = .29$ .  $n = 382$ ; RMSEA = 0.02; CFI = 0.98; SRMR=0.03); Figure 1 shows that the hypothesized model with time invariant and variant covariates. Significant paths for the mother and father models are reported in figure 2. Figure 3a and Figure 3b represents the trend of Latent Growth Curve An

alysis for mother and Father HAC from middle to late adolescence.

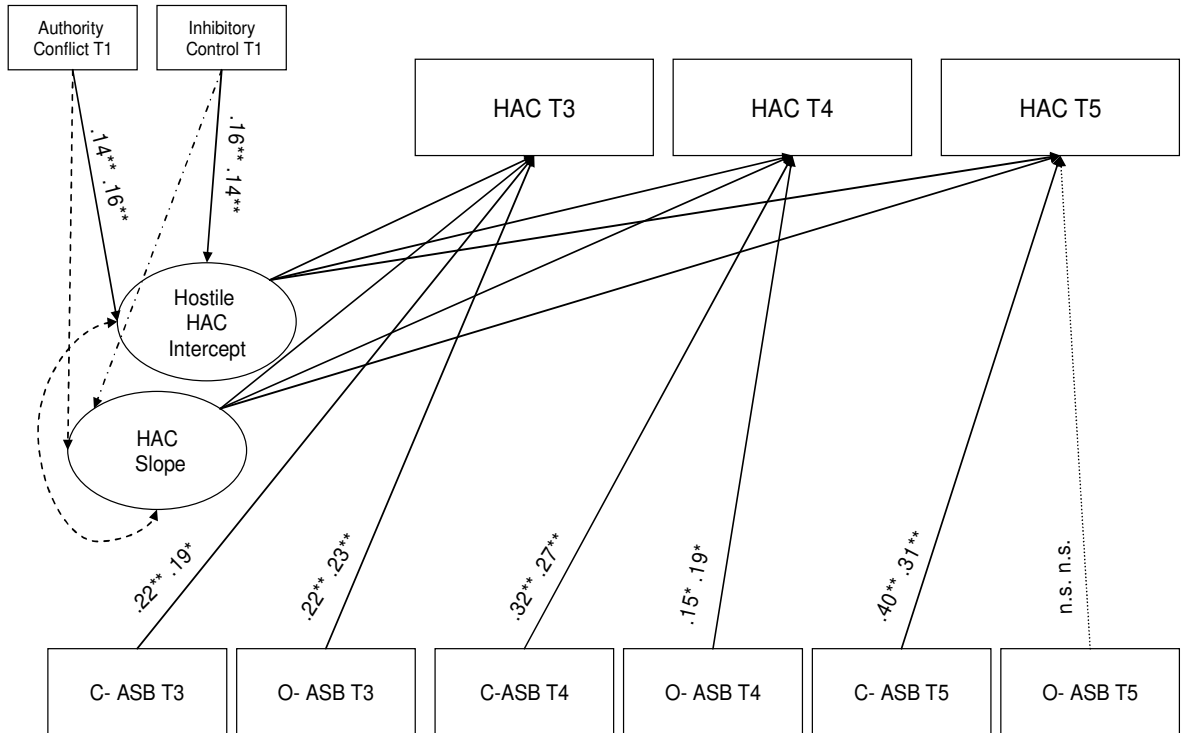
For both mother and father HAC models authority conflict and inhibitory control predict the intercept factor (respectively:  $\beta = .14$ ,  $\beta = .16$ ,  $p < .01$ ;  $\beta = .16$ ,  $\beta = .14$ ,  $p < .01$ ).

These results suggest that higher authority conflict (measured with self and parent report) and poor levels of inhibitory control (measured with self and parent report) significantly predicts higher levels of mother and father HAC toward their children three years later.

As regards the proximal covariates, there was a time-specific effect of C- ASB on mother and father HAC models at all times considered (respectively:  $\beta = .22$ ,  $\beta = .32$ ,  $\beta = .40$ ,  $p < .01$ ;  $\beta = .19$ ,  $\beta = .27$ ,  $\beta = .31$   $p < .01$ ).

Differently, O- ASB showed a time-specific significant effect at T3 (age 15-16) and T4 (age 17-18) on mother and father HAC models (respectively:  $\beta = .22$ ,  $\beta = .15$ ,  $p < .05$ ;  $\beta = .23$ ,  $\beta = .19$ ,  $p < .05$ ).

The explained variance in the time specific indicator at time 3, 4 and 5 were respectively 55%, 54% and 58% for mother HAC model and respectively 55%, 54% and 62% for father HAC. Overall, for mother HAC model the percentage of variance explained for the intercept was 10% and 19% for the slope; for father HAC model the percentage of variance explained for the intercept was 13% and 18% And no residuals variance for the slopes factor was found.

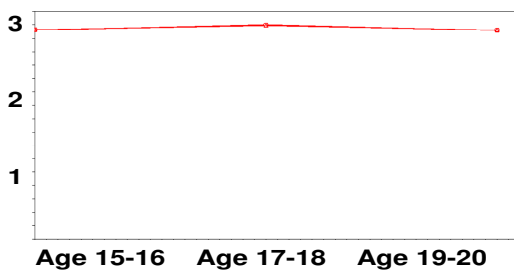


**Figure 2**

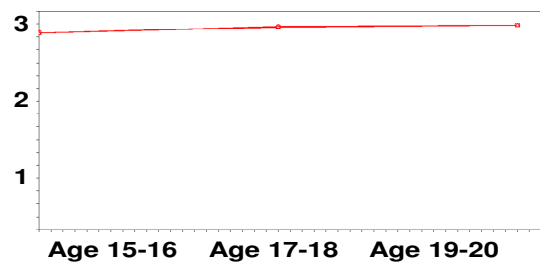
Note: All estimated parameters are standardized. The first value refers to mother hostile aggressive conflict; the second value refers to father hostile aggressive conflict. \* $p < .05$ . \*\* $p < .001$ .

Model Mother:  $\chi^2 = 19.64$ , 16 df,  $p = .24$ ,  $n = 382$ ; CFI = .98, TLI = .96, RMSEA = .03, SRMR = .04

Model Father:  $\chi^2 = 18.68$ , 16 df,  $p = .29$ ,  $n = 382$ ; CFI = 0.98, TLI = .95, RMSEA = 0.02; SRMR = 0.03



**Figure 3a. Latent Growth Curve Analysis of Mother HAC**



**Figure 3b. Latent Growth Curve Analysis of Father HAC**

## *Discussion*

Results of the present study underline the relevance of an integrated approach for the study of mother and father HAC. Findings of the study corroborate the importance of taking into account a longitudinal perspective which allows examining the developmental risks of parent HAC and its growth over time in the general population, in conjunction with a situational perspective able to focus on time specific proximal influences which may affect the trajectory of HAC over time. The inclusion of distal predictors (inhibitory control and authority conflict) and time-varying covariates (overt and covert antisocial behaviors) on modelling latent trajectory represents an adequate application of this theoretical model.

The first aim of this study was the examination of the factorial structure and the longitudinal invariance of HAC conflict scale separately for mother and father. Results of confirmatory factorial analysis show a mono-dimensional structure of the scale in comparison to the bi-dimensional structure. In fact, even if bi-dimensional structure of the scale show a good fit to the data, the high correlation between two factors discourages to consider it.

Consequently, we accepted a mono-dimensional structure of the construct of HAC.

Moreover, confirmatory factor analysis evidenced a full invariance for both constructs of HAC considered in this study. Testing and establishing longitudinal factorial invariance provides empirical evidence that the fundamental meaning of the construct has not changed across the different developmental periods, constituting a requisite to modelling change over time (Vandenberg and Land. 2000).

The second aim of this study was the analysis of HAC growth separately for mother and father from middle adolescence (age 15-16) through late adolescence

(age 19-20). The developmental trend showed a stable trend of HAC. The stability of growth during time was yet characterized by a significant inter-individual variability for intercept and slope factors in the “unconditional” model, for both mother and father developmental trends. These results suggests that different groups in the population can follows different trajectories of development, in accord with the studies on development of antisocial and delinquent behaviors (Laub and Sampson, 2001; Moffitt. 1993).

Moreover, the stability of the growth trend identified confirms previous studies that assess HAC on the basis of the intensity and the affect of perceived conflict (Laursen. 1998; Collins and Laursen. 2004). This methodological distinction is the basis for the identification of at risk parents-adolescents relationships, which are characterized by more hostile and aggressive disagreements (Collins e Laursen. 2004) which may be conducive toward chronic hostile-aggressive parent-child interactions over the course of development.

The analysis of predictors allowed us to identify the role of such relevant temperamental characteristics (inhibitory control) and behavioral variables (authority conflict) assessed from both parents and adolescent perspective at age 12-13.

Children lack of inhibitory control and persistent authority avoidance behaviors affect the initial levels of HAC for both mothers and fathers during middle adolescence at age 15-16.

These results confirm previous studies showing, on the one hand, significant associations between children lack of inhibitory control and use of parental harsh practices (Bronte-Tinkew et al., 2006;Walker-Barnes and Mason, 2004), on the other hand the significant contribution of authority conflict pathways in fueling the cycle of intra-family violence ( Farrington, 2001).

The time varying covariates considered, that is C- ASB and O-ASB, significantly affect the growth over time, contributing to the stabilization of chronic HAC during adolescence.

As already shown by previous studies concerning the development of antisocial behaviors (T.J. Dishion and G.R.Patterson. 2006; Patterson. Shaw. Snyder. and Yoerger. 2005), results of this study evidenced a progressive increase of C-ASB and a progressive decrease of O-ASB through the time assessment considered.

### ***Briefs Conclusion,***

The present study significantly contribute to the study of family relationships characterized by hostility and aggression and their connections with antisocial behaviors, using a developmental model wich take into account the role of predictors and time-specific variables. To our knowledge, no studies have analyzed the development of mother and father HAC toward their children over the course of adolescence until early adulthood, considering the role of distal and concurrent risk factors.

However, further studies needs to analyze different aspects of HAC yet not explored.

First of all, it would be necessary to analyze a more wide age range including pre-adolescent years to better understand this phenomenon. In addition further analysis should assess the existence of different development trajectories in the population looking at gender differences in the dyad mother-female, mother-male and father-female, father- male.

Moreover, it would be necessary to study the bidirectional nature of the relationship between the development of antisocial behaviors and HAC over time

through statistical analysis that will be able to consider and to estimate two parallel processes (Muthen and Muthen, 1998-2006).

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## **CHAPTER III**

THE DEVELOPMENT OF MOTHER HOSTILE AGGRESSIVE  
CONFLICT DURING ADOLESCENCE: ANTECEDENTS AND  
OUTCOMES IN EARLY ADULTHOOD

*The development of mother hostile aggressive conflict during adolescence:  
antecedents and outcomes in early adulthood*

***Introduction***

Research on parent-adolescent relationships suggests possible mutual influences in negative and positive affect over time (e.g., Conger and Ge, 1999). These researches suggested that parent-child relationship during adolescence may challenge more frequently in comparison to childhood years because increased conflict often results in the amplification of both parent and adolescent emotional intensity (Laursen, Coy, and Collins, 1998; Paikoff and Brooks-Gunn, 1991). In fact, in early adolescence, conflict and the associated affective intensity have been linked to the onset of pubertal changes and the negotiation of autonomy (Laursen and Collins, 1994; Montemayor, 1983; Paikoff and Brooks-Gunn, 1991).

Different explanations were suggested as regards the pubertal development and perturbations in family relations. Steinberg (1988) proposed two competing hypotheses: (a) the *accelerating hypothesis*, which states that parent-child emotional distance accelerates the child's pubertal development, and (b) the *distancing hypothesis*, which proposes that pubertal maturation increases parent-child emotional distance.

Moreover, several other studies have supported the “*distancing hypothesis*” demonstrating that conflicts and negative affect between parents and children sharply increase while positive interactions decrease during the onset of puberty (Conger and Ge, 1999; Laursen and Collins, 1994; Steinberg, 1988, 1990).

The role of behavioral and temperamental child's characteristics that could be considered as risk factors for the onset of Hostile Aggressive Conflict (HAC) and for

its maintenance over the course of development were analyzed and presented in the previous chapter.

In this contribution we will focus on Mother Hostile Aggressive Conflict toward their children, considering the child' and parent' gender. Moreover in the present study we will focus on the distal and on concurrent antecedent (age 12-13 to age 13-14 and age 15-16) and on short and long term outcomes associated with trajectories membership (age 17-18 and age 19-20).

### ***Hostile aggressive conflict (HAC): the role of gender***

Results of a nationally-representative survey conducted in United States in 1995, revealed that 35% of infants, 94% of toddlers and over 50% of 12-year-old children had experienced some form of parental physical conflict during the previous year (Strauss and Stewart 1999). Moreover, almost 90% of parents surveyed reported one or more instances of harsh verbal conflict (i.e., screaming, cursing, threatening or name calling) directed at their children in the past twelve months (Strauss and Field 2003).

Results of longitudinal studies have demonstrated the association between parenting and delinquency and in particular that inconsistent parenting, harsh discipline, and parents' hostility toward their children increases the risk for conduct problems, aggression and delinquency (Kim et al., 2003; Patterson, 1982).

The association between HAC and child-adolescents behaviors problems also appears to vary by parent and child gender.

