

Prevalence of Father-Child Rough-and-Tumble Play and Physical Aggression in Preschool Children

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Abstract

Three samples of francophone subjects from Quebec (Canada) are used to establish the prevalence of parent-child RTP according to different personal, social and family variables, and to verify if children who engage in more RTP with their father exhibit less physical aggression towards other children and are more competitive without resorting to aggression. Our results showed that 24 to 43% of fathers engaged in RTP with their children on a daily basis, and only 4 to 16% of fathers never do. Moreover, personal characteristics such as the age and sex of the participants seemed to have a greater influence on the frequency of parent-child RTP than variables related for example to work, socio-economic conditions, or the living environment. The hypothesis that children who engage in more RTP with their fathers display less physical aggression towards their peers is invalidated here. We have concluded that it is important that not only RTP frequency, but also and especially indicators of RTP quality be used. Future observational studies of father-child RTP are required in order to do so. Finally, certain preliminary results support the hypothesis that father-child RTP fosters the development of the competition skills in children without using aggression.

Key words: rough-and-tumble play, aggression, preschool, father, prevalence

Résumé

Trois échantillons de sujets francophones du Québec (Canada) ont été utilisés afin d'établir la prévalence des jeux de bataille parent-enfant en fonction de différentes variables personnelles et socio-familiales, et de vérifier si les enfants qui font davantage de ces jeux avec leur père font moins d'agressions physiques envers les autres enfants et sont plus compétitifs sans utiliser l'agression. Nos résultats ont montré que 24 à 43% des pères font quotidiennement des jeux de bataille avec leurs enfants, et que seulement 4 à 16% des pères n'en font jamais. De plus, la fréquence des jeux de bataille parent-enfant semble être influencée davantage par les caractéristiques personnelles tels l'âge et le sexe des participants que par des variables reliées par exemples au travail, aux conditions socio-économiques, et au milieu de vie. L'hypothèse voulant que les enfants faisant plus de jeux de bataille père-enfant font moins d'agressions physiques envers les pairs est ici infirmée. Nous avons conclu à l'importance d'utiliser, non pas seulement la fréquence des jeux, mais aussi et surtout des indices de leur qualité. Pour cela, il est essentiel dans l'avenir d'entreprendre des études observationnelles des jeux de bataille père-enfant. Finalement, certains résultats préliminaires soutiennent l'hypothèse que ces jeux permettent le développement chez les enfants d'habiletés de compétition sans besoin d'utiliser l'agression.

Mots-clés: jeux de lutte, agression, préscolaire, père, prévalence

Introduction

Our intention is first to present an ethological model suited to analysis of the functions of father-child play fighting in the social adaptation of children, and then to attempt to determine the prevalence and correlates of parent-child RTP.

The inhibition of physical aggression in children

Recent data has provided an increasingly clear picture of the trajectory of physical aggression from infancy to adulthood (Nagin & Tremblay, 1999; Loeber & Hay, 1997; Tremblay, Japel, Pérusse, Boivin et al., 1999). Contrary to what was previously believed to be true, the frequency of physical aggression does not increase with age but rather diminishes in most cases. The prevalence of physical aggression is greatest at around the age of two years, but subsequently declines radically until school age, and then more regularly until adolescence. The age of two also corresponds to the “terrible two’s” when parents and child care workers experience greater difficulty with children. Transversal studies have shown that the average frequency of aggressive behavior diminishes between the ages of 2 and 5 years in favor of pro-social behaviors (Restoin, Montagner, Rodriguez, Girardot et al., 1985). The early presence of physical aggression points to its potential role in competition for local resources, and thus for survival. Indeed, it is as of the age of two that hierarchies of dominance become apparent in groups of children in child care (Gauthier & Jacques, 1985), hierarchies which determine priority of access to resources (toys, parents, child care workers, etc.) while

avoiding conflict among peers. Thus, there has been a slight change in perspective. It is no longer a question of studying the conditions that foster the development of physical aggression, but rather of attempting to understand the social mechanisms associated with its inhibition, socialization mechanisms that fail in the case of the minority of children who continue to manifest aggressive behavior.

Human and nonhuman primates comparison

The comparison of the characteristics of human beings with those of other primates may be highly enlightening in this regard. Primate research has shown that, in the majority of non-human primate species, as in humans, males are more physically aggressive than females (Fedigan, 1982). As early as preschool age, boys are known, on average, to be more physically aggressive and to have a greater tendency to dominate their peers, to be more active, more impulsive, more demanding, and more adventurous than girls (Block, 1983; Coie & Dodge, 1997). According to Campbell and Eaton's (1999) meta-analysis, boys' greater level of activity begins in infancy. The sexual differences with regards to physical aggression have been verified in all cultures studied (Maccoby & Jacklin, 1974). While a certain number of girls may be just as and even more physically aggressive than boys, girls on average have a greater tendency to engage in indirect aggression (e.g.: gossip) and to isolate (see Sanchez-Martin, Fano, Ahedo, Cardas et al., 2000).

