

## The search for the age of 'onset' of physical aggression: Rousseau and Bandura revisited

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### ABSTRACT

**Background** Studies of aggression often confound physical aggression with verbal aggression, indirect aggression, relational aggression, opposition, competition and other externalizing behaviours. Developmental models of aggression have suggested that onset of physical aggression occurs after the onset of hyperactive, stubborn and oppositional behaviour. Yet little is known about the onset and development of physical aggression before school entry.

**Method** The age of onset and frequency of physical aggression was studied in a population sample of 17-month-old children.

**Results** The 511 maternal reports on 11 physically aggressive behaviours indicated that the rate of cumulative onset of physically aggressive behaviours increased substantially from 12 to 17 months after birth. By 17 months of age, onset of physical aggression was reported for close to 80% of the children. However, the sex of the child and the presence of a sibling appeared to influence age of onset.

**Conclusions** These results, and those of other studies of preschool children, suggest that the notion of increased probability of 'onset' of physical aggression as children approach adolescence needs to be reconsidered. Most children have had their 'onset' of physical aggression by the end of their second year after birth, and most have learned to inhibit physical aggression by school entry. Thus, there may be two main developmental trajectories of physical aggression: childhood limited, and life-course persistent. This may be an indication that there is a sensitive period for learning to inhibit physically aggressive behaviour. To understand and prevent cases of chronic physical aggression which appear most at risk of violent criminal behaviour, we need

*to study the factors which help children learn to inhibit physical aggression during the preschool years.*

## Introduction

There is no original sin in the human heart, the how and why of the entrance of every vice can be traced. (Rousseau, 1762/1911: 56)

People are not born with preformed repertoires of aggressive behaviours; they must learn them in one way or another. (Bandura, 1973: 61)

Based on the results of a relatively large number of longitudinal studies over the past two decades, it has often been concluded that childhood aggression is one of the best predictors of adolescent and adult aggression (e.g. Reiss and Roth, 1993; Huesmann et al., 1996; Coie and Dodge, 1998). This conclusion has launched a quest for the age of onset of aggression and the pathways which lead to aggression. If aggressive behaviour is learned (Lefkowitz et al., 1977; Bandura, 1973; Eron, 1990; Huesmann, 1997), if it is a stable behaviour (Olweus, 1979; Parke and Slaby, 1983; Coie and Dodge, 1998), if its age of onset can be identified, and if its antecedents can be recognized, then one can hope that preventive interventions will nip its development in the bud.

## Defining aggression

A major problem with this quest is the operational definition of aggression (de Wit and Hartup, 1974; Farrington, 1997). Studies on aggression attract much interest from the public and policy makers because fear of becoming the victim of violent aggression is a major issue in our modern societies. However, most of the longitudinal studies of aggression during childhood have not been assessing the type of aggression which people fear most, namely physical aggression. The peer, parent and self-rating scales of 'aggression' in these studies typically include only a few physical aggression items among a majority of items which refer to disruptive behaviours such as disobedience, attention seeking, impulsivity, opposition, competition, hyperactivity, rejection, association with bad friends, vandalism, lying and stealing (e.g. Pekarik et al., 1976; Lefkowitz et al., 1977; Achenbach and Edelbrock, 1986; Tremblay, 1991; Tremblay et al., 1991). Thus, many developmental studies continue to confound physical aggression with verbal aggression, indirect aggression, opposition, hyperactivity, competition, and other disruptive or troublesome behaviours. Many studies lump together all these behaviours and label them externalizing, delinquent or antisocial (Coie and Dodge, 1998).

