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Multi-dimensional approach to bullying

PhD Thesis

Sonia LUCIA

Degree in psychology and Master in criminology

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IMPRIMATUR

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RÉSUMÉ

Le bullying est un type de comportement agressif qu'un élève (ou plusieurs) fait subir à un autre et qui se manifeste par des agressions verbales, physiques et/ou psychologiques. Les caractéristiques du bullying sont la répétitivité d'actions négatives sur le long terme et une relation de pouvoir asymétrique. Pour la victime, ce type de comportement peut avoir des conséquences graves telles qu'échec scolaire, dépression, troubles alimentaires, ou idées suicidaires. De plus, les auteurs de bullying commettent plus de comportements déviants au sein de l'école ou à l'extérieur de cette dernière. La mise en place d'actions ciblées auprès des auteurs de bullying pourrait donc non seulement prévenir une victimisation, mais aussi réduire les actes de délinquance en général. Hormis quelques études locales ou cantonales, aucune recherche nationale auprès d'adolescents n'existait dans le domaine. Ce travail propose de combler cette lacune afin d'obtenir une compréhension suffisante du phénomène qui permet de donner des pistes pour définir des mesures de prévention appropriées.

Afin d'appréhender la problématique du bullying dans les écoles secondaires suisses, deux sondages de délinquance juvénile autoreportée ont été effectués. Le premier a eu lieu entre 2003 et 2005 dans le canton de Vaud auprès de plus de 4500 écoliers. Le second a été administré en 2006 dans toute la Suisse et environ 3600 jeunes y ont participé. Les jeunes ont répondu au sondage soit en classe (questionnaire papier) soit en salle d'informatique (questionnaire en ligne). Les jeunes ayant répondu avoir sérieusement harcelé un autre élève est d'environ 7% dans le canton de Vaud et de 4% dans l'échantillon national.

Les analyses statistiques ont permis tout d'abord de sélectionner les variables les plus fortement liées au bullying. Les résultats montrent que les jeunes avec un bas niveau d'autocontrôle et ayant une attitude positive envers la violence sont plus susceptibles de commettre des actes de bullying. L'importance des variables environnementales a aussi été démontrée : plus le jeune est supervisé et encadré par des adultes, plus les autorités (école, voisinage) jouent leur rôle de contrôle social en faisant respecter les règles et en intervenant de manière impartiale, moins le jeune risque de commettre des actes de bullying. De plus, l'utilisation d'analyses multiniveaux a permis de montrer l'existence d'effets de l'école sur le bullying. En particulier, le taux de bullying dans une école donnée augmente lorsque les avis des jeunes divergent par rapport à leur perception du climat scolaire. Un autre constat que l'on peut mettre en évidence est que la réaction des enseignants lors de bagarres a une influence différente sur le taux de bullying en fonction de l'établissement scolaire.

ABSTRACT

Bullying is the intentional, repetitive or persistent hurting of one pupil by another (or several), where the relationship involves an imbalance of power. Bullying is a type of aggressive behaviour and the act can be verbal, physical and/or psychological. The consequences on the victims are serious: school failure, depressive symptomatology, eating disorders, or suicidal ideation. Moreover, the authors of bullying display more delinquent behaviour within or outside the school. Thus, preventive programmes targeting bullying could not only prevent victimisation, but also reduce delinquency in general. Very little data concerning bullying had been collected in Switzerland and, except some local or cantonal studies, no national research among teenagers existed in the field. This work intends to fill the gap in order to provide sufficient understanding of the phenomenon and to suggest some tracks for defining appropriate measures of prevention.

In order to understand the problems of bullying in Swiss secondary schools better, two surveys of self-reported juvenile delinquency were carried out. The first one took place between 2003 and 2005 in the canton Vaud among more than 4500 pupils, the second in 2006 across Switzerland with about 3600 youths taking part. The pupils answered to the survey either in the classroom (paper questionnaire) or in the computer room (online questionnaire). The youths that answered having seriously bullied another pupil are about 7% in canton Vaud and 4% in the national sample.

Statistical analyses have selected the variables most strongly related to bullying. The results show that the youths with a low level of self-control and adopting a positive attitude towards violence are more likely to bully others. The importance of the environmental variables was also shown: the more that youth is supervised and monitored by adults, and the more the authorities (school, neighbourhood) play their role of social control by making the rules be respected through intervening in an impartial way, the less the youth bully. Moreover, the use of multilevel analyses permitted to show the existence of effects of the school on bullying. In particular, the rate of bullying in a given school increases when there is a wide variation among students of the same school in their perception of their school climate. Another important aspect concerns teachers' reactions when pupils fight: this variable does not influence the bullying rate to the same extent, and depends on the school.

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INTRODUCTION

This study is situated at the intersection of a series of projects related to juvenile delinquency and covers both methodological improvement for collecting data and empirical analyses focused on the factors of risk related to bullying.

Bullying is a subcategory of aggressive behaviour. It is a vicious kind of such behaviour, as it is directed, repeatedly, towards a particular victim who is unable to defend himself or herself[1] effectively. A pupil that chronically harasses another pupil either physically or psychologically is called a bully (Smith *et al.*, 1999). Bullying is positively associated to other deviant and delinquent behaviour (Baldry & Farrington, 2000; Junger-Tas & Van Kesteren, 1999; Perren & Hornung, 2005). By detecting the profile of the youths who commit violence at school, schools and authorities could intervene in a more targeted manner and thereby impact delinquency in general (Killias, 2001; Olweus, 1999c).

