

BIRTH ORDER AND YOUTH DELINQUENT BEHAVIOUR TESTING THE DIFFERENTIAL PARENTAL CONTROL HYPOTHESIS IN A FRENCH REPRESENTATIVE SAMPLE

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Studies on delinquent behaviour have frequently shown that firstborn children are less involved in delinquency than middle-born children. We suggest that differential parental control of the children depending on their ordinal position might account for this phenomenon. The study, carried out with a French representative sample ($n = 1129$), indicated that firstborns were more supervised than middle-borns. Firstborns reported less minor offences and serious offences than middle-born children. However, when sibship size and parental supervision were controlled in a subsequent analysis of covariance, the effect of ordinal position on serious offences disappeared, whereas the birth-order effect on minor offences declined but remained significant. It is concluded that ordinal position plays a moderate role in delinquent behaviour and that this effect is partly induced by differential parental control.

Keywords: Delinquency; Birth Order Effect; Parental Supervision; Sibship Size; Ordinal Position

INTRODUCTION

As the influence of family variables, such as early pregnancy, broken home, abuse, and parenting deficiencies have been widely explored by research in criminology (see for instance, reviews by Agnew, 2001; Rutter *et al.*, 1998; Siegel, 1998), other relevant factors, such as birth order, have been investigated. Despite the available research evidence for the relationships between birth order and delinquency, the underlying mechanisms are barely understood. The idea of ordinal position effects on varying aspects of social life has been recurrently discussed in the social sciences for over 100 years. Francis Galton (1874) was among the first to focus on this variable, postulating that the over-representation of firstborns in his sample of English scientists constituted proof to their superiority. This assumption was consistent with an idea that was generally accepted at the time, that female offspring quality diminishes with the number of births. Later, the hypothesis of a specific ordinal position effect was argued from a psychoanalytic perspective by Alfred Adler (1949, 1990). Adler observed in firstborn children the traits of the guardians of the established order, contrasted to the impression of

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younger siblings being restless and constantly under pressure. Focusing on firstborn authoritarianism, Adler proposed that the traumatism associated with the arrival of a new baby (what he called the phenomenon of “dethroning”) particularly motivates identification with authority in firstborn children.

More recently, Sulloway’s work *Born to Rebel* (Sulloway, 1996) has stimulated research on the effects of ordinal position. Sulloway adopts an evolutionary perspective and considers that children develop a fundamental predisposition to maximize the resources that they obtain from their parents. The quest for a family niche leads firstborn children to prefer dominant positions and to affirm the physical and intellectual superiority that they temporarily enjoy through their birth order, a tendency that would engender more conservative positions. In that sense, later-borns would approach the quest for a familial niche through the adoption of conflictual attitudes toward authority, a higher attraction to risk and a more open-minded and humanistic vision of the world. Based on biographies and evaluations conducted by about 100 experts and historians, Sulloway’s work demonstrates that in the domain of scientific innovation, firstborn children are under-represented across cultures and times. His meta-analysis of several hundreds of empirical studies regarding birth-order effects on personality (as reported by Ernst and Angst, 1983), supports the idea that compared to firstborns, younger children are generally less conformist and more adventurous. This latter result was however criticized on methodological grounds by Harris (1998) because it did not take the sample size of the selected studies into account and that the nonsignificant results appeared mainly in samples of large size.

Evidence of the Birth-order Effect on Delinquency

While Sulloway does not aim at applying his model of family dynamics on the phenomenon of juvenile delinquency, it is legitimate to expect that the rebellious tendencies supposed to be manifest in later-borns increase their probabilities of law infraction and deviance toward their parents or institutions, which constitute factors invariably involved in delinquent conduct (see, for example, Emler and Reicher, 1995). Several empirical studies have confirmed this, starting with the classical study by Glueck and Glueck (1950). These authors compared 500 delinquent boys to a control group, matched on criteria of age, gender, IQ, ethnic and social background, and observed a higher proportion of middle-born children in their sample of delinquents (see, for similar results, Lee and Newson, 1954; Hirschi, 1969; West and Farrington, 1973; Leflore, 1988). These observations may be contrasted to discordant findings which either do not verify any effect of ordinal position (Ferguson, 1952; Johanson, 1968; Barry and Barry, 1969), or report inconsistent effects whereby later-borns would be more (Berg *et al.*, 1967) or less (Biles, 1971; Koller, 1971) engaged in deviance. Such inconsistencies suggest that the effects of ordinal position on delinquency are modulated by factors that were not systematically controlled in previous research. While Sulloway defends the explanatory power superiority of birth order over the large majority of predictive sociological factors of human behaviour, it is possible that other variables that may modulate or even produce the effects of birth order are underestimated. In an exhaustive analysis of the international literature published on this topic between 1946 and 1980, Ernst and Angst (1983) concluded that birth-order effects were more often artefacts produced by works that have neglected to control certain appropriate variables such as sibship size or socioeconomic level (see also Schooler, 1972). In fact, the comparison between firstborn and later-borns runs the risk of assimilating the effects of birth order to