Another characteristic shared by both human and non-human primates concerns rough-and-tumble play (RTP). RTP refers to vigorous behaviors, such as wrestling, grappling, kicking and tumbling, which happen in a play context (Pellegrini & Smith,

1998). Young male primates play together more often and more vigorously than females (Chalmers, 1983), as in many mammal species (Smith, 1982), and in all the cultures studied, boys tend to engage in more RTP than girls (Carson, Burks & Parke, 1993). In short, sexual differences with respect to the frequency of both serious and playful aggression would seem to be due to children's predispositions, which are reinforced to varying extents by the parents (see Boulton & Smith, 1992).

But, contrary to the vast majority of nonhuman primates, human males, depending on the culture (Roopnarine, Ahmeduzzaman, Hossain & Riegraf, 1992), engage in physical play with children (Biben & Suomi, 1993). This can be largely explained by the fact that humans live longer than other primates, and are also dependent as children on their parents for longer to learn the great number of things necessary to their adaptation to an environment which has become increasingly complex over the course of history (MacDonald, 1993). Physical play includes such well-known forms of play as physical exercises with infants, throwing the child in the air and catching him again, bouncing the child on the parent's knee, playing "horsy", tickling, and, as of preschool age, rough-and-tumble play (RTP).

Father-child and mother-child play

Little research has been conducted on physical parent-child play. Empirical research into paternal involvement has shown fathers to generally have less involvement than mothers in all aspects of parenting with the exception of physical play. Mothers spend more time with their infants than fathers, but the time devoted to physical play compared to other activities is proportionally more important for fathers (Bronstein,

1984; Keyes & Scoblic, 1982; Russell & Russell, 1987). Fathers tend to excite their children whereas mothers tend to contain them (Dixon, Yogman, Tronick, Adamson & Brazelton, 1981). Infants respond to fathers with more excitement when the fathers develop heightened, stimulating, and playful relationships (Yogman, 1994). Also, from the beginning of children's second year of life to their tenth, fathers engage in vigorous physical play with them more frequently than mothers, whereas mothers engage primarily in cognitive object-mediated play and role-playing (Crawley & Sherrod, 1984; MacDonald & Parke, 1986). Fathers spend more time and engage in more physical play with their sons than with their daughters (Jacklin, DiPietro & Maccoby, 1984), whereas mothers encourage their daughters' pretend play more than their sons' (Tamis-LeMonda & Bornstein, 1991). Children – especially boys – prefer physical play with either parent to any other form of play, but their pleasure seems to be more intense during physical play with their fathers (Ross & Taylor, 1989), while fathers in particular engage in more RTP-type physical play with them (Carson, Burks & Parke, 1993; MacDonald & Parke, 1986). As a result, mothers are perceived by children primarily as a source of well being and security, while fathers are the preferred playmates, particularly for boys (Lamb, 1996). Infants may be predisposed to seek an appropriate balance of both stimulation and calm (Yogman, 1994). In the same way as children use signals to maintain proximity and receive care from adults, they also seek out intense stimulation, prompting both men and women to provide such stimulation for them in non-stressful contexts, but receiving it primarily from men. Yogman (1994) suggests that fathers may play both an indirect and a direct role in children's lives: an indirect role via the emotional and physical support given to the mother during stressful periods; and a direct role in the development of

exploration and autonomy in the child as early as the child's second year of life, during non-stressful periods. Thus, it is possible that parent-child physical play, which peaks around the age of four (8% of interactions: Pellegrini & Smith, 1998), has an determining impact on the child's acquisition of social skills in physical play with other children, which in turn peaks between the ages of 8 and 10 (at roughly 10% of interactions: Pellegrini & Smith, 1998).

The socialization of aggression

As the father has himself a tendency to be more aggressive, he is perhaps better suited than the mother to help his sons control their aggression by teaching them to express it in a socialized manner at an appropriate time, provided of course that he has not developed behavioral problems himself over the course of his development. One may therefore hypothesize, like Carson, Burks and Parke (1993), that fathers teach their children to control their aggressive emotions by initiating them to confrontation through RTP. In both physical and pretend play, fathers adopt a more directive style with children than mothers (Kazura, 2000), especially with their sons (Farver & Wimbarti, 1995). Indeed, it is clear that during RTP, the competent father "activates" the child, i.e. he positively stimulates the child without overstepping the limit that might result in a fit of tears or true display of aggression by the child.

Studies with animals have clearly established a relation between play and socialization, particularly in primates (see Hughes, 1999). In monkeys, the socialization experience is provided through peer play. Rhesus monkeys raised by their mothers but prevented from playing with peers were later rejected by their age-mates, and even

displayed many aggressive behaviors (Novak & Harlow, 1975). Five main functions have been attributed to RTP: 1- promoting social cohesion by encouraging the formation of social ties between youngsters (Bekoff, 1984); 2- permitting the development of fighting skills (Pereira & Altmann, 1985); 3- familiarizing the young with dominant and subordinate roles (Pereira & Altmann, 1985); 4- permitting assessment of one another's strength and abilities (Poirier & Smith, 1974); and 5- fostering the establishment and maintenance of dominance (Paquette, 1994). This therefore gives rise to the hypothesis that fathers help children learn the competition skills required for their future social adaptation and the necessary competition of the adult world (Hughes, 1999). Le Camus, de Léonardis and Lescarret (1989) concluded from their study that, compared to single-parent children, dual-parent children tend to be more mobile, active and autonomous, and have a more elaborate sociality both in terms of contestation and collaboration. Bourçois (1997) has shown that, in dual-parent families, children from involved and differentiated parents (distinct functions: caregiving versus play) present a more highly developed sociality, and are better prepared for both competition and cooperation. What we understand here by competition skills is not only physical fighting skills, but also and especially those psychological attributes that permit one to defend oneself, to face adversity and environmental threats, a level of self-esteem that enables one to confront others when it is necessary to fight for one's rights, and the ability to deal with conflict in a socialized manner without either using aggression or avoiding problematic situations that it may not always be possible to resolve through cooperation and sharing. This need to develop competition skills no doubt varies across cultures. Studies of Aka pygmies (Central African Republic), Chinese Malaysian and Indian families have shown an