In Switzerland, various self-reported surveys on juvenile delinquency were set up between 2003 and 2006. In this context, the author of this dissertation had the opportunity to develop the questionnaires, organize the surveys and create the databases. The same questions on bullying behaviour were included in all the survey. This thesis encompasses two issues. The first one relates to the methodology used in the collection of the data and in particular the development and validation of on-line questionnaires. In fact, previous methods used in research on self-reported delinquency were face-to-face interviews and self-administered

[1] In order to simplify the reading of this dissertation, the masculine form will henceforth be used generically.

interviews. We reckoned that new computer technologies, the emergence of the Internet, as well as an increasing presence of computer equipment and Internet access in schools, would allow the introduction of new methods. A controlled experiment allowed us to evaluate the feasibility of these new tools, and the previous "paper-and-pencil" questionnaires were then compared with computer-assisted interviews via the Internet. Either the interviewer collected the data during the interview on the computer or the respondent answered a paper questionnaire. This was an improvement for increasing the quantity and quality of the data to be analyzed. The second issue concerns the understanding of bullying behaviour. Bullying is studied on the individual level by analyzing the profile of the authors of bullying, and on the school level by taking into account the influence of the school context on such behaviour. Thus, different types of analysis are applied depending on the level taken into account. When only the individual level is concerned, analyses such as logistic regression and discriminant analysis are used, while multilevel analysis is applied to identify and explain the influence of the school context on bullying.

The development of the work is set out as follows: the first chapter presents an up-to-date review of bullying and the theoretical foundation of delinquency, with the purpose of clarifying our subject. Chapter 2 opens with the use of self-reported surveys. Then, the context of the various surveys and the general hypotheses are presented followed by the explanation of the analytical strategies applied and some theoretical overview of multivariate analyses. Chapter 3 opens with general information on the Swiss school system and describes in detail the series of surveys in Canton Vaud between 2003 and 2005 followed by a presentation of the research methodology (material, population and procedure, data collection). The hypotheses related to the Vaud samples are stated and tested. As chapter 4 is related to the national survey (ISRD-2, 2006), some general information on Switzerland is given. The methodology used, the hypotheses related to the national sample and the quantitative results are presented. In chapter 5, the results of both surveys are debated in the light of the theoretical concepts, and the policy implications, the limitations of this dissertation and several directions for future researches are discussed. The concluding chapter highlights the main results and suggests main areas of intervention.

CHAPTER ONE: LITERATURE

1.1. BULLYING

1.1.1. Introduction

Bullying is a subcategory of aggressive behaviour that is especially perverse. It is directed repeatedly towards a particular victim who is unable to defend himself effectively.

This abuse of power by the bullying person(s) can happen in any human group in which power relationships inevitably exist. Temptation to abuse such power is common. The bullies can gain psychological gratification, status in their peer group, or financial advantage by taking money or possessions. Whether bullying actually occurs depends on the character of the potential bully, the likelihood of support of others in the group, the response of the potential victim, and the institutional framework which may or may not permit bullying to happen. Bullying can take place in locations where there is no easy escape, such as school, prison, juvenile offenders' institutions, and at the workplace. Bullying can also happen at home (where "abuse" is the term used for actions of essentially the same pattern) (Lösel & Bliesener, 1999).

1.1.2. Background

A strong societal interest in bully/victim problems was first aroused in Sweden in the late 1960s and early 1970s. The interest quickly spread to the other Scandinavian countries,

Norway and Denmark. In the 1970s and early 1980s, bully/victim problems were an issue of general concern in Norwegian mass media and among teachers and parents, although the school authorities at first did not concern themselves with the phenomenon. In 1982-1983, a marked change took place. A newspaper reported in late 1982 that three boys between 10 and 14 years old from the northern part of Norway had committed suicide, in all probability because of severe bullying by peers. This event aroused considerable tension in the mass media and the public. It resulted in a nationwide campaign to fight bullying problems in Norwegian primary and lower secondary schools, launched by the Ministry of Education in 1983 (Olweus, 1999a).

Since that time, a large amount of research has been carried out on the subject. The work of Professor Yohji Morita of Osaka University in Japan merits particular mention. After a number of suicides among Japanese schoolchildren in 1995, the Japanese Ministry of Education supported a study into causes and possible solutions to the problem of school bullying. As a first step, country reports on bullying were gathered from across the globe, and a noteworthy book came out with reports from 21 countries (Morita, Soeda, Soeda & Taki, 1999; Smith *et al.*, 1999).

1.1.3. Terminology

The interest in the phenomenon of peer harassment or victimization was first aroused in Sweden in the late 1960s and early 1970s under the designation “mobbning” or “mobbing”. The term was introduced in the context of racial discrimination, by a school physician, P.-P. Heinemann, who borrowed the term from the Swedish version of a book on aggression written in the sixties by the ethologist Konrad Lorenz. The English term “mobbing” is used in ethology to describe the collective attack by a group of animals on an animal of another species. A number of weaker individuals crowd together and display attacking behaviour, such as geese scaring away a fox. “Mobbing” – in the ethological sense – is related to a group, to a specific situation and is temporary.