those of sibship size which is known to vary in function of socioeconomic level (Clausen and Clausen, 1973; Steelman, 1985). In order to overcome the incoherence present in the existing literature it seems that the study of ordinal position effects on delinquency should focus on taking into account certain key factors that may jointly be involved in this relationship. In this light, we shall see that parental environment is a factor that may modulate the relationship between birth order and delinquency.

Parental Differential Treatment of Siblings

A large number of studies emphasize differential treatment of siblings by parents in function of their birth order (Hilton, 1967; Cohen and Beckwith, 1977; Cicirelli, 1978; Lewis and Kreitzberg, 1979). Drawing on diverse methodological approaches (parent or child self-report questionnaires, observation, experimentation) this literature argues that parental investment in offspring is unequal. Thus, parents attribute more importance to their first child (Clausen, 1966), which concretely results in larger amount of time and better quality of care given to the firstborns (Roberts and Rowley, 1972; Bakeman and Brown, 1977). Compared with later-borns, firstborns are more exposed to adult models and to adult expectations and pressure (Baskett, 1985). The requirements imposed by parents are generally firmer for firstborns (McArthur, 1956; Vernon *et al.*, 1967). Similarly, it would appear that the feeling of being controlled by parents (Schaller, 1972), as well as identification with them (Palmer, 1966), is higher among firstborns. Further, as has been suggested by Zajonc (1983), the older child is frequently playing the role of parent surrogate to the younger ones, a situation that may strengthen one's inclination to internalize parental norms.

Parental Control and Delinquency

The literature presented here may be read to imply that ordinal position effects are derived from differential parental treatment of firstborns and following children. It is noteworthy that several characteristics that seem to distinguish firstborns from later-born socialization concern the exercise of parental control, which is widely recognized to prevent delinquent conduct, as is affirmed by social control theory (Hirschi, 1969; see also Reiss, 1951; Nye, 1958). According to this approach, individuals obey rules because they have formed strong ties to conventional society. These ties refer to several dimensions, including attachment, defined as "combination of caring and supervision" (Deutschman, 1994, p. 265). Parental supervision (also designated here by the term parental control without distinction) is defined as parents' knowledge of and information on the child's activities and friends and the enforcement of set living regulations. This family variable is among the most persistently involved in delinquency: children whose parents exercise control on their activities and their relations commit less serious and less frequent delinquent acts than others (Hirschi, 1969; Jensen, 1972; West and Farrington, 1973; McCord, 1979; Wilson, 1980, 1987; Wiatrowski *et al.*, 1981; Loeber and Dishion, 1983; LaGrange and White, 1985; Loeber and Stouthamer-Loeber, 1986; Cernkovich and Giordano, 1987; Fréchette and Leblanc, 1987; Paternoster, 1988; Wells and Rankin, 1988; Brook *et al.*, 1989; Crouter *et al.*, 1990; Rankin and Wells, 1990; Dishion *et al.*, 1991; Sampson and Laub, 1993; Jang and Smith, 1997; Dishion and McMahan, 1998; Rutter *et al.*, 1998).