In this direction, Deater-Deckard and Dodge (1997) found that harsh discipline in the context of same gender dyads (i.e., mothers and daughters, fathers and sons) was more strongly correlated with externalizing problems than in mixed

sex dyads (i.e., mothers and sons, fathers and daughters). In other study, paternal harsh discipline was more strongly related to sons' aggression than to daughters' aggression, but maternal harsh discipline was not related to either daughters' or sons' aggression (Chang et al. 2003). Recently, McKee et al. (2007), examining rates of harsh verbal and physical conflict by gender of parent and child replicated previous findings only for harsh physical conflict (e.g. Mahoney et al. 2000; Straus and Stewart 1999). In fact, while both parents show higher levels of physical conflict with sons than with daughters, they use the same level of harsh verbal with both sons and daughters.

***Hostile aggressive conflict (HAC): longitudinal studies during adolescence***

Different studies have examined negative and violent parent-child relationships during adolescence focusing on different definition of HAC and analyzing different aspects that characterized these relations.

In a recent study, Gutman, L., and Eccles, J. (2007) using hierarchical linear model, have analyzed the developmental trend of negative family interactions (e.g., frequency of yelling, hitting, pushing) in a sample of adolescents ranging from age 13 to age 19.

Results have shown that negative family interactions were highest in early adolescence, highlighting the salience of family relations during this period.

However, from early to middle adolescence, negative interactions remained fairly stable.

In other study, Lansford et al. (2009) identified trajectories of mild physical discipline (e.g., spank with hand), and harsh parental physical discipline (e.g., spank with object) and analysed their antecedents and outcomes. Results evidenced distinct physical discipline trajectory groups that varied in frequency of physical discipline

and rate of change in two different ages sample (from age 6 to age 9 and from age 10 to age 15).

In both samples and for both mild and harsh physical discipline, there were groups of mothers who rarely if ever used physical discipline over time.

Moreover, in both samples and for both mild and harsh physical discipline there were also groups that began at high levels of use and groups that began at moderate levels of use. Finally only in the younger sample (from age 6 to age 9), these groups decreased over time; while in the older sample (from age 10 to age 15) the groups that began at high levels of use remained high, and the groups that began at moderate levels decreased precipitously after the age of 12.

Results of this study have shown that controlling for early childhood externalizing behaviors; the minimal/ceasing trajectory groups were associated with the lowest levels of subsequent adolescent antisocial behavior and with parent–adolescent positive relationship quality; while children whose parents remained high in their use of physical discipline across this developmental period showed the highest levels of antisocial behaviors in adolescence.

In a similar direction, another study was conducted by Herrenkohl et al., (2006) using Latent Growth Mixture Models approach (LGMM) with the aim to analyze the relation between trajectories of family management from age 11–14 and violence trajectory groups from ages 13 through 18.

The family management construct includes items as: “When you misbehave, do your parents take time to calmly discuss what you have done wrong?” and “My parents put me down”, while child violence construct includes “picked a fight”, “committed assault” and “committed robbery”.



Results have identified four trajectories of youth violence (age 13- 18; non offenders, late increasers, desisters and chronic offender) and three trajectories of family management during adolescence (age 11–14): low, increasing, and high family management. By age 11, most of the families were either stable high (42.7%) or stable low (43.3%) in family management practices.

The examination of transition probabilities for the family management and violent offending joint trajectories in this study revealed that, as expected, a low level of family management during early adolescence was associated with a higher prevalence of chronic and late increasing violence. In contrast, a consistently high level of family management predicted a lower prevalence of violent offending.

#### ***Hostile aggressive conflict: outcomes in early adulthood***

#### ***Hostile aggressive conflict and Depression***

Severe and prolonged HAC in the home is associated with worse psychosocial functioning in adolescence and young adulthood (Hoeve et al., 2007; Reinherz et al., 2003). Longitudinal studies demonstrated a significant association between HAC and later externalizing and internalizing symptoms among youths (Herrenkohl and Herrenkohl, 2007). Moreover, Moylan et al (2010) documented a significant increase in the likelihood of depression for youths growing up in a violent environment.

Elsewhere, Reinherz et al (2003) reported a relatively strong longitudinal association between violent relationships with parents by age 15 and major depression diagnosis for individuals in late adolescence and early adulthood.

### ***Hostile aggressive conflict and Antisocial behaviors***

Several studies have showed the relationship between such types of parental practices, characterized by hostility, and delinquent behaviors during adolescence (Patterson and Stouthmer-Loeber, 1984).

Longitudinal studies on development of delinquent and antisocial behaviors have suggested the predictive role of *parenting style*, defined as a pattern of parental behaviors and dispositions toward their children, to differentiate developmental serious delinquency trajectories from those non-serious (Hoeve et al., 2008). In addition, Hoeve et al. (2009) have further supported these results showing as the parents hostility and rejection dimensions can explain the link between parent-child relationships and delinquency, as evidenced also in previous studies (Patterson and Yoerger 1993).

### ***Hostile aggressive conflict and Post-traumatic symptoms disorder (PTSD)***

Growing up and living in a context characterized by hostility and violence fall into the category of *complex traumas* (Cook et al., 2005; van der Kolk, 2005), a relatively recent conceptualization of long-standing, repeating, traumatic events. Complex trauma refers to “the experience of multiple, chronic, and prolonged, developmentally adverse traumatic events, most often of an interpersonal nature (e.g., sexual or physical abuse, war, community violence) and early life onset” (van der Kolk, 2005, p. 401). Posttraumatic reactions typically cause problems of dysregulation in emotional, cognitive, behavioral, and psychobiological domains (Margolyn and Vickerman, 2007).

These symptoms can have a significant impact on typical maturation and may disrupt the child normal development (Cicchetti and Toth, 1995; Silvern et al., 1995;

van der Kolk, 2005). During the years of adolescence and early adulthood, typical emotional reactions are characterised by anxiety, hyperactivated emotional responses and restricted affect. While cognitive symptoms (in youth exposed to violence) include overestimations about danger, preoccupied worry, and intrusive thoughts about the safety of oneself and other family members (Briere, 1992).

As reported by different investigators, adolescents exposed to family violence and HAC over the course of development may show posttraumatic reactions that typically involve the interplay of dysregulation in emotional, cognitive, behavioral, and psychobiological domains, with symptoms in each domain potentially triggering symptoms in other domains. On these bases, the further examination of these symptoms within the context of longitudinal family relations may contribute to the knowledge of those mechanisms that act as disruptors of adolescents' normal development (Cicchetti and Toth, 1995; Silvern et al., 1995; van der Kolk, 2005).

Regarding the antecedents and the risk factors associated with the onset and the maintenance of HAC, the literature has shown that many factors may affect whether and how frequently parents use of physical discipline and parents' ability or inability to change their parenting practices over the course of development.

Theories that emphasize the importance of social contexts, family systems, and ongoing relationship contexts (e.g., Laursen and Collins, 1994) all suggest possible developmental precursors and consequences of parents' use of physical discipline.

For example, physical discipline techniques have been found to be related to socioeconomic characteristics, child temperamental and behavioral characteristics, and parent-child relationships (Gershoff, 2002; Krishnakumar and Buehler, 2000; Lansford, Deater-Deckard, Dodge, Bates, and Pettit, 2004; McLoyd and Smith,

2002). The conceptual model guiding the present study included this diverse array of factors.

### *The present study*

#### *Aims*

This contribution moves on the basis of previous studies that investigated longitudinal developmental trends of family negative relations (Gutman and Eccles, 2007) and trajectories of mild and harsh physical discipline (Lansford et al., 2009).

Furthermore, considering our previous study (Chapter III) in which we found that the developmental growth of HAC from middle to late adolescence (from age 15-16 to age 19-20) is characterized by intra-individual variability, we have three goals:

- First, we will examine separately by gender the developmental change in mother hostile aggressive conflict (MHAC) from middle to late adolescence (from age 15-16 to age 19-20) using Latent Growth Mixture Models (LGMM) approach (Muthén and Muthén 2000; Muthén and Shedden 1999);
- Second, we will explore antecedents of the MHAC trajectory groups at two assessment points: during early adolescence (age 12 to 14) and concurrent adolescence age (age 15-16);
- Third, we will explore developmental outcomes of MHAC trajectories at short term (age 19-20), concurrently with the last assessment point of the MHAC trajectories model' and at long time, two years later (age 21-22).

Summarizing, separately by gender, three key questions are explored in this study:

- First, how many and which distinctive Mother Hostile Aggressive Conflict (MHAC) trajectory groups were empirically identifiable in a sample of Italian adolescents, using data on adolescent' perception of MHAC from middle

adolescence (ages 15 to 16 years) to late adolescence (ages 19 to 20 years)?

- Second, are the identified MHAC trajectory groups associated with specific early adolescents (age 12 to 14) and concurrent adolescents' predictors (age 15-16)?
- Third, are the identified MHAC trajectory groups predictive of specific outcomes at short and long time (T5 age 19 to 20; T6 age 21 to 22)?

### *Hypothesis*

Regarding the first key question, based on previous studies (Lansford et al., 2009;

Gutman and Eccles, 2007); we assume that, separately by adolescents gender, different trajectories of MHAC could be identified using LGMM characterized by different level of HAC severity.

As pertains to the second key question, based on Lansford et al., 2009 study and our previous study (chapter II), showing that previous child's temperamental (inhibitory control) and behavioral characteristics (authority conflict) can influence the onset of HAC in adolescence .

We assume that the different trajectories identified will show significant differences regarding risk factors related to child' temperamental characteristics (inhibitory control ), individual' emotional and behavioral problems (depression, aggressive behaviors, authority conflict , overt and covert antisocial behaviors, HAC toward mother), peer relationships (involvement with deviant peers), violence experience in the family ( violence victimization and violence witnessing, father' and mother' use of physical discipline) during early adolescence (age 12 to14) and during middle adolescence (age 15-16).

As pertains to the third key question, based on previous studies that have showed the

association among HAC and delinquency, depression and PTSD symptoms (Cook et al., 2005; Hoeve et al. 2009; Moylan et al., 2010), We assume that different trajectories identified can predicts considered outcomes at short time (age 19-20) and long time (age 21-22). In particular we assume that more serious trajectories can better predicts Depression, Overt and Covert Antisocial Behaviors and PTSD symptoms at short and long time (age 19-20 and age 21-22).

## ***METHOD***

### *Sample*

Participants of the longitudinal study were better described in the previous chapters. Differently from the previous study (chapter I), for the present study we used predictors at Time 1 (T1) and Time 2 (T2) based on self and teacher report. At T1 and T2, participants' age was 12-13 (Mean=12.48; SD=.49) and 13-14 (Mean=13.48; SD=.50), while, for Latent Growth Mixture Models (LGMM) of mother HAC adolescent's self reports were available from Time 3 (T3) to Time 5 (T5). At time 3 (T3), participants' age was 15-16 (Mean=15.49; SD= .50), at time 4 (T4), was 17-18 (Mean=17.49; SD= .50), and finally, at Time (T5) was 19-20 (Mean=19.47; SD=.49). In addition, for the present study we used outcomes at Time 6 (T6) based on self report when participants were age 21-22 (Mean=21.50; SD=.50).

The participation rate was high during the longitudinal data collection: 55% on average from T1 to T6, while the retention rate was on average 78% from T3 to T5 (the waves used for LGMM models).

Univariate analysis of variance (ANOVA), revealed that there were no statistically significant differences on the means of the variables of interest ( $F(1, 379) = .52$  n.s.) between the participants who provided complete data from T1 to T6 for the present study and the ones who dropped out over the years.

### *Procedures*

Procedures used in the longitudinal study were described in the previous chapter (chapter I).

### *Measures*

#### *Computation of Early Adolescent Measures (T1-2 Age 12-13 to age 13-14)*

Early adolescence measures were averaged across multiple waves (T1 and T2) to gain average measures of the predictors. Wherever possible, the measures were computed using data from multiple informants (self and teacher report). The general strategy for building composite variables was described by Capaldi and Patterson (1989) and Patterson et al. (1992). In short, a three-stage process was used: First, the internal consistency of the items associated with each scale was established in cohort 1 ( $\alpha$  of at least .6; item-total correlation of at least .2). Second, the convergent validity of the indicators for a construct was examined within a principal component factor analysis (the factor loading for the one-factor solution had to be at least .3). Third, the internal consistency of the item scales and the convergent validity of the construct indicators had to replicate in cohort 2. This procedure ensured that reports from multiple informants were substantively associated with each other. Early adolescents measures were obtained during waves 1 and 2 (i.e., when participants were aged 12 to 13 years and aged 13 to 14 years, respectively). Thus, the early adolescents' measures were obtained before the assessment of the youths' self-reported mother hostile aggressive conflict. The variables were coded so that a higher score represented a more problematic behaviors or situation (i.e., a higher score indicated a higher level of aggressive behaviors, poorer inhibitory control, or a higher involvement with deviant peers). Concurrent adolescents measures were

obtained during waves 3 (i.e., when participants were aged 15 to 16 years). Thus, the concurrent adolescents' measures were obtained at the same assessment of the youths' self-reported mother hostile aggressive conflict. Concurrent adolescents measures were obtained during waves 3 (i.e., when participants were aged 15 to 16 years). Thus, the concurrent adolescents' measures were obtained at the same assessment of the youths' self-reported mother hostile aggressive conflict. The variables were coded so that a higher score represented a more problematic behaviors or situation.