Though the English word "mob[2]" denotes a crowd – harassing and intimidating an individual, often in a destructive or hostile mood, – the German and several other European languages have adopted mobbing as a loanword to describe all forms of bullying including that by single persons. Olweus express his doubt in using the term "mobbing" in school settings for two main reasons: i) bullying at school is usually perpetrated by a small group of two or three students or by a single student and not by a crowd (even though it does happen that a pupil is bullied by a whole class); ii) the aggression is systematic and over a long period, and is not temporary (Olweus, 1978, 2001).

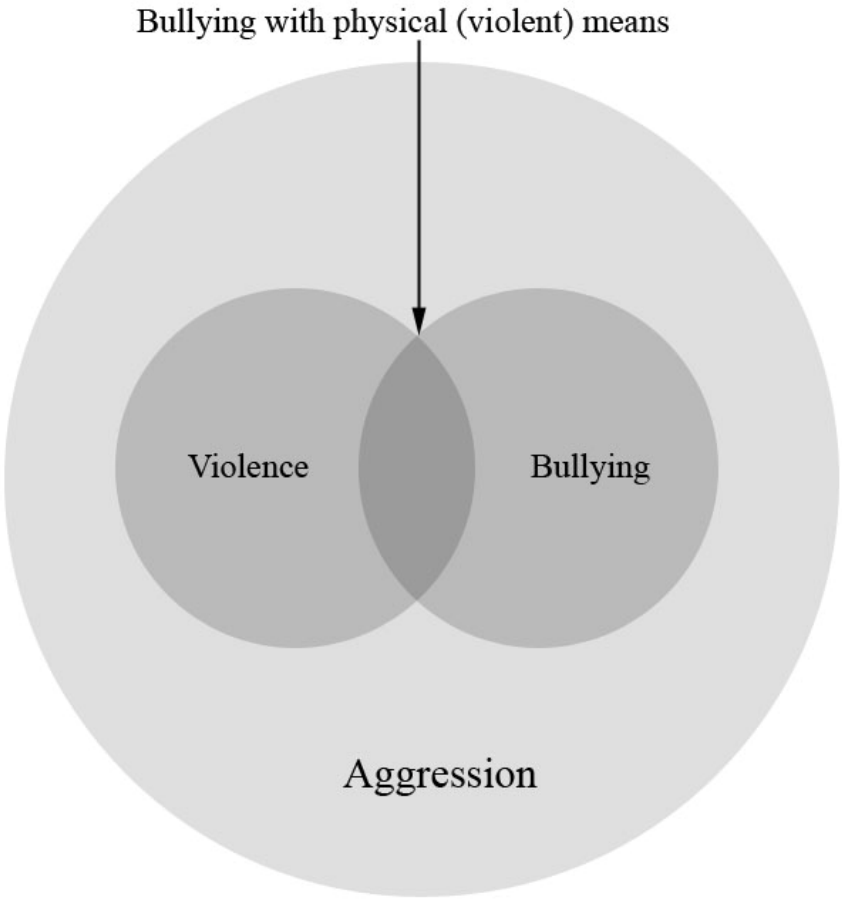
1.1.4. Definition of bullying

As described by Olweus, bullying is a subcategory of aggressive behaviour. It is a vicious kind, since it is directed, often repeatedly, towards a particular victim who is unable to defend himself effectively (Smith *et al*., 1999).

Aggressive behaviour is defined as "a behaviour intended to inflict injury or discomfort upon another individual" (Olweus, 1999b, p. 12). The characteristics of bullying are the repetitiveness and an asymmetric power relationship. So not all aggression involves bullying, and not all bullying involves aggression. Moreover, *violent behaviour* is also a subcategory of an aggressive behaviour and is defined as the use of physical force or power to injury someone. Olweus illustrated the relationships among the three terms graphically. A reproduction of his diagram is present bellow. Aggression is the general behaviour whereas bullying and violent behaviour are subcategories of aggressive behaviour. There is also an overlap between bullying and violence (e.g., hitting, kicking). Bullying without violence includes behaviour such as exclusion or spreading rumours.

[2] At the beginning of the 1980s, Professor Heinz Leymann used the term "mobbing" to talk about moral harassment at work. By "mobbing", he means a communicative situation which threatens to inflict serious damage, psychic and physical, on the individual. Mobbing is a process of destruction; it consists of hostile intrigues which, taken separately, could seem trivial, but the constant repetition of which has pernicious effects. The concept of mobbing defines the sequence, usually over a long period, of hostile remarks and intrigues expressed by one or more people towards a third person, and refers to a conflict relation at the place of work, as between colleagues or between superiors and subordinates.