absence or low frequency of parent-child physical play in these societies which value sharing and cooperation, whereas industrialized societies are characterized by strong competition, and value independence and assertiveness (Roopnarine, Ahmeduzzaman, Hossain & Riegraf, 1992).

Objectives

The objectives of this article are twofold. First, we will verify with three samples from the francophone population of the province of Quebec (Canada) which variables influence the prevalence of parent-child RTP. Then, we will attempt to verify if children who engage in more RTP with their father manifest less physical aggression with peers and do more non-aggressive competition.

Method

To achieve our objectives, we analyzed three databases using a question about the frequency of parent-child play fighting: *ProsPère*, *Père-En-Jeux*, and QLSCK. The characteristics of these samples are presented in the Table 1.

Table 1 about here

*ProsPère*² Project

² *ProsPère* is a project of GRAVE-Ardec, the Groupe de recherche et d'action sur la victimisation des enfants, at the Université du Québec à Montréal.

The *ProsPère* project is an action research aimed at assessing the community model of support for paternal involvement with young children. A representative sample of subjects was recruited from two semi-rural communities north of Montreal and from two Montreal neighborhoods (Quebec, Canada). The four communities were required to meet the following criteria: (1) presence of over 300 families with at least one child under six years of age, and (2) a total of at least 25% of families living under the poverty line. A letter was sent to each of the families prior to the interview to inform them of an upcoming in-home visit. Households were excluded from the study only after six unsuccessful attempts to meet the family. The final sample is composed of 468 dual-parent, francophone families with at least one child between the ages of 0 and 6 years living in a disadvantaged area. Spouses were required to have cohabited for at least one year.

Fathers (biological or not) and mothers participated in separate face-to-face interviews, beginning with the father. In order to avoid potential reading difficulties and confidentiality issues, participants were simply asked to point to a number on a scale drawn on a card (placed in front of them).

Père-En-Jeux Project

Seventy-five (75) fathers of children between the ages of 20 and 72 months were recruited through notices placed in store entrances and local community health centers (CLSC) of different neighborhoods in the city of Montreal (Canada). The father was then asked to check whether his spouse (regardless of whether she was the mother of the child

or not) would also be willing to participate in the research project: 43 of the spouses agreed. Data collection took place in two stages. During the first in-home visit, after a period spent familiarizing the child with the male assistant and the camera that had been set up in a corner of the living room, the father and mother were filmed one after the other in two parent-child play formats: 1- seven minutes of play in the presence of various toys supplied by the study; and 2- seven minutes of play without toys. Each of the parents then completed a questionnaire on their socio-economic characteristics and their play habits with their child. During the second visit, six months later, each of the parents completed a questionnaire on their child's social behaviors.

In this project, the child's physical aggression (fighting, hitting, biting, etc.) was assessed using 10 Likert-type questions (on a three-point scale, from *Never* to *Often*) completed by the father and the mother, the same instrument used by Tremblay et al. (1999). "Non-aggressive competition" involved 4 Likert-type questions (on a six-point scale, from *Never* to *Always present*) also completed by the parents regarding competition or conflict situations in which for example the child negotiates with others without using aggression. The internal consistency of the two indicators, assessed using Cronbach's alpha, was 0.80 and 0.66 respectively.

QLSCK Project

The Quebec Longitudinal Study of Children in Kindergarten (QLSCK) is a school-based sample of 1000 males and 1000 females who were randomly selected from children attending kindergarten in the Canadian province of Quebec in 1986-1987. The

original goal of the study was to examine the development of psychosocial maladjustment and to identify related risk and protective factors in a population-based, representative sample. Yearly assessments of the children's behaviors, family dimensions, and social environment were obtained from mothers and teachers when the subjects were aged 6 to 12 years old. The boys and girls and their parents were interviewed again when the subjects were 15 years old. Recently, another round of interviewing was conducted when the participants were 21 years old. Based on the questionnaire used for the Père-En-Jeux project, a retrospective version was developed and administered to the young adults. Results presented here are from preliminary data available for a sub-sample of 372 subjects. Data collection is still currently ongoing with this sample. Based on the chi-squared analyses and *t*-tests we have conducted, the sub-sample of 372 subjects does not differ from the complete sample in terms of the variables selected for our study (age, income, schooling, frequency of aggression, etc.). The characteristics of this sample are summarized in Table 1. The family income was assessed when the children were 8 years old rather than 6.

In this project, the children's "fighting" scale was assessed based on 3 questions completed by their kindergarten teacher. The internal consistency of this scale, assessed using Cronbach's alpha, was 0.87.