Outcomes adolescents measures were obtained during waves 5 and 6 (i.e., when participants were aged 19 to 20 years and aged 21 to 22 years). Thus, the outcomes adolescents' measures were obtained at the final and subsequent assessment of the youths' self-reported mother hostile aggressive conflict. The variables were coded so that a higher score represented a more problematic behaviors or situation.

The childhood and adolescent measures are listed and explained in Table 1.

**Table 1. Measures used in the study.**

Construct/measure	Number of items	Cronbach's $\alpha$	Description or sample item
<i>Early Adolescence age 12 to 13 and 13 to 14 (waves 1 and 2)</i>			
Depression CDI (Kovacs, 1985).	27	.83; .85	Feel depressed.
Aggressive behaviors YSR (Achenbach e Edelbrock, 1987). TRF (Achenbach, 1991).	16	.81; .82 .86; .84	Physically attack people.
Inhibitory control YSR (Achenbach e Edelbrock, 1987). TRF (Achenbach, 1991).	8	.55; .56 .63; .65	Impulsive or act without thinking
Peer rejection	2		Friends you don't like to play with
Involvement with Deviant Peers Scale (Capaldi and Patterson, 1989).	3	.89 .70	Deviant peers who use drugs
Violence victimization Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	1		Have ever been a victim of physical violence from others
Violence witnessing Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	1		Have ever witnessed violence among the members of your family



Authority conflict YSR (Achenbach e Edelbrock, 1987) TRF (Achenbach,1991)	8	.61 .66 .72 .67	Stubborn
<b>Adolescence age 15 to 16 (wave 3)</b>			
Father physical discipline (Loeber, 1991)	1		To hit your child
Mother physical discipline (Loeber, 1991)	1		To hit your child
Overt antisocial behaviors Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	4	.83	Have been involved in fights between people or rival groups
Covert antisocial behaviors Covert Antisocial Scale (Capaldi and Patterson, 1989).	7	.78	Enter or slither into a building to steal something
Involvement with deviant peers Involvement with Deviant Peers Scale (Capaldi and Patterson, 1989).	11	.89	Sold light drugs
Hostile aggressive conflict toward mother The Parent-Adolescent Disagreement Scale” (Honest, Charman, Zani, Cicognani, Xerri, Jackson, and Bosma,1997).	.75	4	To get really angry and hit out
Inhibitory control YSR (Achenbach e Edelbrock, 1987) .	8	.63	Impulsive or act without thinking
<b>Early adulthood age 19 to 20 and 21 to 22 (wave 5 and 6)</b>			
Depression CES-D scale (Radloff, 1977).	18	.93; .86	To feel depressed
Overt antisocial behaviors Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	4	.88; .88	Have been involved in fights between people or rival groups
Covert antisocial behaviors Covert Antisocial Scale (Capaldi and Patterson, 1989).	7	.83; .80	Enter or slither into a building to steal something
PTSD Symptoms YSR (Achenbach e Edelbrock, 1987).	20	.83; .85	Too fearful or anxious

### ***Analysis Strategy***

Data analyses proceeded in four steps. First, descriptive statistics for all study variables were computed.

Second, we used LGMM to identify distinct developmental trajectories of MHAC from middle adolescence (ages 15-16) to late adolescence (ages 19-22). The LGMM approach (Muthén and Muthén 2000; Muthén and Shedden 1999) can be viewed as a more general form of conventional growth curve modelling. In conventional growth curve modelling, a mean growth curve is estimated for the population, and heterogeneity or individual differences in developmental trajectories

are captured by allowing for continuous variability of the growth factors (i.e., the estimation of growth factor variation). The LGMM approach, in contrast, assumes that the population is composed of a mixture of distinct subgroups, each defined by a prototypical mean growth curve. Because this method allows for cross-group differences in the shape of developmental trajectories, it is especially suited for identifying and modelling heterogeneity in types of developmental trajectories within a given population (Nagin and Tremblay 1999). The LGMM models were estimated with the software package M-plus 4 (Muthén, 2004), which permits the estimation of missing values using the full information maximum likelihood estimator. Model selection requires the determination of the number of classes that best describes the data. In LGMM, a  $k$  class model is not nested within a  $k + 1$  class model; therefore, it is not appropriate to use the likelihood ratio test for model selection. Instead, the Bayesian information criterion (BIC) is used as a basis for selecting the optimal model because it can be used for the comparison of both nested and unnested models (Kass and Raftery 1995; Raftery 1995). Generally, the model with the smallest absolute BIC value is chosen. Note that the BIC tends to favour models with fewer classes because it rewards parsimony.

Third, early adolescents' predictors (age 12 to 14) and adolescent concurrent predictors (age 15-16) of trajectory group membership (TGM) were investigated by computing multivariate analyses of covariance (MANOVAs).

Fourth, we performed a series of hierarchical regressions in which depression overt and covert antisocial behaviors and PTSD symptoms at Time 5 (age 19-20) and at T6 (age 21-22) were predicted by TGM after controlling for their initial levels at T1 (age 12-13).

In this study we don't investigate the role of demographic variables as mother

and father education level because no significant correlations were found with all other measures (see Table 2).

**Table 2 Descriptive statistics and correlations between all variables used in the study.**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Mean	DS
1. Ed level T1	-	-.04	.03	.01	.10	-.06	-.05	.05	.01	.12	-.13	-.11	.04	-.05	.17*	.13	.02	.02	-.03	1.16	.83
2. Mother Hac T3	.016	-	.52**	.54**	.29**	.40**	.35**	.01	.11	.01	.21**	.40**	.31**	.48**	.32*	.44**	.23**	.50**	.45**	1.59	.57
3. Mother Hac T4	-.06	.48**	-	.56**	.23**	.34**	.32**	-.07	.14	.01	.16	.25*	.28**	.29*	.10	.26**	.10	.41*	.27**	1.70	.59
4. Mother Hac T5	-.07	.30**	.52**	-	.28**	.26**	.26**	-.12	.09	.01	.06	.25**	.22*	.22*	.14	.18*	.05	.25**	.19	1.58	.54
5. Cdi T1-2	-.08	.21**	.20*	.38**	-	.38**	.40**	.18*	.23**	.14	.23**	.42*	.23**	.19	.22*	.36**	.09	.35*	.37**	.16	1.77
6. Agg beh T1-2	-.13	.18*	.06	.15	.31**	-	.70**	.18*	.23**	.12	.42**	.76*	.28*	.21**	.24*	.35	.23*	.34**	.42*	-.24	.50
7. Inhib Control T1-2	-.13	.13	.12	.19*	.30**	.83**	-	.02	.21**	.15*	.27*	.59**	.23*	.18	.19**	.23**	.18*	.38**	.52*	-.07	.59
8. Peer Rej T1-2	-.07	.04	.06	.20*	.21**	.41**	.41**	-	-.03	.06	-.06	.09	.04	.08	.07	-.01	.02	.04	.04	-.51	1.26
9. Violence Victim T3	-.03	.10	.10	.11	.34**	.18*	.17*	.18*	-	.38**	.30**	.24**	.22**	.11	.16	.14	.32**	.17*	.20**	1.14	.37
10. Violence Witness T3	-.13	.11	.01	.07	.24**	.09	.12	.09	.19**	-	.05	.09	.15	.02	-.05	.11	.02	.10	-.01	1.09	.29
11. Involvement T1-2	-.17*	.02	-.11	-.06	.17*	.40**	.20**	.13	.22**	.10	-	.47**	.23**	.21*	.26**	.39**	.29*	.24**	.26**	2.58	.70
12. Aut conflict T1-2	-.18*	.10	.05	.19*	.46**	.68**	.58**	.26**	.21**	.21**	.42**	-	.26*	.25*	.24*	.35**	.30	.29**	.41**	.44	.74
13. F Physical Disc T3	-.14	.36**	.30**	.25**	.22**	.11	.09	.14	.07	.15*	.15*	.20**	-	.46**	.19	.31**	.23*	.37**	.29*	-.06	.90
14. M Physical Disc T3	-.02	.27**	.28**	.34**	.10	.07	.07	.07	.07	.04	.04	.01	.74**	-	.16*	.33**	.30**	.42**	.30	-.02	.99
15. Overt ASB T3	.09	.30**	.13	.18*	.20**	.31**	.24**	.07	.09	-.03	.16*	.33**	.09	.02	-	.34**	.29*	.27**	.32**	-.31	.76
16. Covert ASB T3	-.03	.37**	.36**	.29**	.33**	.25**	.17*	.07	.09	.13	.15*	.29**	.16*	.11	.44**	-	.26**	.45**	.47*	-.14	.94
17. Involvement T3	-.03	.43**	.28**	.24**	.19*	.06	.07	.03	.01	-.02	.08	.17*	.22**	.12	.54**	.45**	-	.24*	.35*	-.23	1.48
18. Hac vs mother T3	-.03	.46**	.24**	.22**	.23**	.11	.05	.02	.05	.16*	.12	.19**	.33**	.19**	.21**	.34**	.33**	-	.45**	-.03	.94
19. Inhib Control T3	-.11	.32**	.38**	.35**	.30**	.29**	.37**	.20**	.21**	.11	.11	.32**	.27**	.24**	.30**	.30**	.33**	.13	-	-.07	1.05
Mean	1.01	1.61	1.57	1.59	-.12	.23	.06	.43	1.34	1.21	2.71	.52	.03	.01	.29	.11	.24	.03	-.08	-	-
DS	.86	.58	.57	.58	1.72	.87	.74	2.04	.60	.52	.86	.78	1.01	.97	1.09	1.01	1.99	1.06	.94	-	-

Note: Ed level= Standardized measure of mother and father education degree; Mother Hac T3-T5= Mother hostile aggressive conflict T3-5; Cdi= Standardized aggregate measure of Child Depression Inventory T1-2; Agg beh T1-2= Standardized aggregate measure of self and teacher report of aggressive behaviors T1-2; Inhib Control T1-2= Standardized aggregate measure of self and teacher report of inhibitory control T1-2; Peer Rej= Standardized aggregate measure of peer rejection T1-2; Violence Victim T3= violence victimization T3; Violence Witness T3= violence witness T3; Involvement T1-2= Standardized aggregate measure of involvement with deviant peers T1-2; Aut Conflict T1-2= Standardized aggregate measure of authority conflict T1-2; F-M Physical Disc T3= Standardized measure of Father and Mother use of physical discipline T3; Overt ASB T3= Standardized measure of Overt Antisocial behaviors T3; Covert ASB T3= Standardized measure of Covert Antisocial behaviors T3; Involvement T3= Standardized measure of involvement with deviant peers T3; Hac vs Mother T3= Child Hostile Aggressive conflict toward mother T3; Inhib Control T3= Standardized measure of inhibitory control T3. Values under the diagonal refers to males; values above the diagonal refers to females. \* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed).

**RESULTS**  
***Descriptive statistics***

Descriptive statistics and correlations between all variables used in the study were shown in Table 2.

***Distinct Developmental Trajectories of Mother Hostile Aggressive Conflict (MHAC)***

Homogeneous subgroups with distinct developmental trajectories of MHAC from middle adolescence (age 15-16) to late adolescence (age 19-20) were identified using the LGMM approach separately for males and females.

On the basis of data inspection and theoretical considerations, a linear growth model was chosen for the growth mixture analyses. The model fit information for all estimated models is presented in Table 3a and Table 3b. Based on the BIC, model C, with three classes, was selected as the best fitting model for both males and females. The posterior probability of its being the correct model was near one, which indicates that the model fitted the data very well. The observed and fitted growth curves for the three MHAC males trajectory classes— high-stable (HS) MHAC, medium stable (MS) MHAC, and low stable (LS) MHAC — and for the three MHAC females trajectory classes — high decreasing (HD) MHAC, medium stable (MS) MHAC and low decreasing (LD) MHAC — are shown in Figure 1a-b.

The males HS MHAC ( $n = 30$ ) were young men who started with high levels of MHAC, and then remains stable over time. The males ML MHAC ( $n = 74$ ) started with medium levels of MHAC and remains stable over time. The males LS MHAC ( $n = 57$ ) began with low levels of MHAC and similarly remains stable over time. The females HD MHAC ( $n = 18$ ) started with high levels of MHAC but gradually decreased over time. The females MS MHAC ( $n = 133$ ) started with medium levels

of MHAC and remains stable over time. Finally, there were LS MHAC ( $n = 12$ ), who started with low levels of MHAC and finally, there were LS MHAC ( $n = 12$ ), who started with low levels of MHAC and then decreased over time. Table 4 depicts the average posterior class membership probabilities for the three-class solution, with class assignment based on maximum posterior probabilities separately for males and females. Conventionally, values close to one on diagonal elements indicate good classification quality (Nagin 1999).