There are at least six important advantages in differentiating physical aggression from other aggressive, disruptive and antisocial behaviours. First, the concreteness of physical aggression makes it somewhat easier to measure than most other social or antisocial behaviours. Second, there is a relatively large consensus that physical aggression, i.e. aggression that causes bodily

harm, is a socially undesirable behaviour. The consensus is less clear for aggressive behaviour that is not physical in nature. For example, most parents would be proud to hear their son described as an aggressive tennis player or an aggressive debater. Fewer would take pride in a physically aggressive debater or tennis player. A consensus concerning aggression that is not physical, and thus inflicts mental harm, would not be as easy to reach and would be more difficult to measure. Third, one would expect that most individuals who tend to inflict bodily harm to others also tend to inflict mental harm, but individuals who tend to inflict mental harm to others do not necessarily inflict bodily harm. Fourth, from a developmental perspective, one would expect that the capacity to inflict bodily harm to others would precede the capacity to inflict mental harm. Fifth, although there is a large consensus that physical aggression should be inhibited, it is still omnipresent in our modern societies. Finally, interventions may need to be tailored to the type of aggressive behaviour one wants to prevent.

### **Physical aggression from school entry to adulthood**

Data on the prevalence of serious violent crimes from the National Youth Survey (Elliott, 1994) indicate that both black and white males and females in the United States become more and more at risk of committing serious physical aggressions from 12 to 17 years of age. This phenomenon has been observed in other data sets (Farrington, 1987) and appears to support the conclusion that the likelihood of physical aggression increases as children grow older. Loeber and Hay's (1997) retrospective and prospective data from a sample of Pittsburgh males, first assessed when they were in seventh grade, showed that as children grow older, more and more start to display minor aggression, fighting and violence.

These data also lend credence to recent models of pathways for the development of antisocial behaviour. For example, the data seem to support a model where fighting in males is preceded by temper tantrums, which were themselves preceded by disobedience (Patterson et al., 1992). Loeber and colleagues (1994; Loeber and Stouthamer-Loeber, 1998) presented a more complex model, but still one that shows minor aggression and physical fighting being preceded by disobedience and stubborn behaviour.

This image of children being more inclined to initiate physical aggression as they grow older fits an image of children born good and becoming bad under the influence of their environment, which dates back to at least Jean-Jacques Rousseau's (Rousseau, 1911 [1762]) model of child development, and the more recent social learning hypothesis of aggression (Bandura, 1973). However, it does not fit well with average levels of physical aggression obtained from the few studies that have focused specifically on the development of physical aggression during the elementary school years. For example, in their prospective longitudinal study of North Carolina children, using both

teacher and self-reports, Cairns, Cairns, and colleagues (Cairns and Cairns, 1994; Cairns et al., 1989) found that the mean frequency of physical aggressions decreased with relative steadiness from 10 to 18 years of age. We obtained a similar developmental trend with a sample of 1037 males from low socioeconomic areas of Montréal whose physical aggression was rated by teachers from 6 to 15 years of age (Figure 1). Similar results have also been obtained in the Pittsburgh Youth Study (Loeber and Hay, 1997) and from cross-sectional studies (Choquet, 1996; Tremblay et al., 1996).

It could be argued that although most children are less and less physically aggressive with time, a minority of children commence or increase the frequency of their physical aggression as they grow older. Nagin and Tremblay (in press) have addressed this issue by attempting to identify the developmental trajectories of teacher-rated physical aggression in a sample of low socioeconomic area boys followed from six to 15 years of age. They found that 14% of the boys appeared to never have been physically aggressive, 4% showed a high frequency of physical aggression from six to 15 years of age, 28% started with a high level of physical aggression at age six and became less and less physically aggressive with time, while the majority (53%) had a low level of physical aggression at age six and also became less and less aggressive with time. In contrast with hypotheses concerning late onset of antisocial behaviour (Patterson et al., 1989; Moffitt, 1993), Nagin and Tremblay did not find any group that could be labelled 'late onset' for physical aggression, i.e. boys