Results

Prevalence of parent-child RTP

1- *ProsPère* Project

This sample was characterized by a high percentage of parents engaging in RTP with children: 86.5% of the fathers and 73.4% of the mothers reported having play-fights at least twice a week (Table 2). Nevertheless, the sex of the parent had no significant impact on parent-child RTP distribution. About 40% of the parents said they engaged in RTP every day (Table 2). However, a paired samples t-test showed the average frequency of father-child RTP to be significantly higher than the average frequency of mother-child RTP ($t=4.38$, $df=456$, $p<.001$).

Table 2 about here

We found no significant difference in father-child RTP distribution based on rural/urban living environment, the sex of the child, the age of the father, whether the father was employed or not, the father's work schedule (daytime during the week versus others), his income and level of schooling. The frequency of father-child RTP ($\rho=-.13$, $p<.01$, $n=459$) as well as that of mother-child RTP ($\rho=-.20$, $p<.001$, $n=459$) were correlated with the age of the child. Father-child RTP peaked at 12-35 months and mother-child RTP at 12-23 months, after which the proportion of parents engaging in this type of play every day diminished progressively until the age of 72 months.

The *t*-test showed the average frequency of father-son RTP to be significantly higher than that of father-daughter RTP ($t=2.05$, $df=457$, $p<.05$). While mother-daughter RTP variance were significantly higher than that of mother-son RTP ($F=8.01$, $p<.01$), the average frequencies were not significantly different.

We also found a negative correlation between father-child RTP and the age of the father ($\rho = -.11$, $p < .05$, $n = 459$), and between mother-child RTP and the age of the mother ($\rho = -.12$, $p < .05$, $n = 459$). Fathers between the ages of 30 and 34 years as well as those 50 years or older tended to engage in slightly more RTP on a daily basis.

Nor did we find any significant difference in mother-child RTP distribution by rural/urban living environment, the sex of the child, the age of the mother, whether the mother was employed or not, the mother's work schedule (daytime during the week versus others), her income and level of schooling. On the other hand, mothers under the age of 30 and those 45 years and older tended to engage in slightly more RTP on a daily basis.

2- *Père-En-Jeux* Project

Frequency of parent-child RTP

Thirty-seven percent (37.2%) of the women said that they never engaged in this type of activity with their children, compared to only 16% of the men. Indeed, it appears that one man in two (50.7%) and less than one woman in four (23.3%) engaged in RTP with their children at least once a week. Finally, one man in four (24.0%) and less than one woman in ten (9.3%) did so every day. Asked about the frequency of their spouses' play with the children, 16.2% of the fathers said that the mother had tickle- or play-fights with the children often or very often, while 41.9% of the mothers revealed that the father engaged in such play with the children often or

very often. Father and mother RTP distribution was not differentiated in this sample (Table 3; $\chi^2=6.68$, $df=4$, $p>.05$). However, the paired samples *t*-test showed the average frequency of father-child RTP to be significantly higher than the average frequency of mother-child RTP ($t=2.24$, $df=25$, $p<.05$)

Table 3 about here

Comparison of frequency distributions (Table 3) showed that both mothers and fathers not engage in RTP with boys more frequently than with girls ($\chi^2=6.73$, and $\chi^2=5.46$ respectively, $df=4$, $p>.05$). However, the *t*-test demonstrated that the average frequency of father-son RTP tended to be higher than that of father-daughter RTP ($t=1.76$, $df=61$, $p<.10$). We found no significant difference in RTP distribution according to whether the father worked or not, his income, his work schedule (daytime during the week versus others), or the father's level of schooling. On the other hand, there did seem to be a tendency for fewer fathers whose personal income exceeded \$40,000 to engage in RTP with their children every day. The proportion of fathers (54%) engaging in RTP with their children was considerably higher when the children were between the ages of 24 and 35 months: it dropped to approximately 25% as of the age of 36 months. It was also higher when the father was under 30 years or over 45 years ($\chi^2=7.99$, $df=3$, $p<.05$). However, parent-child RTP was not significantly correlated with the age of the child or that of the parents.

The sample of mothers here was too small to verify the impact of maternal variables on mother-child RTP distribution.

Quality of parent-child RTP

Three indicators of RTP quality were explored with the *Père-En-Jeux* parents: the frequency of times such play ended with the child in tears, the frequency of times the child became angry during play, and the child's motivation to win. No significant difference between the girls and the boys regarding their average motivation to win was found using the *t*-test. Table 4 reveals that approximately half of the fathers and mothers said that their child never displayed anger during play with the parent. Slightly more children cried during such play with their father than with their mother (61% versus 50%), but the difference was not significant. We also noted that more girls than boys (70% versus 40%) never became angry when playing with their mothers; and 20% of the boys regularly or often became angry with their mothers compared to 0% of the girls. Finally, approximately one boy in two occasionally became angry when playing with his father, compared to one girl in three.

Table 4 about here

The mothers who played with their daughters reported that their daughters were not very motivated to win the play-fights, while the mothers who played with their sons reported that their sons were highly motivated to win (Table 5). On the other hand, the fathers reported the girls, just like the boys in general, to be highly motivated to win (Table 5).