**Table 3a Males model. Model Fit of Latent Growth Mixture Models**

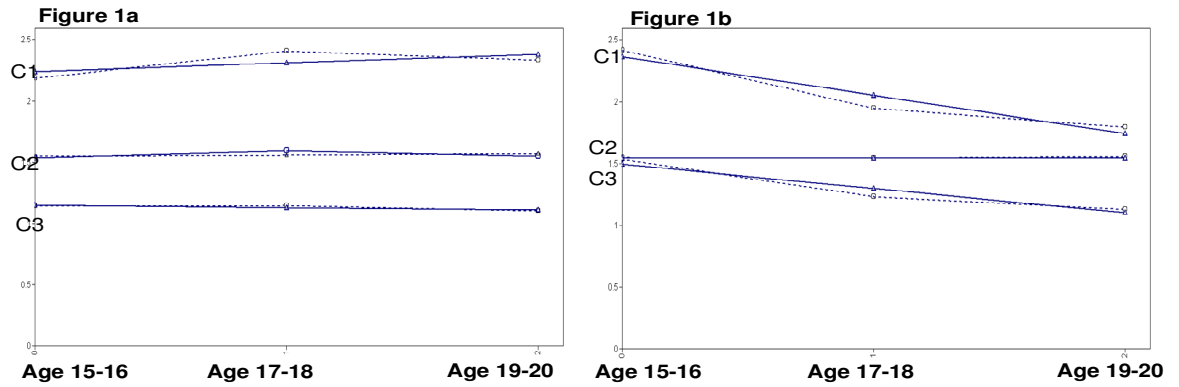
Model	LL	BIC	Posterior Probabilities
A. 1-c	- 273.52	556.61	1
B. 2-c	- 248.87	516.90	0.81 0.95
C. 3-c	- 220.01	474.50	0.94 0.86 0.93
D. 4-c	- 216.31	478.61	0.72 0.89 0.93 0.79

**Note: Log Likelihood (LL), Bayesian Information Criterion (BIC), and Posterior Probability**

**Table 3b Females model. Model Fit of Latent Growth Mixture Models**

Model	LL	BIC	Posterior Probabilities
A. 1-c	- 264.858	541.28	1
B. 2-c	- 243.827	510.79	0.95 0.79
C. 3-c	- 238.267	507.38	0.77 0.81 0.93

**Note: Log Likelihood (LL), Bayesian Information Criterion (BIC), and Posterior Probability**



**Figure 1a:** Fitted (solid) versus Empirical (dashed) Growth Curves for Selected Latent Growth Mixture Model with three males MHAC Classes (n = 161) .

NOTE: C1- high stable MHAC (18.5%), C2 medium stable (49.3%),C3 low stable (32.2%).

**Figure 1b:** Fitted (solid) versus Empirical (dashed) Growth Curves for Selected Latent Growth Mixture Model with three females MHAC Classes (n = 163) .

NOTE: C1- high decreasing MHAC (11.4%), C2 medium stable (80.2%),C3 low decreasing 8.4%).

**Table 4: Average Posterior Offender Trajectory Class Probabilities (assignments based on maximum posterior probabilities of class membership)**

Assigned Offender Trajectory Class									
Trajectory group	Males high stable (N=30)	Males medium stable (N=74)	Males low stable (N=57)	Total	Trajectory group	Females high decreasing (N=18)	Females medium stable (N=133)	Females low decreasing (N=12)	Total
Males high stable	0.928	0.072	0.000	1	Females high decreasing	0.811	0.189	0.000	1
Males medium stable	0.026	0.939	0.035	1	Females medium stable	0.030	0.936	0.034	1
Males low stable	0.000	0.137	0.863	1	Females low decreasing	0.005	0.232	0.763	1

*Early Adolescence predictors and Concurrent Adolescence predictors of Mother*

*Hostile Aggressive Conflict*

We examined the characteristics of the trajectory groups, focusing on early adolescence predictors (age 12 to 13 and age 13 to 14) and concurrent adolescence predictors (age 15 to 16).

A series of MANOVAs (using pairwise deletion to handle missing data) were computed separately for males and females GMM models to examine mean

differences across groups. Bonferroni post hoc analyses were used for inter group comparisons.

***Males Gmm model.***

For the first model of MANOVA, we examined early adolescence (T1-2 age 12 to 13 and age 14 to 15) predictors of males' MHAC TGM. Results revealed that depression symptoms at Time 1-2 significantly differentiated all the trajectory groups (see Table 5). Bonferroni post hoc analyses indicated that young adolescents in the HS group had significantly higher levels of depressive symptoms compared to those in the MS and LS groups.

For the second model of MANOVA, we examined concurrent predictors (T3 age 15 to 16) of males mother hostile aggressive conflict TGM. Results revealed that the use of physical discipline by father and mother significantly differentiated all the trajectory groups (see Table 5). Bonferroni post hoc analyses indicated that adolescents in the HS group have been more victims of father and mother physical discipline significantly compared to those in the MS and LS groups. In addition adolescents in HS group are more involved with deviant peers and they display more covert antisocial behavior compared to adolescents in the other two groups.

Finally, results evidenced that adolescents in HS group are more prone to respond with hostile aggressive conflict toward their mother and they show significantly lower capacity of inhibitory control in comparison with adolescents in the MS and LS group (see Table 5).



**Table 5 MANOVAs Examining Antecedents and Concurrent predictors of Mother Hostile Aggressive Conflict Trajectory Groups (Males model)**

Trajectory group	<i>HIGH STABLE</i>	<i>MEDIUM STABLE</i>	<i>LOW STABLE</i>	<i>F</i>	$\eta^2$
<b><i>Antecedent predictors T1-2</i></b>					
	Mean (Ds)	Mean (Ds)	Mean (Ds)		
Depression	.47 (2.14) A	-.01 (1.72) AB	-.71 (1.29) B	4.98**	.06
Aggressive behaviors	.32 (.72) A	.17 (.78) A	.17 (.97) A	.36	.01
Inhibitory control	.23 (.73) A	-.02 (.69) A	-.03 (.69) A	1.47	.02
Peer rejection	1.11 (3.11) A	.14 (1.65) A	.08 (1.83) A	2.62	.04
Involvement with deviant peers	2.56 (.64) A	2.73 (.87) A	2.73 (.90) A	.48	.01
Violence victimization	1.22 (.42) A	1.23 (.42) A	1.12 (.33) A	1.29	.02
Violence witnessing	1.11 (.32) A	1.03 (.17) A	1.10 (.30) A	1.63	.02
Authority conflict	.55 (.59) A	.56 (.69) A	.38 (.81) A	.99	.01
<b><i>Concurrent predictors T3</i></b>					
Father physical discipline	.57 (1.47) A	-.07 (.65) B	-.18 (.76) B	7.33**	.09
Mother physical discipline	.62 (1.54) A	-.07 (.67) B	-.19 (.71) B	8.36**	.10
Overt antisocial behaviors	.49 (1.18) A	.31 (1.04) A	.03 (.94) A	2.23	.03
Covert antisocial behaviors	.65 (1.10) A	.20 (1.09) AB	-.19 (.72) B	7.20**	.09
Involvement with deviant peers	1.03 (2.42) A	.23 (1.98) AB	-.17 (1.65) B	3.55*	.04
Hac toward mother	.35 (1.07) A	-.09 (.79) AB	-.18 (1.07) B	3.20*	.04
Inhibitory control	.64 (1.16) A	-.20 (.73) B	-.38 (.73) B	15.20**	.16

***Females Gmm model.***

For the first model of MANOVA, we examined early adolescence (T1-2 age 12 to 13 and age 14 to 15) predictors of females' mother hostile aggressive conflict TGM.

Results revealed that depression symptoms at Time 1-2 significantly differentiated HD trajectory group from MS and LD trajectories groups (see Table 6).

Bonferroni post hoc analyses indicated that young adolescents in the HD group had significantly higher levels of depressive symptoms compared to those in the MS and LD groups.

Moreover, females in the HD group display more aggressive behaviors and they have poor capacity of inhibitory control in comparison of females in the other two trajectories groups (see Table 6).

For the second model of MANOVA, we examined concurrent predictors (T3 age 15 to 16) of females mother hostile aggressive conflict TGM. Results revealed that the use of physical discipline by father and mother significantly differentiated HD group from MS and LD groups (see Table 6).

Bonferroni post hoc analyses indicated that adolescents in the HS group have been more victims of father and mother physical discipline when compared to those in the MS and LS groups. In addition adolescents in HS group display more covert antisocial behaviors compared to adolescents in the other two groups.

Finally, results evidenced that adolescents in HS group are more prone to respond with hostile aggressive conflict toward their mother and they are significantly lower capacity of inhibitory control in comparison with adolescents in the MS and LS group (see Table 6).

**Table 6 MANOVAs Examining Antecedents and Concurrent predictors of Mother Hostile Aggressive Conflict Trajectory Groups (Females model)**

Trajectory group	<i>HIGH DECREASING</i>	<i>MEDIUM STABLE</i>	<i>LOW DECREASING</i>	<i>F</i>	<i>η<sup>2</sup></i>
<b><i>Antecedent predictors T1-2</i></b>					
	Mean (Ds)	Mean (Ds)	Mean (Ds)		
Depression	-.49 (.51) A	.03 (.15) AB	1.25 (.42) B	4.34**	.06
Aggressive behaviors	.10 (.04) A	-.28 (.04) AB	-.41 (.14) B	5.10**	.07
Inhibitory control	.32 (.15) A	-.10 (.05) AB	-.32 (.18) B	4.57**	.06
Peer rejection	-.64 (.31) A	-.45 (.11) A	-.93 (.38) A	.86	.01
Involvement with deviant peers	2.91 (.17) A	2.50 (.06) A	2.70 (.21) A	1.08	.02
Violence victimization	1.25 (.07) A	1.05 (.02) A	1.18 (.08) A	4.83**	.06
Violence witnessing	1.06 (.05) A	1.04 (.02) A	1.09 (.07) A	.32	.01
Authority conflict	.69 (.19) A	.40 (.07) A	.41 (.23) A	2.80	.04
<b><i>Concurrent predictors T3</i></b>					
Father physical discipline	1.14 (2.13) A	-.11 (.78) B	-.37 (.00) B	12.90***	.14
Mother physical discipline	.84 (1.54) A	-.11 (.83) B	-.41 (.00) B	9.52***	.11
Overt antisocial behaviors	-.07 (1.09) A	-.37 (.72) A	-.37 (.67) A	1.13	.01
Covert antisocial behaviors	.52 (1.49) A	-.23 (.88) B	-.28 (.61) B	4.82**	.06
Involvement with deviant peers	-.22 (1.77) A	-.34 (1.29) A	-.24 (1.20) A	.08	.00
Violence toward mother	.88 (1.66) A	-.14 (.74) B	-.32 (.55) B	11.03***	.13
Inhibitory control	.48 (1.14) A	-.03 (1.02) B	-.29 (.66) B	2.48*	.03

***Short term and long term outcomes of Mother Hostile Aggressive Conflict.***

In the fourth step of analysis we examined short term outcomes (T5 age 19 to 20) and long term outcomes (T6 age 21 to 22) of GMM. In particular, we examined the predicting role of TGM on depression, overt antisocial behaviors, covert antisocial behaviors and PTSD symptoms, controlling for their initial levels.

***Males Gmm model.***

We performed a series of hierarchical regressions in which outcomes at T5 (age 19-30) and T6 (age 21-22) were predicted after controlling for their initial levels at T1 (age 12-13).

In particular, each outcome at a given assessment time (T5- age 19-20 and T6- age 21-22) was regressed in two sequential steps onto, respectively, (1) the stability of outcome at T1 (age 12-13), (2) TGM of medium stable and high stable groups. Table 7 summarizes the results obtained in the four separate hierarchical regressions.

For each analysis, the table shows the standardized  $\beta$  obtained for a predictor when it was first entered in the model and the increment in explained variance associated with a statistically significant predictor (column labelled “ $R^2$ ”). Not surprisingly, there was clear evidence of temporal stability in depression, overt and covert antisocial behaviors and PTSD symptoms from early adolescence to early adulthood.

More importantly, however, this stability did not completely account for the variation in adolescents’ behavioral development over time. The results of hierarchical regression analysis (Table 7) showed that both memberships of MS and HS MHAC groups significantly predicts depression symptoms, covert antisocial behaviors and PTSD symptoms at T5 (age 19-20) above and beyond their stability over time. In line with our hypothesis, the TGM of HS group was the most important predictor of all outcomes considered in our study at short and long time, above and beyond the stability of specific behavior. Interestingly the TGM of MS group predicts depression symptoms at T5 (age 19-20) and PTSD symptoms at T5 (age 19-20) and T6 (age 21-22).

***Females Gmm model.***

We performed a series of hierarchical regressions in which outcomes at T5 (age 19-20) and T6 (age 21-22) were predicted after controlling for their initial levels at T1 (age 12-13).

In particular, each outcome at a given assessment time (T5-age 19-20 and T6-age 21-22) was regressed in two sequential steps onto, respectively, (1) the stability of outcome at T1 (age 12-13), (2) TGM of MS and HD groups. Table 8 summarizes the results obtained in the four separate hierarchical regressions. For each analysis, the table shows the standardized  $\beta$  obtained for a predictor when it was first entered in the model and the increment in explained variance associated with a statistically significant predictor (column labelled " $R^2$ ").

As reported previously for males' models, there was clear evidence of temporal stability in depression, overt and covert antisocial behaviors and PTSD symptoms from early adolescence to early adulthood. In this case too, this stability did not completely account for the variation in adolescents' behavioral development over time.

The results of hierarchical regression analysis (Table 8) evidenced that memberships of MS MHAC group significantly predicts depression symptoms at T5 (age 19-20) and PTSD symptoms at T5 and T6 (age 19-20 and age 21-22) above and beyond their stability over time. In line with our hypothesis, the TGM of MS group was the most important predictor of depression symptoms and PTSD symptoms at short and long term, above and beyond the stability of specific behavior. The membership of HD group predicts depression symptoms at long time (T6- age 21-22).