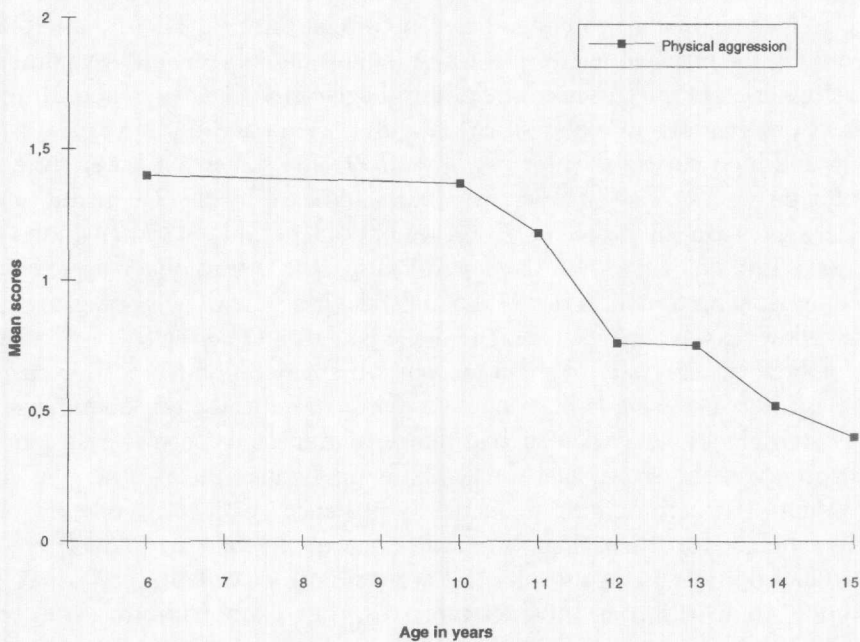


Figure 1: Boys' teacher-rated physical aggression from age 6 to 15 years.

with an 'onset' and maintenance of a moderate or high level of physical aggression for a significant number of years after age six.

These results certainly challenge the idea that physical aggression is a behaviour with a frequency that increases with age. They also challenge the notion that there is a significant group of children who show chronic physical aggression during late childhood or adolescence after having had low levels of aggression throughout childhood.

### Physical aggression during the preschool years

Because the mean frequency of physical aggression, for any type of developmental trajectory of physical aggression, appears to be at its highest in kindergarten (Nagin and Tremblay, in press), the search for the 'onset' of physical aggression must logically focus on the preschool years. Although de Wit and Hartup (1974) made a convincing plea for studying the early development of aggression more than 20 years ago, there are surprisingly very few longitudinal studies which have tried to chart the development of physical aggression during the preschool years.

Two longitudinal studies of small samples of children found relatively high levels of continuity in physical aggression, i.e. children tend to maintain the same relative level of physical aggression from around the end of the second year after birth onward. Keenan and Shaw (1994) observed a sample of 89 boys and girls of low socioeconomic status mothers. Direct observations of behaviour during laboratory assessments when the children were 18 and 24 months of age yielded significant inter-age Pearson correlations of 0.23, 0.30 and 0.45 respectively for physical aggression towards mothers, objects and examiners. Cummings et al. (1989) assessed the physical aggression of 22 boys and 21 girls by direct observations in a play situation with a friend at 2 and 5 years of age. They found high correlations for boys ( $r = 0.59$ ) and somewhat lower correlations for girls ( $r = 0.36$ ). These two studies indicate levels of continuity of physical aggression similar to those observed in older children. Other studies of preschool children's aggression have used less specific definitions of aggression. For example, Kingston and Prior (1995: 349) describe their focus on aggression in the following way: 'we focus on the development and correlates of what we call, for brevity, 'aggressive behaviour' but which incorporates both verbally and physically aggressive behaviour . . . . More specifically, our definition of aggression includes behaviours such as temper outbursts; damage or destruction to property; verbal and physical threats; bullying; fights; hurting others by hitting, biting or scratching; and frequent disobedience.' Competitive behaviour was also included in their aggression scale for two- to four-year-olds. Because such studies do not distinguish physical aggression from verbal aggression, disobedience, competition and temper tantrums, they cannot inform us on the age of onset and stability of physical aggression.

The fact that longitudinal studies show relatively high correlations of physical aggression scores between two and five years of age (continuity) does not tell us if the frequency of physical aggression is increasing or decreasing (stability) during the preschool years. The first descriptions of these developmental trends can be found in a number of cross-sectional studies undertaken by the child development pioneers of the 1920s and 1930s (e.g. Bridges, 1931; Dawe, 1934; Murphy, 1937) who targeted conflicts and tantrums in small samples of children. These studies suggested that with age, physical aggression decreased, while verbal aggression and conflicts increased. A recent cross-sectional study of a large representative sample of Canadian children also indicated that, according to maternal reports, the frequency of physical aggression declined from two to 11 years of age (see Figure 2), while the frequency of indirect aggression increased (Tremblay et al., 1996).