Figure 1-1 Relationship between aggression, violence and bullying (Source: Olweus, 1999b)



More precisely, Olweus defined bullying as involving repeated, negative actions over time, either physical or psychological. These negative actions include: hitting, kicking, threatening, locking inside a room, saying nasty and unpleasant things, and teasing (Olweus, 1991). By a definition involving harassment that is carried out repeatedly and over time, one intends to exclude occasional non-serious negative actions that are directed against one person at one time and against another on a different occasion. In order to use the term bullying, there should also be an imbalance in strength (an asymmetric power relationship). The target of bullying may actually be physically weaker or may simply perceive himself as physically or mentally weaker than the perpetrator(s); or there may be a difference in numbers, with several students ganging up on a single victim. A somewhat different kind of imbalance may be achieved when the "source" of the negative actions is difficult to identify or confront, as in social exclusion from the group, back talk, or when a person is being sent mean anonymous notes (Olweus, 1999b). The phenomenon of bullying is characterized by three criteria: (1) it is

an aggressive behaviour or intentional doing of harm, (2) which is carried out repeatedly and over time, (3) in an interpersonal relationship characterized by an imbalance of power.

The behaviours mentioned above have been classified as direct and indirect bullying. Direct bullying involves open attacks on a victim, while indirect bullying is marked by social isolation, exclusion from a group, or non-selection for activities (Olweus, 1991).

When talking about bullying, media often speak of "violence at school." In French different words are used, such as: *brimade, intimidation, harcèlement, brutalité, agression, violence*, or even "mobbing at school."

1.1.5. Operationalization of bullying

In order to measure the concept of bullying, the questions used in our work are based on Olweus definition (1999b, p. 10):

> "A student is bullied or victimised when he or she is exposed, repeatedly and over time, to negative actions on the part of one more other students."

Bullying is operationalized in various ways and includes a variety of hurtful actions such as name calling, deliberately excluding individuals from activities, not talking to a person, money taken or belongings damaged, as well as the more obvious forms of hitting and kicking (Bosworth, Espelage & Simon, 1999). Bullying can also take the form of saying or writing inappropriate things about a person, threatening a person with bodily harm, making a person do things he does not want to do, taunting, teasing and coercion. Bullying can be physical, verbal, psychological, or a combination of these three.

1.1.6. Bullying, a public concern

Among the problematic behaviours of youth, bullying has become a topic of both public concern and research effort. The reasons are, on the one hand, the psychological consequences on the victims of bullying and on the school climate and, one the other hand, the great predictive value of this variable for violent behaviour in adulthood (Killias, 2001, p. 650). Many authors writing on the subject have mentioned the effect that bullying can have on a child. In fact, a single student who bullies can have far-reaching effects not only on his

victims but on fellow students as well, by creating a climate of fear and intimidation at school. When asked for the number-one reason for not returning to school, 10% of high school dropouts reported fear of being harassed or attacked (Greenbaum, Turner & Stephens, 1988).

Bullying is often followed by short-term and long-term undesirable psychosocial consequences. Both victims and perpetrators of bullying tend to have high numbers of physical and psychological symptoms such as depressive symptomatology, severe suicidal ideation, psychiatric and psychosomatic symptoms, eating disorders, and are more frequently referred to psychosocial services. Those who are bullies and victims tend to have poor psychological adjustment. The consequences on the bullies-and-victims are very similar to those described above but compared to the bullies-only and victims-only[3], they are the group presenting the highest risk of developing such symptoms (Ttofi & Farrington, 2008).

Moreover, bullies have been identified as a risk factor for other types of antisocial behaviour (such as excessive drinking and substance abuse). Bullying is also significantly correlated with aggression in general, and there is a significant continuity in aggression from adolescence to adulthood (Bosworth *et al.*, 1999; Farrington, 1993; Farrington & West, 1990; Ttofi & Farrington, 2008). A Scandinavian study found that bullying others in school was strongly linked to violent behaviour and carrying weapons on the street (Andershed, Kerr & Stattin, 2001). Rigby and Cox (1996) found that for both sexes bullying and low self-esteem independently place adolescents at increased risk of criminal activity. Olweus discovered that there is a clear link between bullying as a child and later conviction for a criminal offense. As adults, the old bullies show criminal tendencies of a serious nature as well as of recidivism (Olweus, 1999c).

In the United States, experts from the Secret Service have develop profiles of the Columbine and other school shooters and found that most of the shooters had been bullied before choosing to attack their perceived tormentors. In two-thirds of the school shootings (for which the shooter was still alive to report), the attackers had previously been bullied and the experience of bullying appeared to play a major role in motivating the attacker (Sampson, 2004).

[3] Because there is a relation between bullies and their victims the following categorization is sometimes used: those who are neither bully nor victim, bullies only, victims only, both bully and victim.

As we can see, the cost of bullying is high. One the one hand, bullying has undesirable psychological consequences for children and adolescents and, on the other hand, it has a strong future impact on society through the involvement of youth in delinquency. Given that, it is essential to understand bullying behaviour better, to talk about this problematic, and to implement prevention programmes.