**Table 7. Regressions predicting depressive symptoms, Overt ASB, Covert ASB and PTSD symptoms at short and long time, controlling for prior levels: Males model.**

	Depression Age 19-20		Depression Age 21-22		Overt Age 19-20		Overt Age 21-22		Covert Age 19-20		Covert Age 21-22		PTSD Age 19-20		PTSD Age 21-22	
	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>
<b>Step 1</b>																
<i>Stability age 12-13</i>	.25**	6%	.31**	9%	.21**	4%	.10	1%	.22**	5%	.24**	6%	.29**	8%	.29**	8%
<b>Step 2</b>																
<i>Stability age 12-13</i>	.09		.21*		.15*		.06		.16*		.19*		.12		.18	
<i>Medium stable group</i>	.33***		.02		.01		.01		.13*		.21*		.37***		.24*	
<i>High stable group</i>	.53***	26%	.36**	21%	.45***	24%	.36**	13%	.61***	36%	.38**	17%	.62***	35%	.41**	21%

**Table 8. Regressions predicting depressive symptoms, Overt ASB, Covert ASB and PTSD symptoms at short and long time, controlling for prior levels: Females model.**

	Depression Age 19-20		Depression Age 21-22		Overt Age 19-20		Overt Age 21-22		Covert Age 19-20		Covert Age 21-22		PTSD Age 19-20		PTSD Age 21-22	
	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>
<b>Step 1</b>																
<i>Stability age 12-13</i>	.25**	6%	.31**	9%	.21**	4%	.10	1%	.22**	4%	.24***	5%	.29***	8%	.29***	8%
<b>Step 2</b>																
<i>Stability age 12-13</i>	.22**		.24**		.20**		.11		.20**		.22**		.26**		.24**	
<i>Medium group</i>	.19		.44**		.03		.11		.13		.13		.28**		.57***	
<i>High decreasing group</i>	.08	8%	.23*	19%	.13	6%	.19	3%	.13	6%	.18	7%	.15	12%	.21	28%

## *Discussion*

The present study investigated three research questions related to trajectories of MHAC from middle adolescence to late adolescence, separately for males and females.

Trajectories of self-reported MHAC from middle adolescence through late adolescence were identified separately by gender. Further, associations between distinct trajectories and early and concurrent predictors as well as early adulthood outcomes were examined.

For males three trajectory classes following distinctive developmental courses of MHAC were identified in this study, namely, high stable MHAC (HS), medium stable MHAC (MS) and low stable MHAC (LS).

Approximately 50 percent of the males were on the MS path, whereas 18.5 percent persisted in high conflict with mother over time. Approximately thirty percent of the males were either LS MHAC throughout the entire study period.

Also for females' three trajectory classes following distinctive developmental courses of MHAC were identified in this study, namely high decreasing MHAC (HD), medium stable MHAC (MS) and low decreasing MHAC (LD). Approximately 80 percent of the females were on the MS path, whereas 18.5% of females were in a pathway showing initial high level of MHAC and then decreasing over time.

Approximately 8 percent of the females were in a pathway showing low levels of MHAC and then decreasing throughout the entire study period.

Differently from males' trajectories, adolescents' females show a decreasing pattern over time. Analysis of distal and concurrent antecedents (T1-2 age 12 to 14 and T3- age 15-16) showed that both males and females belonging respectively to

HS and to HI differ from other trajectories identified in terms of risk factors involving psychological characteristics and involvement with deviant peers.

In addition, the same two groups of males and females (HS group and HI group respectively) are significantly more prone to respond to hostile aggressive conflict toward their mothers, showing the existence of reciprocity in the hostile aggressive relationships between parents and adolescents.

As pertains the outcomes associated with MHAC, regression analysis showed in the case of males that TGM of HS groups leads to depressive symptoms, PTSD symptoms, and Overt and Covert antisocial behaviors at long time (T6-age 21-22), controlling for their initial levels confirming previous similar studies (Fergusson et al. 1996; Fergusson andLynskey 1997; Herrenkohl et al. 1997; Thornberry et al .2001; Herrenkohl et al.2008, 2009; G. Margolin and K. A. Vickerman, 2007).

For females results related to the outcomes associated with MHAC, showed that TGM of HI group leads prevalently to depressive symptoms and PTSD symptoms at long time (T6- age 21-22), controlling for their initial levels (Herrenkohl et al.2009; G.Margolin and K. A. Vickerman, 2007).

In this study what appear to be interesting is that both males and females TGM of MS groups show a form of psychological impairment in the long term (T6- age 21-22) associated to depressive and PTSD symptoms.

These results suggest that, even if MHAC during adolescence is manifested at moderate levels, the stability over time significantly impair emotionally and cognitively the life of these youths at the early stage of adulthood (e.g. Smith et al., 2005).

Moreover, the association of TGM trajectories with PTSD symptoms in late adolescence and in early adulthood years support the idea that growing up and living

in a context characterized by hostility and violence could be considered a *complex traumas*, as defined in recent studies (Cook et al., 2005; van der Kolk, 2005).

In this way the experience of MHAC during adolescence could be considered as a series of long-standing, repeating, traumatic events that compromise the normal individual's adaptation pathway.

### ***Limitations and future directions***

The study offered one of the first analyses on developmental growth of MHAC toward their sons from middle adolescence to early adulthood using LGMM approach, considering their antecedents and outcomes.

Nevertheless, the present study contributes to previous research by investigating LGMM trajectories of MHAC considering distal and concurrent predictors and developmental outcomes in late adolescence and in early adulthood.

However, further studies are needed in order to clarify some issues not yet accounted for. First, the consideration of a larger age span also including the early adolescence ages and adulthood is necessary. Second, further analysis using a LGMM approach and considering the specific role of covariate son each single trajectory can give important advancement to this issue.

Third, specific limitations regarding the use of self-reported measures can affect the estimation of the behaviors. The application of these methodologies using reports from both parents and adolescents across time can give important additional information and consequently allows to understanding the reciprocal relations existing between parents and adolescents.



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## **CHAPTER IV**

THE DEVELOPMENT OF FATHER HOSTILE AGGRESSIVE  
CONFLICT DURING ADOLESCENCE: ANTECEDENTS AND  
OUTCOMES IN EARLY ADULTHOOD

*The development of father hostile aggressive conflict during adolescence:  
antecedents and outcomes in early adulthood*

*Introduction*

*Hostile aggressive conflict: the role of father*

Inadequate attention to the role of fathers, both in research and in practice, has numerous problematic implications for the prevention of family violence (Dubowitz, 2006; Guterman and Lee, 2005; Strega et al., 2008).

Studies that have focused on the role of fathers are mostly within the field of child abuse, showing that fathers are disproportionately implicated as perpetrators of child physical abuse, particularly in its most severe forms (e.g., Brewster et al., 1998; Krugman, 1985; Sinal et al., 2000; Stiffman, Schnitzer, Adam, Kruse, and Ewigman, 2002)

Sinal et al.'s (2000) in a review of inflicted closed head injury (shaken baby syndrome) cases in North Carolina reported that 44% were perpetrated by fathers and 20% were perpetrated by mothers' boyfriends, in contrast to 7% perpetrated by mothers. Additionally, a recent review on child-maltreatment-related fatalities in the state of Missouri reported that while 21% of identified perpetrators were biological mothers, 23% were biological fathers, and 44% were unrelated males in the household (Stiffman, Schnitzer, Adam, Kruse, and Ewigman, 2002).

Considering that usually fathers provide less direct child care than mothers (Margolin, 1992; Yeung, Sandberg, Davis- Kean, and Hofferth, 2001), these results appear alarming.

Moreover, fathers may influence the risk of serious physical abuse both directly in their own perpetration of abusive behaviors as well as indirectly by influencing mothers' abusive behaviors (Dubowitz, 2006).

With regard to risk factors associated to violent father' behaviors toward their children, a limited body of literature has highlighted the role of fathers' abuse of substances (Ammerman, Kolko, Kirisci, Blackson, and Dawes, 1999) and their young age (Lee, Guterman, and Lee, 2008). In addition, no clear evidence exists as regards the role of fathers' unemployment status and low income, (Jones, 1990; Lee et al., 2008; Wolfner and Gelles, 1993).

However, while cross-sectional studies have documented father' involvement in the abuse' situations, less studies to our knowledge have analyzed longitudinal father-child relationships over the course of adolescence.

Recently one study conducted in Germany by Seiffge-Krenke, Geertjan and Vermulst (2010) have investigated the development of father-child negative relationships during adolescence (from age 14 to age23), using Latent Growth Mixture Models approach (LGMM) to identify trajectories.

Separately by gender of adolescents and of parents, the authors, focusing on negative affect dimension of father-child relationships (assessed on the basis of quality of conflict and punishment), have found three different trajectories labelled *normatives*, *increasingly negative* and *distant*. The tree trajectories class follow different development pathway of negative affect: adolescents in the normative trajectory reported low levels of negative affect and then they remained stable throughout the study. Adolescents in the second group, increasingly negative, reported high levels of negative affect at the beginning of the study which continued to increase over the assessment period considered. Finally, adolescents in the third

group, labelled distant, reported a low level of negative affect with fathers across adolescence.

As previously defined (see Chapter I-II-III).in the present study we will refer to a type of Father Hostile Aggressive Conflict (FHAC) toward their children.

### ***The present study***

The present study move from the previous studies that have highlighted the importance of father' role in violent family relationships (Dubowitz, 2006; Guterman and Lee, 2005; Strega et al., 2008; Seiffge-Krenke, Geertjan and Vermulst, 2010), and will consider longitudinally these negative father-child relationships.

Furthermore, the rationale of this study is based on the findings obtained previously (Chapter II and Chapter III) showing significant intra-individual variability in the growth of father HAC from middle to late adolescence (from age 15-16 to age 19-20) , and the existence of different trajectories classes for mothers, associated with negative outcomes during late adolescence (age 19-20) and early adulthood (age 21-22). Lastly according to Seiffge-Krenke et al., (2010), that have shown different pathways of development in the parents-child dyads (father-child, mother-child), we will consider FHAC separately by child' gender.

In summary the present study has three goals:

- First, we will examine developmental change in father hostile aggressive conflict (FHAC) separately by adolescents' gender from middle to late adolescence (from age 15-16 to age 19-20) using Latent Growth Mixture Models (LGMM) approach (Muthén and Muthén 2000; Muthén and Shedden 1999).
- Second, we will explore antecedents of the FHAC trajectory groups

at two assessment points: during early adolescence (age 12 to age 14) and concurrent adolescence age (age 15-16).

- Third, we will explore developmental outcomes of FHAC trajectories at short term (age 19-20), concurrently with the last assessment point of the FHAC trajectories model' and at long time, two years later (age 21-22).

### ***Hypothesis***

Regarding the first key question, based on previous studies (Lansford et al., 2009; Gutman, L., and Eccles, J., 2007; Seiffge-Krenke, Geertjan and Vermulst, 2010), we assume that, separately by adolescents gender, different trajectories of FHAC could be identified using LGMM characterized by different level of HAC severity.

As pertains to the second key question, based on Lansford et al., 2009 study and our previous study (chapter II), showing that previous child's temperamental (inhibitory control) and behavioral characteristics (authority conflict) can influence the onset of HAC in adolescence, we want to explore if different trajectories identified will show significant differences regarding a variety of risk factors related to child' temperamental characteristics (inhibitory control ), individual' emotional and behavioral problems (depression, aggressive behaviors, authority conflict, overt and covert antisocial behaviors), peer relationships (involvement with deviant peers), experience of violent climate within the family (violence victimization and violence witnessing, father hostile violent conflicts (FHAC), father' and mother' use of physical discipline) during early adolescence (age 12 to14) and during middle adolescence (age 15-16).

As pertains to the third key question, based on previous studies that have showed the

association among HAC and delinquency, depression and PTSD symptoms (Cook et al., 2005; Hoeve et al. 2009; Moylan et al., 2010), we assume that different trajectories identified can predicts considered outcomes at short time (age 19-20) and long time (age 21-22). In particular we assume that more serious trajectories can better predicts Depression, Overt and Covert Antisocial Behaviors and PTSD symptoms at the of age 19-20 and 21-22.

Summarizing, three key questions are explored in this study:

- First, how many and which distinctive FHAC trajectory groups are empirically identifiable in a sample of Italian adolescents using data on adolescent' perception of FHAC from middle adolescence (ages 15 to 16 years) to late adolescence (ages 19 to 20 years)?
- Second, are the identified FHAC trajectory groups associated with specific early adolescents (age 12 to 14) and concurrent adolescents' predictors (age 15-16)?
- Third, are the identified FHAC trajectory groups predictive of specific outcomes at short and long time (T5 age 19 to 20; T6 age 21 to 22)?

## ***METHOD***

### ***Sample***

Participants were described in study 2 (Chapter III).

### ***Procedures***

Procedures used in the longitudinal study were described in the previous study (Chapter II).

## Measures

### *Computation of Early Adolescent Measures (T1-2 Age 12-13 to age 13-14)*

Computation method used for the early-adolescent measures is described in the previous study (Chapter III).

The childhood and adolescent measures are listed and explained in Table 1.