Again, if the frequency of physical aggression is at its highest at the end of the second year after birth, when is the age of 'onset' of physical aggression?

Published studies of physical aggression during the first two years after birth are extremely rare. In a British longitudinal study of 49 second-born children, Dunn and Munn (1985) observed physical aggression of the subjects towards their eldest sibling at ages 14, 18 and 24 months. The observed trend indicated an increase in physical aggression. In a cross-sectional study of social interactions in French day-care centres, Restoin (1985; Restoin et al., 1985)

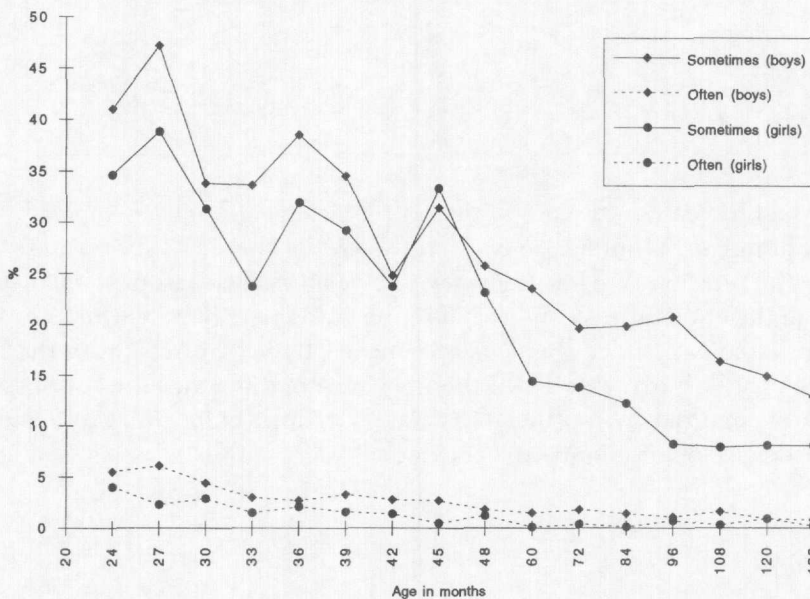


Figure 2: Hitting, biting and kicking (boys and girls aged 2 to 11 years).

Characteristics	1996 sample (n = 511) (%)	1998 sample (n = 787) (%)	( $\chi^2$ )
Family income			7.33*
< \$30 000	23.2	30.2	
\$30 000 – \$60 000	44.1	39.7	
> \$60 000	32.7	30.1	
Educational level of the mother			12.78*
No high school diploma	9.6	16.1	
High school diploma	32.7	33.0	
Vocational/trade school diploma	11.8	10.6	
College diploma	17.1	13.6	
University degree	28.9	26.7	
Educational level of the father			22.66**
No high school diploma	12.8	20.3	
High school diploma	31.1	35.6	
Vocational/trade school diploma	13.0	8.0	
College diploma	15.3	13.3	
University degree	27.9	22.8	
Number of brothers and sisters			0.55
None	42.1	40.0	
1 brother or sister	37.6	39.1	
2 or more	20.4	20.8	
	M	M	t
Age of mother	29.77	29.38	-1.36
Age of father	32.25	32.02	-0.71

Notes: \* $p < 0.5$ , \*\* $p < 0.001$ .

reported an increase in the proportion of physical aggressions, compared with other forms of social interactions, from the end of the first to the end of the second year after birth. That study also showed a decrease in physical aggression from the end of the second year after birth to the end of the third year.

In an attempt to trace the development of physical aggression in the first 17 months after birth, we studied the frequency of different forms of physical aggression reported by mothers for their 17-month-old child, and tried to identify the age of onset of these behaviours.