The mechanisms that support the preventive effect of supervision are multiple. According to Gottfredson and Hirschi (1990) parental supervision encourages the development of self-control in the child, which is a key factor adjacent to delinquent behaviour (Cochran *et al.*, 1998; d'Arneklev *et al.*, 1999; LaGrange and Silverman, 1999). Supervised children are accompanied in their activities and receive instructions on how to produce appropriate behaviours. Behaviours that point to a control deficit are identified, reprimanded and eventually punished, thus diminishing the probability that they will subsequently recur. Indirect confirmation of the importance of parental control on delinquency is provided by the effects of sibship size on delinquency: the probability of deviant conduct increases with sibship size (Glueck and Glueck, 1950; Nye, 1958; Berg *et al.*, 1967; Cowie *et al.*, 1968; Hirschi, 1969; West and Farrington, 1973; Robins *et al.*, 1975; Shanok and Lewis, 1977; Rutter and Giller, 1983; Fischer, 1984; Ouston, 1984; Loeber and Stouthamer-Loeber, 1986; Kolvin *et al.*, 1988; Tygart, 1991; Newson *et al.*, 1993; Sampson and Laub, 1993; Rutter *et al.*, 1998). Empirical evidence is lacking; still these effects (which survive controlling for parental SES) are partially attributed to supervision division, resulting simply from having larger numbers of children to supervise (Hirschi, 1995; Rutter *et al.*, 1998; Agnew, 2001). Still, reports on the topic sometimes diverge: while Mekos *et al.* (1996) found no monitoring-control differences linked to birth order, Crouter *et al.* (1999) found that parents tended to have more knowledge of the activities of their second child compared with those of the firstborns. In these two intra-familial studies the variables of age and birth order were assimilated, and this fact hinders a conclusive determination on the issue of whether the effects refer to ordinal position or age. Indeed, previous studies demonstrated that age may be negatively related to parental control (see Junger-Tas, 1992; Kandel and Wu, 1995) which may in turn induce such differences (see Zajonc, 1983, 2001, concerning the issue of confounding age and birth-order effects).

An additional interpretation of the role of supervision lies in its effect on spending time with peers and consequently being influenced by them. Parental supervision limits or halts exposure to delinquent influences (Dishion *et al.*, 1991; Warr, 1993), which according to social learning theory (Akers, 1985) also constitutes a powerful factor involved in delinquency.

Family, Social Norms and the Practice of a Double Standard in Control

Differential control of firstborn and later-born children may therefore reasonably explain differences in delinquency involvement related to birth order. However, parental supervision is not applied in the same way to boys and girls. The theory of power-control (Hagan, 1989) has emphasized the inequalities in the application of parental control across genders: girls are more supervised than boys. While supervision differences are more likely to diminish today (Felson and Gottfredson, 1984), they remain very significant (Jensen and Eve, 1976; Riley and Shaw, 1985; Hagan *et al.*, 1988; Hill and Atkinson, 1988; Singer and Levine, 1988; Stockard and Johnson, 1992; Hagan *et al.*, 1996; Dishion and McMahon, 1998). This double standard is consequently projected on the levels of delinquency across the genders, at the same time partially explaining variations¹. Baseline supervision being higher for girls than boys, it may be expected that if, as we suggest, birth-order effects are moderated by parental supervision, they will be more marked for boys than for girls. This hypothesis is consistent with the interactions frequently observed by Sulloway (1996) between gender and ordinal position (see also Koch, 1954, 1955; Brim, 1958). It is possible that increased supervision of

girls originates partially from increased difficulty with supervising boys, as is predicted by the bi-directional model of socialization (Bell, 1968; Bell and Chapman, 1986), and that this difference is partially due to endogenous factors. However, the decrease of the dissimilarity between boys' and girls' supervision through time would support explanations based on the involvement of cultural norms that manage gender differential control.

In an exploration of the effect of family context on delinquency, the modulating effect of socioeconomic status (SES) on birth-order effect should be addressed². After Ernst and Angst (1983), several authors think that controlling for this variable when studying any birth-order effect is necessary, mainly because it is linked to sibship size (Clausen and Clausen, 1973; Steelman, 1985).