**Table 1. Measures used in the study.**

Construct/measure	Number of items	Cronbach's $\alpha$	Description or sample item
<b><i>Early Adolescence age 12 to 13 and 13 to 14 (waves 1 and 2)</i></b>			
Depression CDI (Kovacs, 1985).	27	.83; .85	Feel depressed.
Aggressive behaviors YSR (Achenbach e Edelbrock, 1987). TRF (Achenbach, 1991).	16	.81; .82 .86; .84	Physically attack people.
Inhibitory control YSR (Achenbach e Edelbrock, 1987). TRF (Achenbach, 1991).	8	.55; .56 .63; .65	Impulsive or act without thinking
Peer rejection	2		Friends you don't like to play with
Involvement with deviant peers Involvement with Deviant Peers Scale (Capaldi and Patterson, 1989).	3	.89 .70	Deviant peers who use drugs
Violence victimization Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	1		Have ever been a victim of physical violence from others
Violence witnessing Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	1		Have ever witnessed violence among the members of your family
Authority conflict YSR (Achenbach e Edelbrock, 1987) TRF (Achenbach,1991)	8	.61 .66 .72 .67	Stubborn
<b><i>Adolescence age 15 to 16 (wave 3)</i></b>			
Father physical discipline (Loeber, 1991)	1		To hit your child
Mother physical discipline (Loeber, 1991)	1		To hit your child
Overt antisocial behaviors Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	4	.83	Have been involved in fights between people or rival groups
Covert antisocial behaviors Covert Antisocial Scale (Capaldi and Patterson, 1989).	7	.78	Enter or slither into a building to steal something
Involvement with deviant peers Involvement with Deviant Peers Scale (Capaldi and Patterson, 1989).	11	.89	Sold light drugs
Hostile aggressive conflict toward father The Parent-Adolescent Disagreement	.75	4	To get really angry and hit out

Scale” (Honest, Charman, Zani, Cicognani, Xerri, Jackson, and Bosma, 1997).			
Inhibitory control YSR (Achenbach e Edelbrock, 1987) .	8	.63	Impulsive or act without thinking
<b>Early adulthood age 19 to 20 and 21 to 22 (wave 5 and 6)</b>			
Depression CES-D scale (Radloff, 1977).	18	.93; .86	To feel depressed
Overt antisocial behaviors Violence/abuse Scale (Caprara, Mazzotti, and Prezza, 1990).	4	.88; .88	Have been involved in fights between people or rival groups
Covert antisocial behaviors Covert Antisocial Scale (Capaldi and Patterson, 1989).	7	.83; .80	Enter or slither into a building to steal something
PTSD Symptoms YSR (Achenbach e Edelbrock, 1987).	20	.83; .85	Too fearful or anxious

### ***Analysis Strategy***

Data analyses proceeded in four steps. First, descriptive statistics for all study variables were computed.

Second, we used LGMM to identify distinct developmental trajectories of father hostile aggressive conflict from middle adolescence (ages 15-16) to late adolescence (ages 19-20). The LGMM approach (Muthén and Muthén 2000; Muthén and Shedden 1999) can be viewed as a more general form of conventional growth curve modelling. In conventional growth curve modelling, a mean growth curve is estimated for the population, and heterogeneity or individual differences in developmental trajectories are captured by allowing for continuous variability of the growth factors (i.e., the estimation of growth factor variation). The LGMM approach, in contrast, assumes that the population is composed of a mixture of distinct subgroups, each defined by a prototypical mean growth curve. Because this method allows for cross-group differences in the shape of developmental trajectories, it is especially suited for identifying and modelling heterogeneity in types of developmental trajectories within a given population (Nagin and Tremblay 1999).



The LGMM models were estimated with the software package M-plus 4 (Muthén and Muthén 2006), which permits the estimation of missing values using the full information maximum likelihood estimator. Model selection requires the determination of the number of classes that best describes the data. In LGMM, a  $k$  class model is not nested within a  $k + 1$  class model; therefore, it is not appropriate to use the likelihood ratio test for model selection. Instead, the Bayesian information criterion (BIC) is used as a basis for selecting the optimal model because it can be used for the comparison of both nested and unnested models (Kass and Raftery 1995; Raftery 1995). Generally, the model with the smallest absolute BIC value is chosen. Note that the BIC tends to favour models with fewer classes because it rewards parsimony.

Third, early adolescents' predictors (age 12 to 14) and adolescent concurrent predictors (age 15-16) of trajectory group membership (TGM) were investigated by computing multivariate analyses of covariance (MANOVAs).

Fourth, we performed a series of hierarchical regressions in which depression overt and covert antisocial behaviors and PTSD symptoms at Time 5 (age 19-20) and at T6 (age 21-22) were predicted by TGM after controlling for their initial levels at T1 (age 12-13).

In this study we don't investigate the role of demographic variables as mother and father education level because no significant correlations were found with all other measures (see Table 2).

**Table 2 Descriptive statistics and correlations between all variables used in the study.**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	Mean	DS
1. Ed level T1	-	-.04	.03	.01	.10	-.06	-.05	.05	.01	.12	-.13	-.11	.04	-.05	.17*	.13	.02	.02	-.03	1.16	.83
2. Father Hac T3	-.02	-	.60**	.58**	.38*	.30**	.25**	-.08	.18*	.15	.27**	.33**	.52**	.29**	.22**	.40**	.16*	.40**	.45**	1.59	.57
3. Father Hac T4	-.09	.56**	-	.57**	.28**	.20*	.22**	-.13	.20*	.28**	.15	.16	.38**	.10	.05	.39**	-.01	.36**	.31**	1.70	.59
4. Father Hac T5	-.05	.42**	.65**	-	.40**	.23**	.28**	-.09	.17*	.24**	.05	.24**	.37**	.13	.04	.26**	-.04	.37**	.29**	1.58	.54
5. Cdi T1-2	-.08	.21**	.20*	.38**	-	.38**	.40**	.18*	.23**	.14	.23**	.42*	.23**	.19	.22*	.36**	.09	.35*	.37**	.16	1.77
6. Agg beh T1-2	-.13	.18*	.06	.15	.31**	-	.70**	.18*	.23**	.12	.42**	.76*	.28*	.21**	.24*	.35	.23*	.34**	.42*	-.24	.50
7. Inhib Control T1-2	-.13	.13	.12	.19*	.30**	.83**	-	.02	.21**	.15*	.27*	.59**	.23*	.18	.19**	.23**	.18*	.38**	.52*	-.07	.59
8. Peer Rej T1-2	-.07	.04	.06	.20*	.21**	.41**	.41**	-	-.03	.06	-.06	.09	.04	.08	.07	-.01	.02	.04	.04	-.51	1.26
9. Violence Victim T3	-.03	.10	.10	.11	.34**	.18*	.17*	.18*	-	.38**	.30**	.24**	.22**	.11	.16	.14	.32**	.17*	.20**	1.14	.37
10. Violence Witness T3	-.13	.11	.01	.07	.24**	.09	.12	.09	.19**	-	.05	.09	.15	.02	-.05	.11	.02	.10	-.01	1.09	.29
11. Involvement T1-2	-.17*	.02	-.11	-.06	.17*	.40**	.20**	.13	.22**	.10	-	.47**	.23**	.21*	.26**	.39**	.29*	.24**	.26**	2.58	.70
12. Aut conflict T1-2	-.18*	.10	.05	.19*	.46**	.68**	.58**	.26**	.21**	.21**	.42**	-	.26*	.25*	.24*	.35**	.30	.29**	.41**	.44	.74
13. F Physical Disc T3	-.14	.36**	.30**	.25**	.22**	.11	.09	.14	.07	.15*	.15*	.20**	-	.46**	.19	.31**	.23*	.37**	.29*	-.06	.90
14. M Physical Disc T3	-.02	.27**	.28**	.34**	.10	.07	.07	.07	.07	.04	.04	.01	.74**	-	.16*	.33**	.30**	.42**	.30	-.02	.99
15. Overt ASB T3	.09	.30**	.13	.18*	.20**	.31**	.24**	.07	.09	-.03	.16*	.33**	.09	.02	-	.34**	.29*	.27**	.32**	-.31	.76
16. Covert ASB T3	-.03	.37**	.36**	.29**	.33**	.25**	.17*	.07	.09	.13	.15*	.29**	.16*	.11	.44**	-	.26**	.45**	.47*	-.14	.94
17. Involvement T3	-.03	.43**	.28**	.24**	.19*	.06	.07	.03	.01	-.02	.08	.17*	.22**	.12	.54**	.45**	-	.24*	.35*	-.23	1.48
18. Hac vs father T3	-.03	.46**	.24**	.22**	.23**	.11	.05	.02	.05	.16*	.12	.19**	.33**	.19**	.21**	.34**	.33**	-	.45**	-.03	.94
19. Inhib Control T3	-.11	.32**	.38**	.35**	.30**	.29**	.37**	.20**	.21**	.11	.11	.32**	.27**	.24**	.30**	.30**	.33**	.13	-	-.07	1.05
Mean	1.01	1.61	1.57	1.59	-.12	.23	.06	.43	1.34	1.21	2.71	.52	.03	.01	.29	.11	.24	.03	-.08		
DS	.86	.58	.57	.58	1.72	.87	.74	2.04	.60	.52	.86	.78	1.01	.97	1.09	1.01	1.99	1.06	.94		

Note: Ed level= Standardized measure of mother and father education degree; Father Hac T3-T5= Father hostile aggressive conflict T3-5; Cdi= Standardized aggregate measure of Child Depression Inventory T1-2; Agg beh T1-2= Standardized aggregate measure of self and teacher report of aggressive behaviors T1-2; Inhib Control T1-2= Standardized aggregate measure of self and teacher report of inhibitory control T1-2; Peer Rej= Standardized aggregate measure of peer rejection T1-2; Violence Victim T3= violence victimization T3; Violence Witness T3= violence witness T3; Involvement T1-2= Standardized aggregate measure of involvement with deviant peer T1-2; Aut Conflict T1-2= Standardized aggregate measure of authority conflict T1-2; F-M Physical Disc T3= Standardized measure of Father and Mother use of physical discipline T3; Overt ASB T3= Standardized measure of Overt Antisocial behaviors T3; Covert ASB T3= Standardized measure of Covert Antisocial behaviors T3; Involvement T3= Standardized measure of involvement with deviant peer T3; Hac vs Father T3= Child Hostile Aggressive conflict toward father T3; Inhib Control T3= Standardized measure of inhibitory control T3. Values under the diagonal refers to males; values above the diagonal refers to females. \* Correlation is significant at the 0.05 level (2-tailed). \*\* Correlation is significant at the 0.01 level (2-tailed).

## **RESULTS**

Descriptive statistics and correlations between all variables used in the study were shown in Table 2

### ***Distinct Developmental Trajectories of Father Hostile Aggressive Conflict (FHAC)***

Homogeneous subgroups with distinct developmental trajectories of FHAC from middle adolescence (age 15-16) to late adolescence (age 19-20) were identified using the LGMM approach separately for males and females.

On the basis of data inspection and theoretical considerations, a linear growth model was chosen for the growth mixture analyses. The model fit information for all estimated models is presented in Table 3a and Table 3b. Based on the BIC, model D, with four classes, was selected as the best fitting model for males, while for females model C, with three classes was selected.

The posterior probability of its being the correct model was near one, which indicates that the model fitted the data very well. The observed and fitted growth curves for the four FHAC males trajectory classes—high-stable (HS) FHAC, medium decreasing (MD) FHAC, medium increasing (MI) FHAC and low stable (LS) FHAC — and for the three FHAC females trajectory classes — high increasing (HI) FHAC, medium stable (MS) FHAC and low stable (LS) FHAC — are shown in Figure 1a-b.

The males HS FHAC ( $n = 32$ ) were young men who started with high levels of FHAC, and then remains stable over time. The males MD FHAC ( $n = 67$ ) started with medium high levels of FHAC and then decrease slowly over time. The males MI FHAC ( $n = 45$ ) began with medium levels of FHAC and then increase linearly over time. Finally, the LS FHAC ( $n = 52$ ) were young men who began with low

levels of FHAC and then remains stable over time.

The females HI FHAC ( $n = 12$ ) were young females started with high levels of FHAC and then increases over time. The females MS FHAC ( $n = 100$ ) started with medium levels of FHAC and remains stable over time. Finally, there were LS FHAC ( $n = 51$ ), who started with low levels of FHAC and then remains stable over time.

Table 4 depicts the average posterior class membership probabilities for the four-class solution for males and three class-solutions for females, with class assignment based on maximum posterior probabilities.

Conventionally, values close to one on diagonal elements indicate good classification quality (Nagin 1999).