## Method

### Subjects

A total of 511 mothers were interviewed when one of their children (260 girls,

251 boys) was 17 months old ( $M = 16.86$ ,  $SD = 0.60$ ). These mothers were part of a population sample of 572 mothers living in the main urban areas of the province of Québec and recruited in the fall of 1996. Demographic characteristics of the 511 mothers differed slightly from a subsequent population sample representing mothers of all newborns in the Province of Québec in the spring of 1998 (Table 1). The mothers and fathers of the 1996 sample were more educated and had a higher family income than those recruited in 1998. However, the samples did not differ on variables such as the parents' age and the number of children in the family.

### Instruments

The 'person most knowledgeable' about the child (PMK), which in 98% of the cases was the mother, was asked to indicate whether the child never, sometimes, or often manifests a variety of behaviours. The behaviour questionnaire presented to parents was developed by the senior author for the Canadian Longitudinal Survey of Children and Youth from a variety of sources (Statistics Canada and HRDC, 1995). It consists of items measuring dimensions such as hyperactivity, physical aggression, inattention, anxiety and prosocial behaviour. Since the original questionnaire contained only three items pertaining to physical aggression, these items were replaced by 11 items yielding a more detailed picture of physical aggression at 17 months. These items are: takes away things from others; pushes to get what he/she wants; threatens to hit; hits; bites; kicks; physically attacks; fights; starts fights; bullies; and is cruel. Furthermore, for each of these 11 items, mothers were asked to indicate at what age the child had manifested the behaviour for the first time.

Table 2: Prevalence of physically aggressive behaviour by 17 months of age

Behaviours	Sometimes	Often	Total
(1) Takes away things from others	52.7	17.7	70.4
(2) Pushes to get what he/she wants	40.1	5.9	46.0
(3) Bites	24.3	2.9	27.2
(4) Kicks	20.4	3.9	24.3
(5) Fights	19.8	3.3	23.1
(6) Threatens to hit	19.8	2.7	22.5
(7) Physically attacks	19.4	1.2	20.6
(8) Hits	14.7	0.6	15.3
(9) Starts fights	11.0	1.4	12.4
(10) Bullies	7.6	0.6	8.2
(11) Cruel	3.3	0.6	3.9



## Results and discussion

### *Frequency of physical aggressions at 17 months*

Table 2 shows the percentage of 17-month-old boys and girls whose mother reported that they had sometimes or often manifested each of the behaviours. It can be seen that taking away things from others is a highly prevalent behaviour at 17 months of age. Half of the children are reported by their mothers to sometimes take away things from others, and 17.7% are reported to often show this behaviour. The inclusion of this behaviour in a scale of physical aggression could be questioned since it involves a minimum level of physical aggression. However, direct observations of these behaviours (see e.g. Restoin, 1985) show that children often resist, and sometimes strongly resist, by holding on to the object while the other is trying to pull it away. The same event involving adolescents or adults could lead to a robbery charge.

The second most frequently reported physical aggression at 17 months is pushing others to get what the child wants (40.1% sometimes, 5.9% often). This behaviour probably happens most often in the same context as the previous behaviour (taking away things from others) but appears to indicate a higher level of physical aggression. Instead of only pulling on an object the other is holding, the child actually physically pushes the other. Taking away things and pushing to get these things are clearly the most frequent behaviours of the physical aggression items presented to the mothers. These results replicate direct observation studies of children which conclude that object struggles are the most frequent agonistic behaviours among young children (e.g. Hay and Ross, 1982; Restoin et al., 1985).

Biting, kicking, fighting, threatening to hit and physically attacking others are reported for one in four to one in five of the children. Although few mothers endorsed the most serious descriptors, there were still 8.2% who reported their 17-month-old child to bully and 3.9% who described their child as cruel.

Table 3 presents a breakdown of the total percentage from Table 2 into males and females, and whether or not a sibling is present. The clearest result from Table 3 is the effect of having a sibling. Since the subjects were 17 months old, it can be assumed that the siblings were almost always older. Observational studies of sibling interactions have shown that younger siblings between 14 and 24 months tend to initiate physically aggressive interactions (Dunn and Munn, 1985). For both males and females, having a sibling clearly increased the likelihood of mothers reporting physically aggressive behaviour, except for boys' biting, and boys and girls being cruel.