The Study of Birth-order Effects: Present Research Procedures

The study of birth-order effects is usually based on two distinct procedures: comparing children of the same family (*within-family design*) or children from different families (*between-family design*). We based our study on the latter, which has the advantage of not confounding participant's age and birth order (see Zajonc, 1983, 2001). Two main strategies are commonly employed when ordinal position effects are investigated with a between-family design. The first one, illustrated in several classical criminology studies (i.e. McCord and McCord, 1958; Nye, 1958; Hirschi, 1969), consists of the distinction between three groups: firstborns, middle-borns and later-borns. This method frequently yields a curvilinear relationship between delinquency and birth order: deviance is higher among middle-borns and lower among firstborns and last-borns. This partition has a major inconvenience: in order to conduct a rigorous test of ordinal position effects, it is necessary to work on children coming from a sibship of at least three. Very often, ordinal position research contrasts firstborn children to all others indiscriminately (for example, Sulloway, 1996; Freese *et al.*, 1999). This solution may be appropriate in other research domains (e.g. school performance or personality) but in the field of criminology research on delinquency significant differences have been reported between middle-born and later-born children. Moreover, we may suppose that the status of the last-borns is not equivalent with regard to parental supervision when compared with middle-borns. Indeed, although parental control weakens from firstborns to middle-borns, last-borns continue to benefit from a special attention from their environment. Consequently, assimilating the two is not recommended. In order to test the effect of ordinal position on delinquency without ambiguity, the most adequate solution resides in the elimination of last-borns, in a way to compare only firstborns and middle-borns (who are not reduced to second-born children). This is the method we employed in the present study. According to the recommendations of Freese *et al.* (1999), only children and twins were also excluded from the sample. In the present studies birth order was considered as a dichotomous variable indicating whether the participant was a firstborn or a middle-born child.

OVERVIEW

The aims of the study were to (i) compare differential parental control toward firstborns and middle-borns and (ii) analyse birth-order effect on self-reported delinquency, taking into account relevant variables such as gender, SES, sibship size, as Ernst and Angst (1983)

request, and parental supervision. One of the important features of this study is also its innovative nature: it represents the first self-reported delinquency survey based on a representative sample ever performed in France. Based on the above-mentioned studies that confirm parental over-investment on firstborns and the double standard of parental control producing higher supervision of girls, an interaction was expected between gender and birth order suggesting that over-control associated with firstborns would mainly be found for boys, with baseline supervision levels being initially higher for girls who would not benefit from this effect of birth position (H1). Moreover, a negative relation was expected between sibship size and parental supervision (H2). Regarding the effect of birth order on delinquency, an interaction was expected between birth order and gender, suggesting that middle-born boys would be more involved in delinquency than firstborns, while girls' results would not be affected by birth order (H3). If the hypothesis concerning the generation of birth-order effects by firstborn differential parental control is correct, birth-order effects should diminish or disappear when parental control and sibship size are controlled (H4). No specific hypotheses were formulated regarding SES effects.

METHOD

Participants

The sample was composed of 565 firstborns and 564 middle-borns, 563 males and 566 females, aged 13–18 (mean = 15.65, SD = 1.64) living in Grenoble and St Etienne, France. The participants were taken from a larger sample of 2288 subjects initially selected through a stratified random sampling procedure (Roché *et al.*, 2000). Fathers' profession was distributed as follows: white collars and business owners: 25.6%, intermediary professions: 19%, employees and operatives: 55.4%. Participants were individually met at school and filled in the questionnaire in the presence of an interviewer with the consent of their parents, who were informed 2 weeks before the beginning of the study. No compensation was given for the participation of students, which took place during school time. The participation rate was 97.5%. Depending on their answers to selected questions concerning delinquency or victimization (not presented here), participants were given appropriate information about relevant public social service that was eventually needed.

Measures

Parental Supervision

This variable was measured with the parental control index from the Questionnaire for the International Self-Report Delinquency Project (Junger-Tas *et al.*, 1994). This index is based on four questions concerning the frequency of going out in the evenings without the parents, respect of return hour fixed by parents, and not telling parents where one is going to be ($M = 2.00$, $SD = 1.04$)³.