**Table 3a Males model. Model Fit of Latent Growth Mixture Models.**

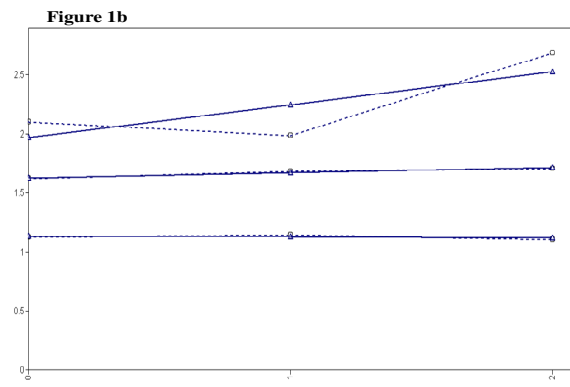
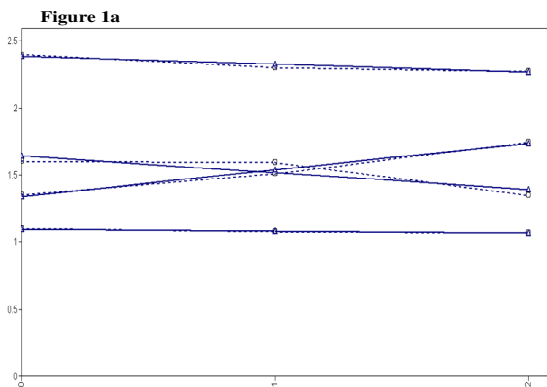
Model	LL	BIC	Posterior Probabilities
A. 1-c	-308.719	627.989	1
B. 2-c	-280.537	582.176	0.95 0.93
C. 3-c	-243.680	525.344	0.81 0.83 0.91
D. 4-c	-241.397	524.219	0.95 0.84 0.73 0.73

**Note: Log Likelihood (LL), Bayesian Information Criterion (BIC), and Posterior Probability**

**Table 3b Females model. Model Fit of Latent Growth Mixture Models.**

Model	LL	BIC	Posterior Probabilities
A. 1-c	-303.252	619.043	1
B. 2-c	-268.182	561.441	0.97 0.85
C. 3-c	-258.264	554.144	0.94 0.84 0.85
D. 4-c	-254.126	558.407	0.89 0.85 0.94 0.83

**Note:**Log Likelihood (LL), Bayesian Information Criterion (BIC), and Posterior Probability



**Figure 1a:** Fitted (solid) versus Empirical (dashed) Growth Curves for Selected Latent Growth Mixture Model with four males FHAC Classes (n = 196) .

NOTE: C1- high stable MHAC (16.3%), C2 medium decreasing (34.2%),C3 medium increasing (11.6%), C4 low stable (26.5%) .

**Figure 1b:** Fitted (solid) versus Empirical (dashed) Growth Curves for Selected Latent Growth Mixture Model with three females FHAC Classes (n = 163) .

NOTE: C1- high increasing MHAC (7.4%), C2 medium stable (61.3%),C3 low stable (31.3%).

**Table 4: Average Posterior of FHAC Trajectory Class Probabilities (assignments based on maximum posterior probabilities of class membership)**

Assigned Trajectory Class										
Trajectory group	Males high stable (N=32)	Males medium decreasing (N=67)	Males medium increasing (N=45)	Males low stable (N=52)	Total	Trajectory group	Females high increasing (N=12)	Females medium stable (N=100)	Females low stable (N=51)	Total
Males high stable	0.946	0.037	0.018	0.000	1	Females high increasing	0.844	0.156	0.000	1
Males medium decreasing	0.028	0.728	0.234	0.009	1	Females medium stable	0.021	0.943	0.036	1
Males medium increasing	0.008	0.232	0.733	0.027	1	Females low stable	0.000	0.147	0.853	1
Males low stable	0.000	0.079	0.081	0.841	1					

***Early Adolescence predictors and Concurrent Adolescence predictors of Father***

***Hostile Aggressive Conflict***

We examined the characteristics of the trajectory groups, focusing on early adolescence predictors (age 12 to 13 and age 13 to 14) and concurrent adolescence predictors (age 15 to 16).

A series of MANOVAs (using pairwise deletion to handle missing data) were computed separately for males and females GMM models to examine mean differences across groups. Bonferroni post hoc analyses were used for inter group comparisons.

***Males Gmm model.***

For the first model of MANOVA, we examined early adolescence (T1-2 age 12 to 13 and age 14 to 15) predictors of males FHAC TGM. Results revealed that

depression symptoms, inhibitory control and violent victimization when adolescents were 12 to 14 (Time 1-2) significantly differentiated HS group from MD, MI and LS groups (see Table 5).

Bonferroni post hoc analyses indicated that young adolescents in the HS group had significantly higher levels of depressive symptoms, poor capacity of inhibitory control and higher victimization experiences compared to those in the LS groups. Males in MD trajectories show no significant differences compared to those in MI trajectories.

For the second model of MANOVA, we examined concurrent predictors (T3: age 15 to 16) of males FHAC TGM. Results revealed that the use of physical discipline by father and mother significantly differentiated adolescents in the HS group from those in MD, MI and LS groups (see Table 5).

Bonferroni post hoc analyses indicated that adolescents in the HS group reported higher scores in father and mother physical discipline significantly than those in the MD, MI and LS groups.

Moreover, males in HS group evidenced higher overt and covert antisocial behaviors, involvement with deviant peer, hostile/aggressive reactions toward their father and lower capacity of inhibitory control.

Bonferroni post hoc analyses also revealed that adolescents in the HS group significantly differ from those in the others trajectories groups (see Table 5).

**Table 5 MANOVAs Examining Antecedents and Concurrent predictors of Father Hostile Aggressive Conflict Trajectory Groups (Males model)**

Trajectory group	<i>HIGH STABLE</i>	<i>MEDIUM DECREASING</i>	<i>MEDIUM INCREASING</i>	<i>LOW STABLE</i>	<i>F</i>	$\eta^2$
<b><i>Antecedent predictors T1-2</i></b>						
	Mean (Ds)	Mean (Ds)	Mean (Ds)	Mean (Ds)		
Depression	.53 (2.04) A	.03 (1.55) AB	-.23 (1.57) AB	-.75 (1.01) B	3.75**	.06
Aggressive behaviors	.45 (.95) A	.18 (.77) A	.35 (.88) A	-.05 (.90) A	2.42	.04
Inhibitory control	.28 (.77) A	.01 (.63) AB	.15 (.88) AB	-.20 (.66) B	3.01	.05
Peer rejection	.71 (2.58) A	.35 (1.85) A	.56 (2.27) A	.08 (1.79) A	.66	.01
Involvement with deviant peer	2.84 (1.03) A	2.73 (.85) A	2.74 (.83) A	2.59 (.80) A	.50	.01
Violence victimization	1.33 (.48) A	1.20 (.40) AB	1.23 (.43) AB	1.05 (.21) B	3.61**	.06
Violence witnessing	1.67 (.38) A	1.07 (.25) A	1.05 (.22) A	1.02 (.15) A	2.05	.04
Authority conflict	.49 (.69) A	.51 (.66) A	.68 (.88) A	.29 (.87) A	1.70	.01
<b><i>Concurrent predictors T3</i></b>						
Father physical discipline	.78 (1.53) A	-.12 (.76) B	-.12 (.57) B	-.19 (.67) B	7.87***	.13
Mother physical discipline	.89 (1.60) A	-.07 (.82) B	-.17 (.50) B	-.24 (.52) B	10.29***	.17
Overt antisocial behaviors	.68 (1.21) A	.33 (1.11) AB	.18 (1.01) AB	-.08 (.73) B	3.18**	.06
Covert antisocial behaviors	1.05 (.90) A	.08 (.82) BC	.26 (1.26) C	-.40 (.66) D	13.44***	.21
Involvement with deviant peer	1.48 (2.37) A	.58 (2.41) AB	-.01 (1.53) BC	-.72 (.55) C	8.25***	.14
Hac toward father	.49 (1.07) A	.11 (1.10) AB	-.15 (.69) BC	-.45 (.73) C	6.27***	.11
Inhibitory control	.71 (1.22) A	-.03 (.74) B	-.29 (.63) B	-.53 (.73) B	12.92***	.20

***Females Gmm model.***

For the first model of MANOVA, we examined early adolescence (T1-2 age 12 to 13 and age 14 to 15) predictors of females FHAC TGM. Results revealed that depression symptoms at age 12 to 14 Time 1-2 significantly differentiated HI trajectory group from MS and LS trajectories groups (see Table 6). Bonferroni post hoc analyses indicated that females in the HI group had significantly higher levels of depressive symptoms compared to those in the MS and LS groups. Moreover, females in the HI group display more aggressive behaviors and they have poor



capacity of inhibitory control in comparison of females in the other two trajectories groups (see Table 6). Finally, females' adolescents in the HI group reported significantly more experience of witnessing violence in comparison of those in MS and LS groups (see Table 6).

For the second model of MANOVA, we examined concurrent predictors (T3 age 15 to 16) of females FHAC TGM. Results revealed that the reported use of physical discipline by father and mother significantly differentiated HI group from MS and LS groups (see Table 6). Bonferroni post hoc analyses indicated that females adolescents in the HI group have been more victims of father and mother physical discipline significantly compared to those in the MS and LS groups. In addition females in HI group display more covert antisocial behaviors compared to adolescents in the other two groups. Finally, results showed that females adolescents in HI group are more prone to respond with hostile aggressive conflict toward father and they have significantly lower capacity of inhibitory control in comparison with adolescents in the MS and LS groups (see Table 6).

**Table 6 MANOVAs Examining Antecedents and Concurrent predictors of Father Hostile Aggressive Conflict Trajectory Groups (Females model)**

Trajectory group	<i>HIGH INCREASING</i>	<i>MEDIUM STABLE</i>	<i>LOW STABLE</i>	<i>F</i>	$\eta^2$
<i>Antecedent predictors T1-2</i>					
	Mean (Ds)	Mean (Ds)	Mean (Ds)		
Depression	1.53 (1.96) A	.20 (1.70) B	-.32 (1.62) B	4.76**	.06
Aggressive behaviorrs	-.04 (.97) A	-.19 (.46) AB	-.40 (.36) B	4.01*	.05
Inihibitory control	.32 (.79) A	.01 (.63) AB	-.31 (.42) B	6.64**	.08
Peer rejection	-.49 (1.32) A	-.56 (1.16) A	-.38 (1.41) A	.32	.00
Involvement with deviant peer	2.72 (.82) A	2.59 (.73) A	2.45 (.58) A	1.51	.02
Violence victimization	1.11 (.33) A	1.11 (.31) B	1.02 (.15) B	3.48*	.05
Violence witnessing	1.22 (.45) A	1.04 (.20) A	1.02 (.15) A	.89	.01
Authority conflict	.65 (1.42) A	.53 (1.42) A	.19 (.64) A	3,62*	.05
<i>Concurrent predictors T3</i>					
Father physical discipline	1.77 (1.89) A	-.05 (.98) B	-.31 (.30) B	24.45***	.24
Mother physical discipline	.63 (1.67) A	.31 (1.00) AB	-1.28 (1.08) B	5.06***	.06
Overt antisocial behaviorrs	-.31 (.86) A	-.28 (.81) A	-.45 (.63) A	.86	.01
Covert antisocial behaviorrs	.87 (1.70) A	-.22 (1.43) B	-.46 (1.02) B	12.74***	.14
Involvement with deviant peer	-.40 (1.69) A	-.22 (1.43) A	-.48 (1.02) A	.59	.01
Hac toward father	.95 (1.22) A	.02 (.80) B	-.39 (.65) B	13.98***	.15
Inhibitory control	.57 (1.19) A	1.70 (1.05) AB	-.45 (.77) B	8.64***	.10

***Short term and long term outcomes of Father Hostile Aggressive Conflict.***

In the fourth step of analysis we examined short term (T5 age 19 to 20) and long term outcomes (T6 age 21 to 22). In particular, we examined the predicting role of TGM on depression, overt antisocial behaviors, covert antisocial behaviors and PTSD symptoms, controlling for their initial levels.

### ***Males Gmm model***

We performed a series of hierarchical regressions in which outcomes at T5 (age 19-20) and T6 (age 21-22) was predicted after controlling for their initial levels at T1 (age 12-13).

In particular, each outcome at a given assessment time (T5- age 19-20 and T6- age 21-22) was regressed in two sequential steps onto, respectively, (1) the stability of outcome at T1 (age 12-13), (2) TGM of high stable and increasing groups.

Table 7 summarizes the results obtained in the four separate hierarchical regressions. For each analysis, the table shows the standardized  $\beta$  obtained for a predictor when it was first entered in the model and the increment in explained variance associated with a statistically significant predictor (column labeled “R<sup>2</sup>”).

Not surprisingly, there was clear evidence of temporal stability in depression, overt and covert antisocial behaviors and PTSD symptoms from early adolescence to early adulthood (Table 7).

More importantly, however, this stability did not completely account for the variation in adolescents’ behavioral development over time.

The results of hierarchical regression analysis evidenced that both memberships of MS and HS FHAC groups significantly predicts depression symptoms, covert antisocial behaviors and PTSD symptoms at T5 (age 19 to 20) above and beyond their stability over time.

In line with our hypothesis, the TGM of HS group was the most important predictor of all outcomes considered in our study at short and long term (age 19-20 and age 21-22), above and beyond the stability of specific behavior.

Interestingly also the TGM of MI group predicts at short time all outcomes

considered in the study (age 19-20) and at long time only PTSD symptoms (T5- age 19-20 and T6- age 21-22).

***Females Gmm model.***

We performed a series of hierarchical regressions in which outcomes at T5 (age 19-20) and T6 (age 21-22) was predicted after controlling for their initial levels at T1 (age 12-13).

In particular, each outcome at a given assessment time (T5- age 19-20 and T6- age 21-22) was regressed in two sequential steps onto, respectively, (1) the stability of outcome at T1 (age 12-13), (2) TGM of HI and MS groups.

Table 7 summarizes the results obtained in the four separate hierarchical regressions. For each analysis, the table shows the standardized  $\beta$  obtained for a predictor when it was first entered in the model and the increment in explained variance associated with a statistically significant predictor (column labeled “ $R^2$ ”).

As reported previously for males’ models, there was clear evidence of temporal stability in depression, overt and covert antisocial behaviors and PTSD symptoms from early adolescence to early adulthood (Table 7). In this case too, this stability did not completely account for the variation in adolescents’ behavioral development over time.