Table 5 about here

There was a significant correlation in *Père-En-Jeux* between the duration of father-child RTP and the frequency of such play ($\rho = .38, p < .01, n = 60$) as well as the motivation to win ($\rho = .35, p < .01, n = 58$). It should be noted that there was no significant relationship among these same variables in mother-child play ($p > .05, n = 25$). Finally, there was no significant correlation in the *Père-En-Jeux* project between RTP frequency and the motivation to win.

3- *QLSCK* Project

Frequency of father-child RTP

The fathers seemed to engage in RTP less frequently in this sample than in the other two projects. Indeed, 25% of the children revealed fifteen years later that their fathers had never engaged in this type of activity, and only 4% had done so every day (Table 6). While slightly more girls than boys (30% versus 18%) said they had never engaged in RTP with their fathers, there was no significant difference in the two frequency distributions (Table 6). The average frequency of father-son RTP tended to be higher than that the father-daughter RTP, but the difference was not significant ($t = 1.65, df = 360, p < .10$). There was a negative correlation between father-child RTP and the father's age ($\rho = -.16, n = 352, p < .01$). Comparison of the age categories for the fathers revealed a progressive decrease in the percentage of fathers engaging in RTP at least once a week from the '25-29 years' category to the '45 years and older' category. We did not,

however, find any impact of the father's level of schooling, the fact that he worked or not, or the family income on the RTP frequency distribution reported by the children.

Table 6 about here

Quality of father-child RTP

There was no difference whatsoever between girls and boys in terms of RTP frequency, the children's motivation to win, the frequency with which the children got hurt or cried, or the frequency with which they became angry during or just after such games. The boys reported a higher average motivation to win score than the girls ($t=2.20$, $df=350$, $p<.05$). We found a significant correlation between the RTP frequency and the motivation to win ($\rho=.25$, $p<.001$, $n=271$).

Both boys and girls seemed to have enjoyed playing such games with their fathers just as much. Fifty-one percent (51%) of the children revealed that they liked RTP with their father very much (only 9% of the children said they did not like it at all). Forty-nine percent (49%) said they were very motivated to win (only 14% had little motivation). Finally, 71% said that such games never ended in them getting hurt or crying, while 64% never became angry during such games.

Relation between father-child RTP, physical aggression and non-aggressive competition

1- *QLSCK* Project

There was a slight but significant correlation between physical aggression in six-year-olds as reported by their teachers and father-child RTP frequency as reported retrospectively by the children at the age of 21 ($\rho=.15$, $p<.01$, $n= 359$: Table 7). The children who were the most aggressive at school were also those who engaged in the most RTP with their fathers at home.

Table 7 about here

Given that the average level of physical aggression among the boys was significantly higher than that of the girls ($t=4.39$, $df=208$, $p<.001$; significantly different variances: $F=36.75$, $p<.001$), we decided to recalculate the correlations according to the sex of the child, and found there to be a significant correlation between RTP and physical aggression only in the boys ($\rho=.24$, $p<.01$, $n=135$).

2- *Père-En-Jeux* Project

There was no significant correlation between the child's physical aggression as reported by the father and the father-child RTP frequency, the duration of such RTP, or the child's motivation to win (Table 7). However, the motivation to win during RTP was shown to be significantly correlated to non-aggressive competition in children ($\rho= .67$, $p<.01$, $n=19$). Further, the correlation found between the duration of father-child RTP and competition was nearly significant ($\rho=.40$, $p<.10$, $n=19$). In other words, children who

competed the most without using aggression towards the other children tended to engage in lengthier father-child RTP, and were more highly motivated to win such games.

Discussion

The consequences of parent-child physical play on the socioemotional development of children are largely unknown and merit more research, especially with respect to fathers given that the studies conducted in the 1980s pointed to the propensity of fathers for this type of activity beginning in their children's infancy. We have chosen to focus on rough-and-tumble play here because children (especially boys) often engage in such play together when they reach school age and it is probably one of the forms of physical play the most commonly used by parents (especially fathers) beginning in the second year of their child's life, at least in industrialized societies. Furthermore, given its resemblance to fighting, rough-and-tumble play is also undoubtedly the type of physical play that best lends itself to a study of its function.

Prevalence of father-child RTP according to the samples

It is important, first of all, to establish the prevalence of father-child RTP in the population. The comparison we have made in this article of the three projects underscores considerable variation in the prevalence of father-child RTP (Table 8). The *ProsPère* project with dual-parent families recruited in disadvantaged neighborhoods showed that 43% of the fathers engaged in RTP on a daily basis with their children, while the prevalence of this was 24% in the *Père-En-Jeux* project conducted with families that

were slightly less socio-economically disadvantaged. We should point out that *Père-En-Jeux* differs from *ProsPère* in that recruitment of families for the former was conducted by approaching the fathers directly, while researchers generally tend to go through the mothers even for research on paternity. While the *Père-En-Jeux* fathers were certainly more willing and motivated to participate, RTP prevalence in this sample proved to be lower than in *ProsPère*. However, data on paternal involvement is more questionable when the fathers' participation in the project is primarily due to their spouses' influence. On the other hand, it is important to mention the small size and non-representativeness of the *Père-En-Jeux* sample. The use of the video in *Père-En-Jeux* may also have caused a sample bias by selecting only those fathers who were comfortable being filmed with their children at home.