Delinquency

Delinquent behaviour was estimated with the relevant section of the Questionnaire for the International Self-Report Delinquency Project (Junger-Tas *et al.*, 1994). Participants were asked to indicate only if they had or had not been involved in such or such conduct among

29 items, without specification concerning the temporal range. Studies suggest that questions referring to specific and recent temporal range are more valid (Elliot and Huizinga, 1989). We nonetheless relied on non-specified questions in order to sample more self-reported behaviours. Following a distinction in criminological literature between minor and serious offences (Elliott *et al.*, 1985; Friedman and Rosenbaum, 1988; Wilson and Herrnstein, 1985), two indexes were computed: minor offences (Kuder-Richardson $F_{20} = 0.81$, $M = 2.2$, $SD = 2.62$) including minor vandalism, shoplifting, exchange of blows, and serious offences (Kuder-Richardson $F_{20} = 0.53$, $M = 0.27$, $SD = 0.68$) including vandalism (arson, throwing stones), violent theft, aggression with ensuing medical care for the victim. The range of individual scores being relatively small⁴ (from 0 to 14 for minor offences and 0–6 for serious offences), data transformation was not conducted. The correlation between both indexes was $r = 0.65$ ($p < 0.001$).

RESULTS

Supervision

A 2×2 (male vs female \times firstborn vs middle-born) analysis of variance was computed on supervision index. A main effect of birth order showed that the firstborns were more supervised than middle-borns ($M = 1.92$, $SD = 1.02$ vs 2.09 , $SD = 1.06$, $F(1,1071) = 8.11$, $p < 0.004$). Results also showed a significant main effect of gender, suggesting that females were more supervised than males ($M = 1.83$, $SD = 0.95$ vs $M = 2.18$, $SD = 1.10$, $F(1,1171) = 31.732$, $p < 0.001$). Hypothesis 1, predicting an interaction between gender and ordinal position, was thus rejected. Additional analysis showed that supervision was negatively correlated with sibship size ($r = -0.13$, $p < 0.001$), confirming hypothesis 2.

Minor Offences

A $2 \times 2 \times 2$ (firstborn vs middle-born \times male vs female \times low SES vs high SES) analysis of variance was computed on the minor offence index. A main effect was observed: firstborns reported less minor offences than middle-born ($M = .46$, $SD = 2.15$ vs 1.93 , $SD = 2.45$, $F(1,1121) = 8.69$, $p < 0.003$). Another main effect of gender indicated that males reported more minor offences than females ($M = 2.35$, $SD = 2.68$ vs $M = 1.04$, $SD = 1.65$, $F(1,1121) = 89.40$, $p < 0.001$). A third main effect of SES suggested that low SES reported more minor offences than high SES ($M = 1.92$, $SD = 2.52$ vs 1.41 , $SD = 2.00$, $F(1,1121) = 10.02$, $p < 0.002$). Contrary to our prediction (hypothesis 3), no interaction effect appeared between gender and birth order.

A similar $2 \times 2 \times 2$ (firstborn vs middle-born \times male vs female \times low SES vs high SES status) analysis was subsequently computed on the minor offence index with two covariates: respondent's family size and parental supervision. Age was not entered as covariate because preliminary analysis showed no age difference between in our sample between firstborns and middle-borns. The results showed that the covariate parental supervision had a significant effect ($F(1,1165) = 129.04$, $p < 0.001$). Surprisingly, the covariate sibship size had no effects on minor offences ($F(1,1165) = 0.03$, NS). Among the selected factors, the observed main effect weakened consistently with hypothesis 3, but remained basically the same: firstborns committed less minor offences than middle-borns ($M = 1.44$, $SD = 2.14$ vs 1.93 , $SD = 2.48$,

$F(1,1065) = 5.78, p < 0.02$); males committed more minor offences than females ($M = 2.34, SD = 2.70$ vs $1.04, SD = 1.66, F(1,1065) = 56.23, p < 0.001$).

Finally, a marginally significant main effect of SES suggested that subjects from low SES committed more minor offences than subjects from high SES ($M = 1.92, SD = 2.54$ vs $1.38, SD = 1.99, F(1,1065) = 3.25, p < 0.07$).