No significant differences in the use of physical aggression were observed between boys and girls who had siblings, except for the kicking item which was more frequent for boys. However, a number of significant differences were observed between males and females who did not have siblings. Behaviours such as taking away things from others and biting were more prevalent among

Table 3: Prevalence (%) of physically aggressive behaviour by 17 months of age

	Boys		Girls	
	Sibs	No sibs	Sibs	No Sibs
(1) Takes away things from others	79.0	68.2 <sup>b</sup>	74.5	54.7 <sup>b</sup>
(2) Pushes to get what he/she wants	59.1	38.0	50.4	30.2
(3) Threatens to hit	25.2	21.3	24.2	17.8
(4) Hits	21.0	15.7	15.0	7.4
(5) Bites	29.4	29.7 <sup>b</sup>	30.1	17.7 <sup>b</sup>
(6) Kicks	37.8 <sup>a</sup>	15.8	25.1 <sup>a</sup>	31.1
(7) Physically attacks	23.1	15.7	26.8	13.1
(8) Fights	32.9	9.1	30.7	12.1
(9) Starts fights	16.1	8.3	16.3	5.6
(10) Bullies	9.8	5.6	9.9	6.5
(11) Cruel	2.8	3.7	3.3	6.6
(12) Any one of 1 to 11	93.7	89.9 <sup>c</sup>	90.8	68.2 <sup>c</sup>
(13) Any one of 1 to 11	80.4	69.5 <sup>c</sup>	80.4	49.5 <sup>c</sup>

Notes: <sup>a</sup>Boys with siblings differ from girls with siblings ( $p < 0.05$ ); <sup>b</sup>Boys without siblings differ from girls without siblings ( $p < 0.05$ ); <sup>c</sup>Boys without siblings differ from girls without siblings ( $p < 0.01$ ).

boys without siblings than girls without siblings. The interaction effect between sex and presence of sibling was seen most clearly (lines 12 and 13 of Table 3) when we calculated the percentage of boys and girls who had received a positive rating on at least one of the 11 items, or one of the 10 items left after having excluded the most frequent, and possibly less physically aggressive item (taking away things from others). To our knowledge, this is the first time that such an interaction has been observed. It suggests that sex differences in physical aggression at that age are highly dependent on context. It is also noteworthy that the presence of the interaction depends on the type of physical aggression that is being assessed.

#### *Cumulative onset of physical aggression*

When mothers reported that their 17-month-old child had sometimes or often manifested one of the physically aggressive behaviours, we followed up by asking at what age they had manifested the behaviour for the first time. This gave an estimate of the age of onset for each of these behaviours. These are of course retrospective data which resemble the earlier reported data from the Pittsburgh Youth Study (Loeber and Stouthamer-Loeber, 1998), where parents and early adolescents were asked to recall the age of onset of minor aggressions, fighting and serious violent behaviours. However, there is an important difference, in that the period of recall for the infants is 10 to 12 months compared with 10 to 12 years when parents of adolescents or adolescents are questioned.

Figure 3 shows the cumulative age of onset of pushing, hitting and kicking. Some children are reported to start these behaviours before their first birthday. But the action really starts in the first few months after that first birthday. The cumulative onset rate of pushing is faster than that of kicking and hitting.