Table 8 about here

The prevalence of daily father-child RTP was only 4% in the QLSCK project. It should be noted that father-child RTP during childhood was reported not by the fathers as in the other two projects, but by the children themselves at the age of 21 years answering retrospectively about the period from 0 to 11 years. Another characteristic that differentiated this sample from the other two was the greater average number of children in the home. In the QLSCK sample, contrary to that of *ProsPère*, the father-child RTP frequency distribution seemed to vary slightly depending on the number of children in the home: the more children there were, the less the father played with the children. But this is certainly not sufficient to explain such a low prevalence. It would undoubtedly have

been preferable to be more precise and ask subjects to report only father-child RTP occurring when they were of preschool age, although it would not for that matter have provided a greater guarantee of the accuracy of the memories.

Determinants of parent-child RTP frequency

Despite the missing data, comparison of the samples reveals a certain number of similarities and differences regarding the effect of different variables on RTP frequency (Table 8). The age of the child seems to influence RTP frequency. The *ProsPère* and *Père-En-Jeux* samples showed father-child RTP frequency to be greater before the age of 3. The *ProsPère* sample also revealed that mother-child RTP frequency was slightly greater before the age of 2, while the *Père-En-Jeux* sample of mothers was too small for this analysis to be conducted (this was the case for the other maternal variables as well). The MacDonald and Parke (1986) study involving 746 children (390 families) ranging from under one year to ten years of age showed a peak in parent-child play fighting at 3-4 years and a progressive decline until the age of ten.

MacDonald and Parke (1986) also found a negative correlation between the frequency of play fighting and the age of the parent (father and mother), but the correlation was not significant when controlled for age of child. Our results also revealed a low but significant negative correlation in the two large *ProsPère* and *QLSCK* samples. But in the *ProsPère* project, the sample in which it was possible to control for the child's age, correlation between parent-child RTP and the age of the parents was no longer significant after controlling for the age of the child, as per the results of the study by MacDonald and Parke (1986). However, *ProsPère* and *Père-En-Jeux* clearly showed the

presence of two peaks in father-child RTP: at under 30 years, and at over than 45 years (*Père-En-Jeux*) or at over 50 years (*ProsPère*). The QLSCCK project showed only one peak, at between 25 and 29 years (no father was under 25), followed by a progressive decline in RTP frequency. Nevelle and Parke's (1992: in Carson et al., 1993) observational study has revealed that fathers 25 years or younger engage in more physically stimulating play than fathers 30 years or older. The *ProsPère* sample showed that mothers tended to engage in RTP more frequently when they were under 30 years or over 45 (rather than 50 years for the men of the same sample). Future research should be conducted to verify if parent availability (related for example to employment or career) may influence this U-curve tendency.

Table 8 also shows that father-child and mother-child RTP frequencies are not influenced by the rural/urban living environment, employment, schooling or income. It does, however, reveal a certain tendency in the *Père-En-Jeux* project: fewer fathers with an income in excess of \$40,000 played such games every day. In the QLSCCK project, the frequency distribution of father-child RTP did not vary according to annual family income. Finally, the samples showed effects of the sex of the child and the sex of the parent on parent-child RTP, fathers tending to engage in more RTP with boys than with girls. Mother-child RTP was not assessed in the QLSCCK project, and the sample of mothers in the *Père-En-Jeux* project was too small to verify if mothers engaged in more RTP with boys than with girls. MacDonald and Parke (1986) also underscored the interactive effect of the sex of the parent and the sex of the child on play fighting.

In light of our results, environmental conditions seem to have little effect on parent-child RTP as compared to personal characteristics such as the age and sex of the

participants. Several studies have shown that parents even tend to preserve their typical paternal or maternal style of play (physical vs. pretend), independently of social and family conditions (Field, 1978; Field, Gewirtz, Cohen, Garcia et al., 1984; Hossain & Roopnarine, 1994; Stuckey, McGhee & Bell, 1982). More studies should be conducted, on the one hand to verify this hypothesis, and on the other to verify if characteristics regarding the parents' personal history may influence RTP frequency.

Father-child RTP and physical aggression in peers

The hypothesis that children who engage in more RTP with their fathers display less physical aggression towards their peers was invalidated by the two samples we have used. It is important here to point out that there is generally no correlation between child-child RTP and child-child aggression during childhood (Pellegrini, 1988). Indeed, we found the opposite in the QLSCK project sample, i.e. a positive but low relation between these two variables: boys assessed as being more physically aggressive (by their teacher at age 6) fifteen years later reported more father-child RTP between the ages of 0 and 11 years. Two comments may be made on this result. First, according to Panksepp (1993), RTP is often viewed by adults as being violent, disturbing and potentially dangerous, and it is highly possible that the teachers confused fighting and play fighting and put the two together in their assessment. The recent study by Smith, Smees, Pellegrini and Menesini (2002) has shown that teachers do not agree with boys aged 5 to 8 years on the frequency of play fighting, while they agree on positive social interaction ratings. Moreover, the teachers' negative views of play fighting may be due to their being particularly concerned about the costs of play fighting (accidental injuries). They believe that about one third of

play fights turn into real fighting, when in fact play fighting leads to real fighting only in approximately one percent of play fighting bouts. As suggested by Smith et al. (2002), teachers may generalize their experience with rejected children (highly disliked by peers and exhibiting high levels of aggression), in whom one quarter of playfights turn into real fights, to all pupils. Secondly, the quality of father-child RTP is undoubtedly more important than its frequency. A father could very well engage frequently in RTP with his children while being overly controlling and even coercive with them, which could exacerbate the children's aggressivity rather than teaching them how to control it.