Serious Offences

A $2 \times 2 \times 2$ (firstborn vs middle-born \times male vs female \times low SES vs high SES status) analysis of variance was similarly computed on the serious offence index. A main effect of ordinal position showed that middle-borns reported more serious offences than firstborns ($M = 0.28, SD = 0.71$ vs $0.17, SD = 0.54, F(1,1121) = 6.30, p < 0.01$). A main effect of gender suggested that males reported more serious offences than females ($M = 0.35, SD = 0.79$ vs $0.10, SD = 0.38, F(1,1121) = 39.89, p < 0.001$). Finally, a main effect of SES indicated that low SES declared more serious offences than high SES ($M = 0.29, SD = 0.73$ vs $0.15, SD = 0.46, F(1,1121) = 9.91, p < 0.002$). An interaction effect between gender and SES ($F(1,1121) = 5.96, p < 0.01$) suggested that low SES male subjects declared more serious offences than high SES males ($M = 0.45, SD = 0.91$ vs $0.22, SD = 0.57, t(540,35) = 3.71, p < 0.001$), whereas SES induced no differences on serious offences among females ($M = 0.12, SD = 0.43$ vs 0.001 vs $0.12, SD = 0.32, t(227) = 1.36, NS$). Contrary to our prediction, no interaction effect appeared between gender and birth order, thus rejecting hypothesis 3.

A similar $2 \times 2 \times 2$ (firstborn vs middle-born \times male vs female \times low SES vs high SES) analysis was subsequently computed on the delinquency indexes with respondent's sibship size and parental supervision as covariates. The results showed that the covariate parental supervision had a significant effect ($F(1,1065) = 82.65, p < 0.001$). Surprisingly and again, the covariate sibship size had no effects on serious offences ($F(1,1065) = 0.12, NS$). As anticipated by hypothesis 4, the previously observed birth-order effect was not significant in this case ($F(1,1065) = 2.39, p < 0.12$). Two of the three previously evidenced main effects were still observed: males reported more serious offences than females ($M = 0.33, SD = 0.78$ vs $0.10, SD = 0.39, F(1,1065) = 18.07, p < 0.001$) and low SES declared more serious offences than high SES ($M = 0.29, SD = 0.74$ vs $0.13, SD = 0.41, F(1,1165) = 6.54, p < 0.01$). The interaction between gender and SES remained significant ($F(1,1065) = 6.54, p < 0.011$), suggesting that, as was the case for minor offences, the effect of SES on serious offences was present only among males.

The classical effects of sibship size on delinquency (Glueck and Glueck, 1950; Berg *et al.*, 1967; Cowie *et al.*, 1968; Hirschi, 1969; West and Farrington, 1973; Rutter and Giller, 1983; Fischer, 1984; Ouston, 1984; Loeber and Stouthamer-Loeber, 1986; Kolvin *et al.*, 1988; Tygart, 1991; Newson *et al.*, 1993; Sampson and Laub, 1993; Rutter *et al.*, 1998) was not confirmed. This unexpected result may be interpreted by the fact that sibship size was used as a covariate measure along with the parental supervision variable. As sibship size and parental supervision are correlated, it is possible that a part of the effect of the former was thus cancelled. Therefore four zero-order correlations were calculated *a posteriori* between sibship size and self-reported minor offences and serious offences. The results of these analyses yielded significant correlations between sibship size and minor offences ($r = 0.12, p < 0.001$) and serious offences ($r = 0.12, p < 0.001$). These observations confirm that sibship size is

involved in deviant conducts even if part of the effects of this factor is mediated by parental supervision.

DISCUSSION

Many studies on delinquent behaviour have shown that firstborn children are less involved in delinquency than middle-born. We proposed that a differential parental control of the children depending on their ordinal position may constitute a viable interpretation of this phenomenon. In the present research, several results suggested that parental control is actually involved in the birth-order effect. First, we confirmed that parental control is selectively activated according to the gender of the target child. As previous studies indicated (Jensen and Eve, 1976; Riley and Shaw, 1985; Hagan *et al.*, 1988, 1996; Hill and Atkinson, 1988; Singer and Levine, 1988; Stockard and Johnson, 1992; Dishion and McMahon, 1998), we found that females were more controlled than males. We also observed, as some authors have already suggested (Rutter *et al.*, 1998; Agnew, 2001), that parental supervision decreased with family size. More importantly in terms of the purpose of this research, we showed that firstborns were more supervised than middle-borns. In regard to the factors involved in youth delinquency, beyond the effects of birth order (see below) the studies reported here confirm the classical association between gender and delinquent conduct (for a review see Rutter *et al.*, 1998). The findings also confirm that, while these effects diminish when parental supervision is kept constant, they do not totally disappear.