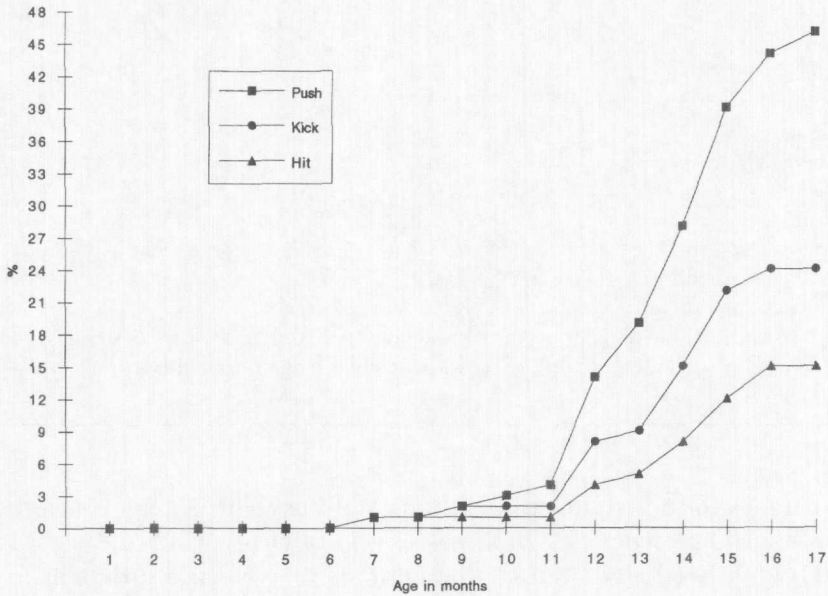


Figure 3: Cumulative onset of physically aggressive behaviour.

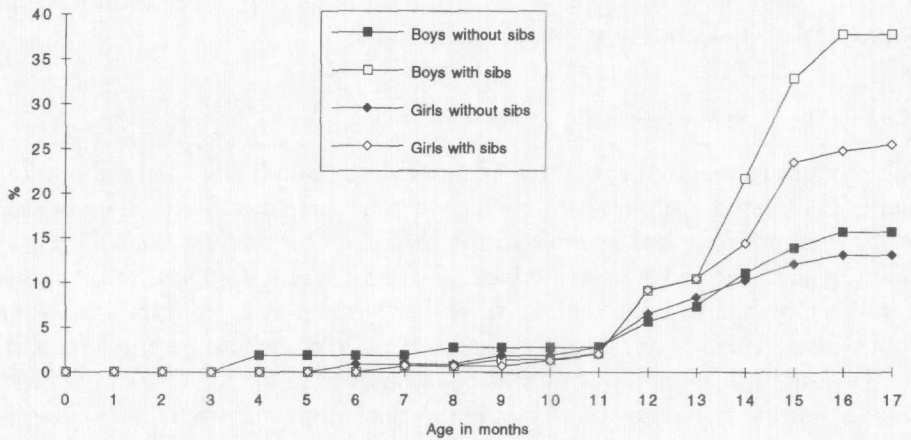


Figure 4: Cumulative onset of kicking others for boys and girls with and without siblings

Pushing appears to precede kicking, and the latter appears to precede hitting. If we change the label on the X axis from months to years, the developmental trend could easily be mistaken for the one described by Loeber and Stouthamer-Loeber (1998) for the cumulative onset of minor aggression, fighting and serious violence from three to 16 years of age.

Figure 4 illustrates a breakdown of the 'kicking' onset curve for males and females with and without siblings. A survival analysis revealed significant differences between the four groups with respect to their 'kicking' onset curve (log rank (3, 511) = 23.98,  $p < 0.000$ ). While the cumulative onset curve of the four groups was similar up to the age of 12 months, group differences became evident between 13 and 17 months of age. Boys with siblings had the steepest cumulative onset curve followed by girls with siblings. The cumulative onset curve of the boys without siblings was much less steep and was similar to the curve for girls without siblings.

### Conclusion

Mothers' reports on the frequency of physical aggression of their 17-month-old child and the age of onset of these behaviours provide evidence that physical aggression by humans can appear before the end of the first year after birth, and that the rate of cumulative onset increases substantially from 12 to 17 months. By that age, onset of physical aggression is reported for close to 80% of the children. From other studies, it appears that the peak in terms of total frequency of physical aggressions is reached by the end of the second year after birth. After this peak of the 'terrible twos', the frequency of physical aggression appears to show a continuous decline up to adulthood (see Figure 2).