1.1.7. Where does bullying occur?

Some research has suggested that twice as many children are bullied in the school environment than in any other location. According to the National Center for Educational Statistics in the United States, "bullying appears to take place more in middle or junior high schools than in high schools" (Nolin, Davies & Chandler, 1996). Olweus (1999c) makes a distinction between violence in the school and on the way to school. The results of the investigations in Norway and Sweden show that there are almost twice as many pupils attacked in school than on the way to school, and in college three times more. Others have reported that bullying behaviours occur in specific locations (e.g., toilets, school bus) and at times where adult supervision is limited or nonexistent (Espelage & Asidao, 2001; Farrington, 1993; Kikkawa, 1987). For example, Kikkawa (1987) found for a sample of secondary school teachers in Japan that it was difficult for teachers to notice bullying in the classroom because bullying activities were often subtle and indirect. Alsaker and Brunner (1999) pointed out a difference between Switzerland and Norway. In Switzerland, students mentioned the following locations for similar levels of bullying activity: on the way to school, on playgrounds, and in classrooms. Each category is brought up by around one-third of the students. Corridors follow with approximately 20% while toilets account for less than 3%. In Norway, most bullying seems to occur on the playground (more than 55%). To explain this difference, the authors suggest that it may be the way breaks are organised, playgrounds are structured, or the degree of adult supervision.

It has been suggested that bullying could be greatly reduced if teachers provided better supervision of students during free play, recess, the noon hour, or on the school bus. Teachers also need to be present in the hallway during class changes and during restroom breaks (Olweus, 1993).

1.1.8. Reluctance to report

One problem is that many children do not tell teachers what happened: more than one-third of middle school students felt unsafe at school because of bullying and did not report such behaviour to school personnel because they were scared, lacked the necessary skills for reporting, or felt teachers and administrators would do nothing to stop the bullying (Bosworth *et al.*, 1999; Junger-Tas, 1999). Another problem is that adults think that difficulties of this kind should be sorted out between the young people themselves (Alsaker, 2003; Narring *et al*., 2004). Junger (1990) mentions that teachers seldom intervene and usually do not give much consideration to the problem of harassment . It appears that authorities (teachers, the police) are excessively lax in responding to complaints. The same is true of student witnesses. Although most students agree that bullying is wrong, witnesses rarely tell teachers and only infrequently intervene on behalf of the victim. Some students worry that intervening will raise a bully's wrath and make him or her the next target (Sampson, 2004).

1.1.9. Demographic and psychosocial factors correlated with bullying

In order to explain bullying, we will introduce different contributing factors identified in the literature. Evidently, no single factor can explain the problem of bullying on its own. It is the interaction of different factors that produces the outcome. The variables have been organised into three different groups: child factors, family factors and school factors.

Child factors

Previous research on bullying indicated differences by gender and by the types of behaviour displayed by children and adolescents. It was found that boys bullied more than girls. Boys were more likely to use physical bullying and verbal threats. In contrast, girls used social and verbal means, including spreading rumours about other students and excluding students from peer groups (Boulton & Underwood, 1992; Junger-Tas & Van Kesteren, 1999; Olweus, 1999c; Sharp & Smith, 1991; Smith *et al*., 1999). Bullying appears to be related to age. Young children are bullied more often than older children, and it appears that the older ones bully more often (Junger-Tas & Van Kesteren, 1999; Smith *et al*., 1999).

Associations between psychosocial factors and bullying behaviour were examined to elucidate variables that indicate avenues for intervention. Bosworth *et al* (1999) showed that high levels of anger are associated with the highest levels of bullying. They also found that

students who reported recent acts of misconduct also reported more acts of bullying their peers. Moreover, students who reported their intention to use nonviolent strategies to manage anger were less likely to report bullying others. In a sample of 8th graders in Austria, students who bullied reported they were more likely to resolve conflicts using physical power (Klicpera & Klicpera, 1996). Bullies score high on self-confidence and have a positive attitude towards violence. In the Netherlands, a strong association between low self-esteem and being bullied was found and a positive correlation between self-esteem and bullying, although this relationship is weaker than the one with victimization. Bullies often carried some sort of weapon (often a knife or a stick) and used soft drugs (Junger-Tas & Van Kesteren, 1999).

Australian students who bullied were more likely to report depression and feeling unhappy at school (Slee, 1995). Rigby and Slee (1991) found that bullying was negatively correlated with happiness in Australian adolescents between 12 and 18 years of age. In that study, participants were shown a series of faces depicting a continuous range of emotions from smiles to frowns. They were asked to select the face that described how they generally felt. Although those students identified as bullies selected unhappy faces, it is unclear whether those faces represented anger, frustration, sadness, or anxiety. The authors held that bullying behaviour is associated with low levels of empathy, as indicated by relatively high scores on the P-factors in Eysenck's Personality Inventory. A factor identified as being associated with students being bullied more than most others is extreme introversion. Students who were identified as bullies were also found to be generally uncooperative in many areas of life, a characteristic they shared with students who were regularly victimised (Rigby & Slee, 1999)

Bullying was significantly correlated with beliefs supportive of violence (Bentley & Li, 1995; Bosworth *et al*., 1999). These findings are consistent with investigations that had shown that aggressive children and adolescents – when compared to their nonaggressive peers – were more likely to accept aggression as justifiable and satisfactory (Bosworth *et al.*, 1999; Slaby & Guerra, 1988). Researchers who attempted to change beliefs supportive of violence through violence prevention programmes were successful in changing these attitudes (Bosworth *et al.*, 1999). Olweus (1994) also advocates that schoolwide bullying intervention reduces antisocial activities such as vandalism, fighting, theft, and truancy, as well as bullying.