The few questions on the quality of RTP explored in *Père-En-Jeux* and in QLSCK enabled us to observe: 1- that girls enjoy games with their parents as much as boys; 2- that between 36% (as reported retrospectively by the children) and 52% (reported by the fathers) of children sometimes become angry; and 3- that between 29% (reported retrospectively by the children) and 61% (reported by the fathers) of children cry or get hurt during these games. However, the *Père-En-Jeux* project demonstrated that mothers seem to consider girls to be less motivated to win than boys, an observation true only of mother-child play as the fathers consider girls to be highly motivated to win. Future studies are required to confirm the result that boys become angry with their parents during RTP more often than girls.

From this, we have concluded that it is important, and even necessary, that future observational studies be conducted to identify the characteristics of quality father-child RTP, and the characteristics of paternal sensitivity in a play situation that should provide the child with pleasure and stimulation without resulting in tears or anger. The father must also be sensitive to his child's emotional state and allow an exchange of "dominant"

and “subordinate” roles, for example by regularly allowing the child the pleasure of having the upper hand.

As RTP is phylogenetically ancient (MacDonald, 1993), it certainly would be beneficial for future research into father-child RTP to take into consideration the mechanisms discovered in young non-human primates (and other mammals). RTP is a system composed of mechanisms aimed at promoting physical contact between participants while preventing injuries (Paquette, 1994). It is characterized first by the absence of agonistic signals such as threats and submission (Fagen, 1981). Second, as primates play, they generally exhibit a play-face that, by indicating non-aggressive intent to others, permits the dyadic interaction to be prolonged without outside intervention (Paquette, 1994). Third, individuals prefer to play with partners of the same age and sex, and similar size (Biben & Suomi, 1993). Fourth, stronger individuals (usually older ones) adjust their strength to match their play partner’s instead of using their full strength (self-handicapping: Fagen, 1981). Finally, shared time-outs and role reversal (Fagen, 1981) allow play to continue while avoiding an escalation of tension that might result in real conflict. All of these characteristics have also been observed in child-child play in different cultures (Boulton & Smith, 1992).

Further, in order to verify the hypothesis that fathers teach their children how to control their aggressive emotions through RTP, among other things, it would be preferable to develop good measures of children’s abilities to exercise self-control over their emotions in conflict situations, rather than evaluating only the frequency of physical aggression.

The fact that we did not establish a relation between father-child RTP and child-child physical aggression in the *Père-En-Jeux* sample is not surprising given that, to date, only 19 families have had their second interview with our assistants to assess their children's social behaviors. Further, these 19 families contain a total of only 9 boys whereas our model predicts this relationship will be found primarily in the latter. The coding of the *Père-En-Jeux* videotapes will undoubtedly permit us to find better indicators of RTP quality that will in turn permit us to better explore the link between physical aggression and RTP.

Father-child RTP and competition without aggression

It is possible that father-child RTP has a stronger relation to competition than to physical aggression in children. This is what is suggested by the preliminary *Père-En-Jeux* results. Non-aggressive competition (not significantly correlated with aggression) is shown to be related to two RTP variables: the duration and the child's motivation to win. Children who were able to live with conflict without aggressing others were those who were the most highly motivated to win at father-child RTP, and who tended to play for longer. Thus, the fathers may have succeeded in providing pleasure for the children in father-child RTP and enabling the latter to develop self-confidence in conflict situations. Given the low internal consistency of our measure of the concept of "non-aggressive competition", it would be important to replicate this study with a better scale containing more items.

Competition is generally considered socially inadequate by parents and educators whereas it is an integral part of the adult world. Indeed, the progressive increase in the

complexity of social life over the course of primate evolution made necessary an equilibrium between competition and cooperation. An individual who is always in competition mode would wind up socially isolated, which would prevent him from taking advantage of the benefits of social life. Conversely, an individual who has developed only cooperation skills would not know what to do to defend or assert himself in the numerous competitive situations that present themselves. Thus, more research should be conducted in order first to identify the competition skills children need to develop, and then to attempt to gain a better understanding of the balance between competition and collaboration that permits us to adapt optimally to our social environment.