Socioeconomic status was mainly included in the present research in order to analyse possible interaction effects with ordinal position and not as a central independent variable under examination. This variable was studied in an extremely simplified dichotomized in order to perform selected analyses; consequently, the findings concerning the effects of this factor on juvenile delinquency are limited. However, some relatively consistent patterns were observed, showing that SES is significantly involved in delinquency among youth. We showed an effect of SES on minor offences and an interaction effect of SES and gender on serious offences. Taken as a whole, these effects confirm the relevance of the SES factor in juvenile delinquency research (see Agnew, 2001, for a review).

Concerning the main focus of our research programme, that is, birth-order effects on delinquent behaviour, several results should be pointed out. In this study, based on representative sample, we analysed the effect of ordinal position on delinquency using a three-factor factorial design (ordinal position, gender, SES), and observed that firstborns reported less minor offences and serious offences than middle-born children. However, when sibship size and parental supervision were controlled in a subsequent analysis of covariance, the effect of ordinal position on serious offences disappeared. These findings suggest that the birth-order effect, at least for serious offences, is affected by parental factors. With regards to more serious offences, therefore, we cannot corroborate Sulloway's argument that birth order possesses explicative superiority to all other sociological factors, nor affirm his belief that this effect transcends gender, social class, race and nationality. Nonetheless, the fact that despite adequate control middle-born committed more minor offences does not permit us to definitively conclude on a simple differential parental control effect on delinquent behaviour.

In the present study, the intervention of parental environment was operationalized in terms of parental control. However, parental environment may induce differential treatment with repercussions on delinquent conducts through other means than parental control, such

as discipline methods or effective communication or attachment, dimensions that were not taken into account in the present study. Recent studies on parental monitoring pointed out that monitoring measures that are typically used in studies on family processes and delinquency generally assess parent's knowledge about their offspring activities, but not the source of this knowledge. As Stattin and Kerr (2000) suggest, parents could get knowledge of their children's activities in three ways (p. 1073): the children could tell them spontaneously (child disclosure), they could ask their children and their children's friends for the information (parental solicitation) and they could impose rules and restrictions on their children's activities and associations, thereby controlling the amount of freedom children have to do things without telling them (parental control). In their study relying on children and parents estimations of these three aspects, Stattin and Kerr showed that "children's and parents reports of 'monitoring' were best explained as children voluntary descriptions of their free-time activities" (p. 1082). Moreover, they observed that among the three potential sources of information, child disclosure best explained the child's norm-breaking behaviour. This conception of monitoring, which underlines the bi-dimensional aspects of parent-child interactions, is an invitation to move from a "top-down" view of parenting to a "more interactive view of parent-child processes that recognize the necessity of reciprocity, cooperation, coordination and coregulation" (Stattin and Kerr, 2000, p. 1083). Before concluding on birth order as a distinct factor in the prediction of minor offences it is essential to empirically test a more general hypothesis of differential socialization relying on a bi-directional and multidimensional conceptualization of monitoring. As in the majority of published papers, in our study, parental monitoring was estimated through the children's evaluation. This methodology is not without limitation, especially given the limited overlap between parents and children's evaluation of parental monitoring (see Harris, 1998; Stattin and Kerr, 2000). Another issue that should be dealt with is the influence of single versus two parents families on the birth-order effects, because the number of available parents is linked to monitoring and delinquency (Wells and Rankin, 1991). Taking into account these factors would reintroduce a social component to a research domain which tends to support the idea that the explanation of obviously social (or antisocial) effects of birth order can disregard family factors that make delinquency most improbable among firstborns.

Notes

1. But not entirely: when the effect of supervision is controlled the difference between boys and girls remains significant (Hagan *et al.*, 1996), at least for certain ages (Jang and Krohn, 1995).
2. Some studies have explored sibship size effects on intellectual performance in function of SES (Velandia *et al.*, 1978), but to our knowledge, no research simultaneously addressed the contribution of birth order and SES on delinquency.
3. One may argue that the scale contains items measuring parental supervision and items evaluating the adolescent's propensity to obey rules as well. We performed analysis with the whole scale and also with the items measuring only on the supervision dimension. Results were similar. We thus decided to rely on the whole instrument devised by Junger-Tas *et al.*
4. The measure refers to the number of types of acts.

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