Hirsch and Gottfredson (1990) mention that individuals with low self-control tend to be implicated in crimes and imprudent conducts of various types, including disruptive behaviour at school. The lacking "elements of self-control" are listed as incapacity to delay gratification, lack of tenacity and persistence, preference for physical rather than mental activities, intolerance of frustration, and lack of sensitivity to the needs of others. Moreover, Olweus (1994) noted a relation between impulsivity and bullying.

Olweus mentions that little systematic knowledge exists on violence perpetrated on children from ethnic minorities or committed among these (Olweus, 1978). However, an investigation carried out in the Netherlands did not find a higher level of victimization from bullying in three groups of boys of ethnic minorities (Turks, Surinamese, and Moroccans) as compared to a group of native Dutch boys of the same age (Junger, 1990). Concerning the offender of bullying, Junger-Tas mentions that immigrant children tend to report somewhat more frequent bullying than Dutch children (Junger-Tas & Van Kesteren, 1999). In Germany, various studies revealed no significant differences in prevalence between foreign and German youth in bullying or in the experience of violence at schools, which is in contrast to police statistics reporting a higher rate of delinquency among foreign adolescents (Lösel & Bliesener, 1999).

Family factors

Bullies tend to come from a troubled family situation and have parents who use erratic and harsh discipline methods. They are often rejected by their parents and disciplined by physical punishment. Violence is often encouraged by parents. Bullying is related to a lack of affective relationship with parents (Junger-Tas, 1999). Farrington (1993) found in a longitudinal research among boys aged 8 to 12 that the most important predictors of bullying were physical neglect at age 8, convicted parents by the age of 10, low school attainment at the age of 11 and low interest of the father in the boy's leisure activities at the age of 12. All these factors predict not only bullying but delinquency and violence in general.

Olweus (1978) observed that bullying tends to persist over time. He found that two-thirds of bullies at the time of the study were also bullies the following year. In the Swedish follow-up studies, it appears that around 60% of the boys considered as bullies between 12 and 16 years old had been convicted for at least one criminal offense by the age of 24. By that age, 35–40% of them have had three convictions or more, whereas this was the case for only 10% of the controls (Olweus, 1999c). Thus, as young adults, the old bullies showed rates of criminality of

a rather serious level as well as of recidivism, the rates being four times higher than the juridical statistics average.

Farrington & West (1990) observed that there is considerable *intragenerational* continuity in bullying from adolescence (age 14) to adulthood (age 32). As already mentioned, bullying is also significantly correlated with aggression in general, and there is significant continuity in aggression from adolescence to adulthood. There is also an *intergenerational* continuity in bullying and being bullied. There are links between generations, with fathers who bullied at school being more likely to have sons who are also perpetrators of bullying at school and fathers who were bullied at school being more likely to have boys who were victims of bullying (Farrington, 1993).

School factors

As mentioned above, bullying takes place when supervision is minimal. Although the amount of bullying differs from one school to another, neither school nor class size seem to make any difference (Olweus, 1978, 1993).

Important factors are the quality of teaching and the intensity of supervision in the classroom and on the playground. An increase of school violence appeared to be related to teachers who are either too strict or unable to keep order in the classroom, and pupils who have a strong dislike of school. Negative school experience seems to play an important role. Schools in socially disadvantaged and inner-city areas where unemployment, poverty, drugs, crime and family problems are widespread, present more problems of violence and bullying than schools in quiet middle-class areas. This has been confirmed by research performed in the Netherlands, Canada and in England (Junger-Tas & Van Kesteren, 1999; Whitney & Smith, 1993).

Klicpera and Klicpera (1996) mentioned that students who bullied were involved in more anti-social acts in school and had a negative image of school in general. Mooij (1994, cited by Junger-Tas, 1999) also found that bullies did not like school and were troublesome in class. Many studies have shown that lacking commitment to school (dislike for school, repeating classes, skipping school, working less for examinations) correlates with delinquent behaviour. The ISRD-1 study showed that in the case of serious and violent delinquency, repeating classes becomes an important variable which, however, is not the case for non-serious offending with which only two variables correlate: whether a respondent likes school, and

whether he has played truant during the last 12 months (Junger-Tas, Ribeaud & Cruyff, 2004).

Concerning the difference in grades/age, studies disagree. The prevalence of bullying does not remain constant across various school age groups. Regarding the active use of violence, many studies have noted an increase at around the 8th to 10th grades (Lösel & Bliesener, 1999). Olweus (1999b) did not find such a clear line in Norway. He noticed a marked drop in the curves for grade 7 (around age 13), in particular for boys, and offered the explanation that these students were the youngest in their school, so they did not have "access to suitable victims" in lower grades. In the RUG study, bullying decreased significantly between ages 10 and 16 (Vettenburg, 1999a). When looking at the forms of bullying, these appear to change with age too: whereas physical confrontation is predominant among younger students, verbal or psychological aggression becomes more predominant among older ones (Lösel & Bliesener, 1999).