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Table 1. Characteristics of the three samples

	<i>ProsPère</i> (n=468)	<i>Père-En-Jeux</i> (75 fathers & 43 mothers)	QLSCK (n=372)
Two biological parents	89.4%	87.5%	-----
Sex ratio (boys/girls)	235/233	38/37	139/223
Average age (years) of father (SD), range	37.8 (6.0) 23-63	33.6 (7.9) 20-55	35.8 (4.9) 25-56
Average age (years) of mother (SD), range	35.2 (5.0) 24-52	31.3 (7.2) 17-43	33.3 (4.5) 23-52
Average age (months) of children (SD), range	37.5 (19.6) 2-72	45.8 (12.9) 22-71	6 years
Average number of children	1.9 (0.9) 1-6	1.7 (0.8) 1-4	2.2 (1.0) 1-12
Single child	48.0%	40.0%	19.0%
Average number of years of schooling of father (SD), range	13.0 (2.9) 3-23	14.0 (3.3) 5-23	12.4 (3.8) 2-26
Fathers' schooling			
12 years or less	57.1%	32.5%	62.0%
13-15 years	25.0%	29.9%	18.5%
16 years and more	17.9%	35.1%	19.5%
Average number of years of schooling of mother (SD), range	12.6 (2.7) 5-22	14.1 (3.5) 7-23	12.3 (2.7) 5-22
Mothers' schooling			
12 years or less	65.5%	32.6%	67.0%
13-15 years	20.7%	27.9%	20.7%
16 years and more	13.8%	39.5%	12.3%
Fathers employed	80.0%	78.7%	81.8%
Mothers employed	66.3%	65.0%	50.0%
Father's income (\$Can)			
0-19,999	33.2%	22.2%	-----
20-39,999	47.9%	51.4%	-----
40,000 and more	18.9%	26.4%	-----
Mother's income (\$Can)			
0-19,999	66.5%	44.7%	-----
20-39,999	27.6%	34.2%	-----
40,000 and more	5.9%	21.1%	-----
Family income (\$Can)			
0-39,999	55.1%	33.3%	57.2%
40-59,999	22.0%	33.3%	29.0%
60,000 and more	22.9%	33.3%	13.8%

Table 2. Prevalence of parent-child RTP in the *ProsPère* project

Frequency	Parent-child RTP (n=468)	
	Father-child	Mother-child
Never	3.5%	7.2%
Once/month	0.9%	3.3%
2-3 times/month	2.0%	4.4%
Once/week	7.2%	11.8%
2-3 times /week	43.6%	34.6%
Every day	42.9%	38.8%

Table 3. Prevalence of parent-child RTP in the *Père-En-Jeux* project

	Father-child RTP			Mother-child RTP		
	Boys (n=38)	Girls (n=37)	Total (n=75)	Boys (n=22)	Girls (n=21)	Total (n=43)
Never	5.3%	27.0%	16.0%	22.7%	52.4%	37.2%
1-2 times/year	7.9%	2.7%	5.3%	9.1%	9.5%	9.3%
1-2 times/month	21.1%	35.1%	28.0%	40.9%	19.0%	30.2%
1-2 times/week	28.9%	24.3%	26.7%	13.6%	14.3%	14.0%
Every day	36.8%	10.8%	24.0%	13.6%	4.8%	9.3%

Table 4. Frequency distribution of times children cry or become angry during RTP (*Père-En-Jeux* project)

Frequency	Child cries		Child becomes angry	
	Father	Mother	Father	Mother
Never	39.1%	50.0%	48.4%	52.0%
1-2 times/year	57.9%	50.0%	50.0%	36.0%
1-2 times/month	3.1%	0	0	4.0%
1-2 times/week	0	0	1.6%	8.0%
Every day	0	0	0	0

Table 5. Percentage of children according to their motivation to win at RTP (*Père-En-Jeux* project)

Motivation	Father		Mother	
	boys	girls	boys	girls
Little	20.6%	26.9%	15.4%	50.0%
Moderate	26.5%	15.4%	7.7%	40.0%
High	52.9%	57.7%	76.9%	10.0%

Table 6. Prevalence of father-child RTP in QLSCK project

RTP frequency	Father-child RTP		
	Boys (n=139)	Girls (n=223)	Total
Never	18.0%	29.6%	25.1%
1-2 times/year	28.8%	19.7%	23.2%
1-2 times/month	28.8%	29.1%	29.0%
1-2 times/week	18.0%	18.8%	18.5%
Every day	6.5%	2.7%	4.1%

Table 7. Spearman correlations between RTP and aggression or competition in two samples

Father-child RTP	Child-child physical aggression		Non-aggressive competition	
	QLSCK (n=359)	<i>Père-En-Jeux</i> (n=19)	QLSCK	<i>Père-En-Jeux</i> (n=19)
Frequency	0.15**	0.10	-----	-0.10
Duration	-----	0.15	-----	0.40*
Motivation to win	0.08	0.18	-----	0.69**

* p<.10 ** p<.01

Table 8. Summary of variables linked to father-child RTP and mother-child RTP respectively according to the three samples

	<i>ProsPère</i>	<i>Père-En-Jeux</i>	QLSCK
Prevalence of daily father-child RTP	High (43%)	Moderate (24%)	Very low (4%)
Rural/urban living environment	no	-----	-----
Sex of parent	yes	yes	-----
<u>Child characteristics:</u>			
age	F and M	F	-----
sex	F	≈ F	≈ F
<u>Characteristics of father:</u>			
age	F	F	F
schooling	no	no	no
income	no	no	no
with or without employment	no	no	no
work schedule	no	no	-----
<u>Characteristics of mother:</u>			
age	M	-----	-----
schooling	no	-----	-----
income	no	-----	-----
with or without employment	no	-----	-----
work schedule	no	-----	-----

F= impact on father-child RTP M= impact on mother-child RTP
 ≈ = tendency