The results of hierarchical regression analysis evidenced that memberships of HI FHAC group significantly predicts depression symptoms at T5 and T6 (age 19 to 20 and age 21 to 22) and PTSD symptoms at T6 (age 21 to 22) above and beyond their stability over time.

In addition, the TGM of MS group was the most important predictor of covert antisocial behaviors at short and long time (T5- age 19-20 and T6- age 21-22), above and beyond the stability of specific behavior.

**Table 7. Regressions predicting depressive symptoms, Overt ASB, Covert ASB and PTSD symptoms at short and long time, controlling for prior levels: Males model.**

	Depression Age 19-20		Depression Age 21-22		Overt Age 19-20		Overt Age 21-22		Covert Age 19-20		Covert Age 21-22		PTSD Age 19-20		PTSD Age 21-22	
	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>
Step 1																
Stability age 12-13	.25***	6%	.30***	9%	.21**	4%	.10	1%	.22**	5%	.24**	6%	.29***	8%	.29***	8%
Step 2																
High stable group	.39***		.28*		.19*		.27**		.44***		.31**		.42***		.42**	
Medium Increasing group	.35***	22%	.16	16%	.21*	9%	.05	7%	.36***	25%	.14	14%	.27**	24%	.23*	23%

**Table 8. Regressions predicting depressive symptoms, Overt ASB, Covert ASB and PTSD symptoms at short and long time, controlling for prior levels: Females model.**

	Depression Age 19-20		Depression Age 21-22		Overt Age 19-20		Overt Age 21-22		Covert Age 19-20		Covert Age 21-22		PTSD Age 19-20		PTSD Age 21-22	
	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$B$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>	$\beta$	R <sup>2</sup>
Step 1																
Stability age 12-13	.25***	6%	.31**	9%	.21**	4%	.10	1%	.22**	5%	.24**	6%	.29***	8%	.29***	8%
Step 2																
High increasing group	.17*		.17*		.07		.01		.14		.05		.09		.33***	
Medium stable group	.12	9%	.05	13%	.08	5%	.12	3%	.21**	9%	.21*	10%	.08	9%	.10	18%

## *Discussion*

The present study investigated three research questions related to trajectories of FHAC from middle adolescence to late adolescence, separately for males and females.

Trajectories of self-reported FHAC from middle adolescence through late adolescence were identified separately by gender. Furthermore, associations between distinct FHAC trajectories and early and concurrent predictors as well as early adulthood outcomes were examined. For males four trajectory classes following distinctive developmental courses of FHAC were identified in this study, namely, high stable FHAC (HS), medium decreasing FHAC (MD), medium increasing FHAC (MI) and low stable FHAC (LS).

Approximately 16 percent of the males were on the high stable path, whereas 34.2% percent were in a path characterized by an initial medium-high level of conflict that follows a linear decrease over time. The path characterized by initial medium levels of FHAC and a linear increase over time includes 11.6% of males. Finally, 26.5% of males were in low stable FHAC throughout the entire study period.

For females three trajectory classes following distinctive developmental courses of FHAC were identified in this study, namely high increasing FHAC (HI), medium stable FHAC (MS) and low stable FHAC (LS).

Approximately 60 percent of the females were on the medium stable path, whereas 7.4% of females were in a pathway showing initial high level of FHAC and then increasing over time. Finally, approximately 30 percent of the females were in a pathway showing low levels of FHAC throughout the entire study period.

The latent trajectories identified in this study seems to be in accordance with the model of negative relationships during adolescence that as been recently evidenced by Seiffge-Krenke, Geertjan and Vermulst (2010). In addition, in our study we have considered separately gender of adolescent and of parents.

Both studies have identified a latent trajectory class that is characterized by an increasing pattern of development.

Interestingly, in the present contribution, taking into account adolescents' and parents' gender, we have shown that increasing trend of development could be traced in both males' and females' samples.

Analysis of distal and concurrent antecedents T1-2 (age 12 to 14 and T3- age 15-16) evidenced that HS group trajectory for males and HI group trajectory for females differs from other trajectories identified in terms of previous risk factors related to both to individual and peer relations domains.

In addition, participants who belong to chronic groups identified (HS group trajectory for males and HI group trajectory for females) are significantly more prone to responds to HAC toward their fathers, showing the existence of reciprocity in the hostile aggressive relationships between parents and adolescents.

As pertains the outcomes associated with FHAC, in the case of males, results of regression analysis have clearly showed that belonging to TGM of HS group leads significantly to depressive symptoms, PTSD symptoms, and Overt and Covert antisocial behaviors at short time (T5-age 19-20) and at long time (T6-age 21-22), controlling for their initial levels.

Also belonging to TGM of MI group seems to lead to different forms of maladjustment especially at short term. In fact the age of 19-20 significant predictions are found for this group in the cases of depressive symptoms, PTSD symptoms, and Overt and Covert antisocial behaviors. In addition at long term these adolescents still maintain significant levels of PTSD symptoms.

These results while confirm what has been found in previous studies (Fergusson et al. 1996; Fergusson and Lynskey 1997; Hawkins et al. 1998; Herrenkohl et al. 1997; Smith and Thornberry 1995; Widom 2001; Wolfe 1999; Herrenkohl et al.2009; G.Margolin and K. A. Vickerman, 2007) clearly show for males significant signs of short and long term maladjustment especially for the high stable group and to a certain extent to the medium increasing group.

Moreover, as regards females, in line with previous studies (Herrenkohl et al.2009; G.Margolin and K. A. Vickerman, 2007) our results showed that the negative outcomes for the TGM of HI are only associated to depressive symptoms and PTSD symptoms at long time (T6-age 21-22).

Finally for the females belonging to TGM of MS group the most significant disadaptive outcomes at short and long time (T5-age 19-20 and T6- age 21-22) are associated to the expression of some types of covert antisocial behaviors.

In summary these results appear to show clear cut evidence as regards the long term effects of hostile and aggressive conflict with father during adolescence. Both males and females belonging respectively to HS and HI groups and males of the medium increasing group show evident signs of PTSD symptoms till early adulthood years. These results consistently support the notion that growing up and living in a context characterized by hostility and violence could be considered a *complex traumas* (Cook et al., 2005; van der Kolk, 2005). Also both males and females belonging respectively to HS and HI groups show till early adulthood years signs of depression states.

Furthermore less surprising are the results associated to overt and covert antisocial behavior, already documented by a vast literature. Males belonging to the HS group consistently show serious involvement in antisocial behaviors, both overt and covert, till adulthood years. While the same peers belonging to the medium increasing group show only short term involvement in both overt and covert antisocial behaviors.

Finally it must be noted in the case of females, that moderate level of hostile conflict with father, but stable over time, contribute to covert type antisocial behaviors.

### ***Limitations and future directions***

The study offered one of the first analyses on developmental growth of FHAC toward their sons from middle adolescence to late adolescence using LGMM approach, considering their antecedents in early adolescence and outcomes at the beginning of adulthood.



Nevertheless, the present study contributes to previous research by investigating LGMM trajectories of FHAC considering distal and concurrent predictors and developmental outcomes in late adolescence and in early adulthood. Several important patterns emerged.

However, further studies are needed in order to clarify some issues not yet accounted for. First, the consideration of a larger age span also including the early adolescence ages and adulthood is necessary. Second, further analysis using a LGMM approach and considering the specific role of covariate on each single trajectory can give important advancement to this issue.

Third, specific limitations regarding the use of self-reported measures can affect the estimation of the behaviors. The application of these methodologies using reports from both parents and adolescents across time can give important additional information and consequently allows to understanding the reciprocal relations existing between parents and adolescents.

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## **CHAPTER V**

### GENERAL CONCLUSIONS and DISCUSSION

## **Conclusions**

The present dissertation aimed to analyze the development of Mother and Father Hostile Aggressive Conflict (MHAC and FHAC) toward their children from middle to late adolescence (from age 15-16 to age 19-20), considering:

- The development of MHAC and FHAC with a particular focus on inter-individual differences in change trajectories explained by distal and concurrent risk factors through the Latent Growth Analysis;
- The identification of different trajectories of MHAC (Chapter III) and FHAC (Chapter IV) through Latent Growth Mixture Models from middle adolescence (age 15-16) to late adolescence (age 19-20) separately by gender, considering distal and concurrent risk factors and the outcomes associated to trajectories' membership at short and long term (late adolescence- age 19-20- and early adulthood –age 21-22).

Preliminarily, the factorial structure and the longitudinal invariance of a modified measure of “Parent-Adolescent Disagreement Scale” developed by Honess, et al., (1997) were analyzed.

We will discuss the overall findings of the dissertation emphasizing these issues. Finally, strengths and limitations of the dissertation and implications for future studies will be reported.

### ***The construct of HAC during adolescence***

In our study we have defined a construct of MHAC and FHAC that includes items of both verbal and physical aggression (e.g. He/she gets really wound up and starts shouting; He/she get really angry and hits out). Preliminary analysis were conducted in order to test the factorial structure of the scale (mono-dimensional/ bi-dimensional solution) and to verify the longitudinal invariance of this construct.

Results of Study I have evidenced that in our sample of Italian adolescents the constructs of MHAC and FHAC are better represented by a mono-dimensional structure where verbal and physical items are not distinguished in different factors. Moreover, a full longitudinal invariance for the two constructs was found.

These results have confirmed that MHAC and FHAC toward their children during adolescence are characterized for the presence of both verbal and physical aggressive acts.

Moreover, our results were in accord with more recent studies that have analyzed violent relationships in adolescence using similar definitions (Gutman, L., and Eccles, J. 2007; Herrenkohl et al., 2006; Seiffge-Krenke, Geertjan and Vermulst, 2010).

### ***The development of MHAC and FHAC from middle to late adolescence: antecedents and outcomes in early adulthood***

Studying the developmental trend of MHAC and FHAC is a prerequisite for understanding whether the inter-individual variability around this trend can be explained by distal or more proximal predictors.

Literature on developmental trend of family conflict has shown contrasting results. In fact, while some studies on family conflict development during adolescence have emphasized a curvilinear trend, with a peak in the course of the medium adolescence, followed after by a decline during the late adolescence (Holmbeck 1996, Montemayor, 1983; Smetana 1996), while other



studies have evidenced the stability and the chronic stability of violent conflicts from late adolescence until early adulthood (Gutman, L., and Eccles, J. 2007; Laursen and Collins, 1998; Seiffge-Krenke, Geertjan and Vermulst, 2010).

In the first contribution (Chapter II) we have analyzed the development of MHAC and FHAC from middle to late adolescence (from age 15-16 to age 19-20) through the latent growth analysis showing for both mother and father a pathway of development characterized by stability over time.

In addition the study emphasized the role of distal child' temperamental and child' behavioral risk factors (inhibitory control and authority conflict) and the role of concurrent risk factors (overt and covert antisocial behavior).

The results of this study have shown that earlier (age 12-13) child' temperamental characteristics as low inhibitory control and behavioral characteristics as high levels of authority conflict predicts the onset of MHAC and FHAC. In addition, overt and covert antisocial behaviors contribute to the maintenance and to chronic levels of MHAC and FHAC from middle to late adolescence (from age 15-16 to age 19-20).

The stability of the growth models identified were characterized by significant intra-individual variability, then in the following studies (Chapter III and Chapter IV) we have explored the existence of Latent Growth Mixture Models (LGMM) separately by child' and parent' gender.

The LGMM' model identified for mother (Chapter III), separately by child' gender, have evidenced the existence of a chronic group (HI-High stable) in the dyad mother-sons, while for the dyad mother-daughter we have found a group characterized by decreasing over time (HD- High decreasing) from age 15-16 to age 19-20.

Otherwise, regarding the father' LGMM model, we have found a different pathways of development. In particular, concerning the dyad father-sons we found two interestingly groups: one

that evidenced high levels of FHAC over the years (HS- High Stable) and one group “late starters” that is characterized by initial moderate levels of FHAC, followed by a linear increase over the time (MI- Medium Increasing). Finally, as regard the father-daughter dyad we have found one group at risk that is characterized by high initial levels of FHAC and a tendency to increase over time (HI- High Increasing).

All these groups membership predicts serious consequences at short at long term (age 19-20 and age 21-22). In particular, for males, the membership of high stable groups for both MHAC and FHAC are associated with overt and cover antisocial behaviors and also with depression and PTSD symptoms at short and long term (age 19-20 and age 21-22). In addition, also the membership of FHAC HI group is associated with depressive symptoms, overt and covert antisocial behavior at short term (age 19-20) and with PTSD at short and long term (age 19-20 and age 21-22).

As regards to females’ models, the membership of HI group for FHAC and the membership of MS group for MHAC is associated with depressive and PTSD symptoms at short and log term (age 19-20 and age 21-22).

Results of these studies contribute to the knowledge of family hostile and aggressive relations, considering its development during adolescence and the associated consequences in early adulthood and it evidence that serious HAC with mother or with father can seriously impair the psychological adjustment.

However, further studies are needed in order to clarify some issues not yet accounted for. First, the consideration of a larger age span also including the early adolescence ages and adulthood is necessary. Second, further analysis using a LGMM approach and considering the specific role of covariate on each single trajectory can give important advancement to this issue.

Third, specific limitations regarding the use of self-reported measures can affect the estimation of the behaviors. The application of these methodologies using reports from both parents

and adolescents across time can give important additional information and consequently allows to understanding the reciprocal relations existing between parents and adolescents.