Another question to ask is whether educational tracks influence bullying. In Switzerland, students in the 7th through 9th grades are usually separated onto different tracks (depending on the canton, the number of tracks varies). In Canton Vaud there is a higher-level track leading later to continuing studies, a medium-level track usually leading to more qualified apprenticeships, and a lower-level track leading to less qualified jobs. Alsaker and Brunner (1999) found that the pupils in the school track involving the highest requirements reported being bullied less and bullying others less than their peers from the other two tracks. Teenagers from the lowest track yielded the highest percentages. Physical bullying was almost absent from the highest track, and verbal and indirect bullying were also lower than in the other tracks. Similar results were found in Zurich, where there are four tracks. From the lowest to the highest level, the rates of bullying were reported as: 18.5%, 11.0%, 7.1% and 4.4% (Eisner, Manzoni & Ribeaud, 2000) .

Bullies frequently act as a group, but rarely are these groups organized as youth gangs (Lösel & Bliesener, 1999). Data from the Bergen study indicate that, in the majority of cases, a small group of two or three students harasses the victim of bullying. However, a considerable number of victims, some 25 to 40 percent, report that they are mainly bullied by a single student (Olweus, 1999b). Alsaker (2003) mentions that as bullying is a group phenomenon, all the class should be involved in resolving the problem. Junger-Tas found that bullying is

not something the pupil does on his own (Junger-Tas & Van Kesteren, 1999). It seems that depending on the point of view (students, teachers, or parents), the answers and responses are different. Teachers view the origin of youth violence more often in individual students whereas students and parents believe that violence tends to derive from youths in groups (Lösel & Bliesener, 1999).

In Australia wide variation between schools has been found, which suggests that certain school environments may encourage bullying. In the USA, Gottfredson *et al*. (2005) found that school climate explained a substantial percentage of variance in school disorder when allowing for the effects of community characteristics and student population. In a study conducted by Rigby and Slee (1999) a high and a low-bullying school were found to differ significantly in the attitudes held by students, who in the low-bullying school on average showed less admiration for bullies and more support for children who were victimised.

Considering the fact that in the life of young people, situational variables and opportunity do play a considerable role in committing offences and using violence (Felson, 1994), it would follow that schools should be able to have a serious impact on bullying.

Neighbourhood factors

In the Netherlands, questions about the bonding of the child to the neighbourhood and about the presence of negative features in the neighbourhood have been asked (Junger-Tas & Van Kesteren, 1999). No relation between bullying and the attachment to the neighbourhood was found, whereas a strong positive relation was observed between negative characteristics of the neighbourhood and bullying.

1.1.10. Studies in Switzerland

Although the phenomenon is a relevant and current problem, Alsaker and Brunner (1999) mentioned that hardly any data on bullying had been collected in Switzerland up to about the year 1999. In 1999, no nationwide data existed. At the level of the cantons, the situation was similar: most had no statistical data at all.

A few studies that deal more with violence at school than with bullying have been made in Switzerland. None of them is a national survey. In a first study, Mülli (1993, cited by Alsaker & Brunner, 1999) questioned 631 high-school pupils about physical violence. It was observed

that 12 to 15% of the boys had been injured by knives or by implements used in Asian martial arts. Ten percent of both genders reported their genitals had been touched against their will by others who applied violence.

Woringer (1995) studied violence in four classes in a primary school (86 children), where 45.8% of the children reported that quite frequently or very frequently, they were subjected to general violence at school, 14.4% were excluded from games, and 1.2% had committed violent acts against peers.

In 1994, a survey on "Everyday school life and stress among school pupils in Switzerland and Norway" was conducted on more than 1800 students between the ages of 10 and 16 (Alsaker & Brunner, 1999). Six items were used to measure "being bullied by others" and "bullying others". In the category of being bullied by others at least once a week during the last two months, the rates for students in grades 4 through 6 (10 to 13 years old) were 5.8%, 10.8%, and 9.5% for physical, verbal, and indirect victimization (i.e., isolation), respectively. Among the older students, 7th through 9th grade (13 to 16 years old), the rates were: 2.3%, 8.2%, and 5.3%. When looking at the Swiss students that had bullied peers at least once a week during the last two months, the rates found for the younger ones were: 3.7%, 8.3%, and 3.4% for physical, verbal, and indirect victimization, respectively, and for the older students, 2.3%, 9.2%, and 4.6%.

In 2002, 72 classes – grades 7 and 9 – participated in a survey in the canton of Zug (Willi & Hornung, 2002). In their sample, "pure bullies" are 6%, "pure victims" are 4% and "bully-victims" are 3%. Analyses done on bullying showed that bullies and bully-victims were often also victims and/or perpetrators of violent delinquency. The analyses also found that pupils who were bullied reported lower peer acceptance than bullies and non-involved pupils, whereas bullies, perpetrators and victims of violent delinquency reported lower family support than non-involved adolescents (Perren & Hornung, 2005).

A study undertaken on the health of Swiss youth in 2002 (Swiss Multicenter Adolescent Survey on Health – SMASH 2002) has looked at young people between 16 and 20 years old. Those bullied constituted 2.2%, 12.7%, and 1.6% for physical, verbal, and indirect victimization (i.e. isolation) (Narring *et al*., 2004). These rates correspond to the results found in a study carried out among army recruits (Haas, 2001).