This view of the mean developmental trend of physical aggression makes it difficult to understand how we could support the idea of 'onset' of physical aggression during the elementary school years, during adolescence, or during adulthood. The large majority of children will have had a period of relatively frequent physical aggression during the first two to three or four years of life. By school entry, most children seem to fit the 'desistors' category. If there are children who increase the frequency of their physical aggressions after the preschool age, the term 'relapse' may be more adequate than the term 'onset' to describe these children. There are probably some children who never used physical aggression during the preschool years. It is most likely that most of them do not use physical aggression as they grow older. Some might, however, and it would be extremely interesting to understand what triggers a meaningful onset of chronic physical aggression or an isolated incident of serious physical aggression, after an early childhood without physical aggression. However, to study this category of individuals, we clearly would need good data from early childhood onward for an extremely large sample.

The search for the onset of aggression has focused on middle childhood and adolescence. Developmental models of antisocial behaviour usually describe

physical aggression as the outgrowth of prior problems, such as opposition, disobedience and hyperactivity. Yet studies of infants indicate that onset of physical aggression is probably as early as the forms of opposition and disobedience, which have been included in these models. By the end of the second year after birth, physical aggression appears to be a normative behaviour. While most children have learned to inhibit physical aggression by their entry into kindergarten, a minority have not, and some of these children may become lifelong chronic cases. These chronic cases are extremely resistant to therapeutic interventions, and they may well be those who showed higher levels of physical aggression during the first 24 months after birth. Thus, there may be two main developmental trajectories of physical aggression, the childhood limited and the life-course persistent. The childhood-limited trajectory would include those who desist before school entry, and those who desist during elementary school or early adolescence (see Nagin and Tremblay, in press). Understanding the causes and consequences of earlier and later desistance should be an important research focus.

The fact that most children appear to learn to inhibit physical aggression between birth and three or four years of age, added to the fact that those who appear not to have learned to inhibit physical aggression during that period will have great difficulty learning to do so later on, may be an indication that there is a sensitive period for learning to inhibit physically aggressive behaviour. If this were the case, then the first three or four years of life should provide the best window of opportunity to prevent the development of chronic physical aggression. To our knowledge, most preventive interventions in the preschool years have not made learning to inhibit physical aggression a main component of their curriculum. In fact, the focus of research over the past few decades, largely inspired by the social learning hypothesis (Bandura, 1973), has been on how children learn to aggress, rather than on how children learn not to physically aggress. The answer to the latter question may be extremely useful to answer the former question and develop preventive interventions.

The study of aggression is slowly taking a life-course perspective. The focus over the years has shifted from adults to adolescents and to children. The next step should be early childhood. To make this shift, we need to better define not only what we mean by aggression, but also what we mean by physical aggression and by chronic physical aggression.

#### Notes for future research

- (1) Some of the questions that need to capture our attention: Why do most toddlers use physical aggression? Why do most children learn to inhibit physical aggression? Why do some children fail to learn to inhibit physical aggression? Why do some relapse? (during childhood, during adolescence, during adulthood). Why do some individuals never use physical aggression, even under the most appropriate conditions? Do some start using physical aggression only after early childhood? If so, why?

- (2) It will be difficult to prove that there are really late-onset cases of physical aggression. It is most likely they are those cases for which we simply have not recorded their earlier physical aggression. If there are late-onset cases, there are probably very few. This will make them still harder to detect. We must not confuse them with occasionals, that is those who at any one point in time can show a short period of extreme (e.g. killing someone) or less extreme (e.g. child beating or wife abuse) physical aggression, but are not and have not been chronic cases.
- (3) Are there real desistors? Most humans appear to be desistors after early childhood, but most can at any one point in time act in a physically aggressive way. Most humans have physically aggressed at one point in time and are capable of doing it again. When we talk of early or late onset, we need to clearly define onset of exactly what kind of behaviour, over which period of time, and in which context.
- (4) If there were a significant number of individuals who were never physically aggressive during early childhood but started displaying serious physical aggression later on in life (late onset: during late childhood, adolescence, or adulthood), one could hypothesize that experimentation with physical aggression during infancy and toddlerhood is a means of learning to effectively inhibit physical aggression.
- (5) To create adequate models of the life-span development of physical aggression and physical violence, we will need to chart the course of physical aggression during early childhood and study the mechanisms which underlie the different trajectories.
- (6) To completely characterize these developmental trajectories we will naturally also have to follow the course of physical aggression from early childhood to adulthood.

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