1.1.11. Prevention of bullying

Olweus (1987) emphasised that the psychological tendency towards aggressive behaviour, which seems to be at the origin of bullying, is not immutable. Rather, bullying is subject to situational factors that also provide the means for reducing the problem. In Norway, a programme has been developed to counter harassment in schools.

The first large-scale anti-bullying programme was implemented in Norway in 1983. A more intensive version of the national programme was evaluated in Bergen by Olweus (1991). The nationwide campaign against bullying was launched by the Ministry of Education. Pupils between 11 and 14 years old were followed up during two and a half years. The results of this programme were very positive. A reduction of 50% occurred in the number of incidents. There was also a decrease of anti-social behaviour, such as theft, vandalism, and truancy. Moreover, satisfaction of pupils with their life at school increased significantly. An important factor is the degree of supervision at school. Schools with adequate supervision in place have a lower level of harassment than schools where supervision is inadequate. Positive effects have also been found in Germany, the USA and Great Britain.

Olweus (1978) had mentioned that two aspects determine the amount of aggression in schools: the presence of strong values in the school condemning violence, and the fact that teachers take responsibility and feel that it is their task to intervene when they witness incidents. The intervention programme (Olweus, 1999a) was built on four key principles derived from research on the development and potential modification of problem behaviour. Thus, it is important to create a school and, ideally, a home as well that are characterised as much as possible by: warmth, positive interest and involvement by adults; firm limits to unacceptable behaviour; in cases of violation of limits and rules, non-hostile, non-physical sanctions should be applied consistently; and adults both at school and at home are expected to act as authorities.

In Switzerland, Prof. Alsaker studied bullying extensively in kindergartens and implemented a prevention programme in Berne (Berne Prevention Programme against Victimization in Kindergarten and Elementary School). An extensive survey of the children (4 to 7 years old), kindergarten staff and the parents was carried out by means of questionnaires and interviews. The prevention programme was implemented at about half the kindergartens whilst the other half served as a control group. The results show that a prevention programme based on

teacher counselling has an effect on reducing the number and intensity of aggressive interactions and on diminishing the risk of becoming victimized (Alsaker & Valkanover, 2001; Perren & Alsaker, 2005).

Since the 1991 Olweus evaluation, at least 15 other large-scale anti-bullying programmes, some inspired by Olweus and others based on different principles, have been implemented and evaluated in at least 10 other countries. Baldry and Farrington (2007) reviewed 16 major evaluations in 11 different countries and concluded that 8 programmes produced desirable results, 2 produced mixed results, 4 produced small or negligible effects, and 2 produced undesirable results. Most programmes were quite complex, and the effectiveness of different components of programmes was not clear. A meta-analysis in the framework of the Campbell Collaboration and for the Swedish National Council for Crime Prevention (Farrington, Baldry, Kyvsgaard & Ttofi, 2008; Ttofi, Baldry & Farrington, 2008) had as objective to assess the effectiveness of school-based anti-bullying programmes in reducing school bullying. The authors of this review clearly separated anti-bullying programme from those intended to prevent or reduce school aggression or violence, as bullying is different from aggression or violence. It is not sufficient to base a programme on commonsense ideas about what might reduce bullying. To solve a problem, it must be first identified, then a strategy/programme should be suggested, followed by a post-implementation evaluation. The meta-analysis showed that school-based anti-bullying programmes are effective in reducing bullying and victimization, which were reduced by around 17-23% in experimental schools compared with control schools. The most important programme components associated with a decrease in bullying were parent training, improved playground supervision, disciplinary methods, school conferences, videos, information for parents, classroom rules and classroom management.

1.2. DELINQUENCY THEORIES

The questionnaires of the different Swiss surveys were constructed in order to study delinquency. Thus, the questions in the surveys relate to criminological theories built to understand delinquency, but they can be applied more widely than to explaining only offending. In the framework of this dissertation, explanation of bullying behaviour uses the general theories developed for understanding delinquency. Moreover, it is pertinent to carry out a review of some of the principal criminological theories addressing the causes of delinquency because, as found in the literature as well as in our study, bullying and delinquency are strongly related and school bullying is part of a broader pattern of anti-social and aggressive behaviour.

The theories presented below are: the social disorganization theory, the differential association theory, the social learning theory, the strain theory, the social control theory, the cultural deviance theory, the routine activity theory, the broken windows theory and the societal vulnerability theory, which allow us to contextualize, understand and interpret our results.

1.2.1. Social disorganization theory

Shaw and McKay (1942) attempt to link the idea of geographical “area” to human behaviour. People develop guidelines about their behaviour through their perception of the prevailing norms and values within a particular area.

This, in turn, links to the idea that people become attached to the particular area in which they live, since it is in their immediate neighbourhood that they develop a sense of communal living, rights and responsibilities. Shaw and McKay used the term social disorganization to describe neighbourhoods in which controls had weakened and criminal traditions rivalled conventional institutions. Thus, if a community is not self-policing and is inadequately policed by outside agencies, some individuals will exercise unrestricted freedom to express their dispositions and desires, often resulting in delinquent behaviour. They argued that any city could be divided into various concentric zones emanating from the centre of the city. In examining crime rates in relation to each zone, Shaw and McKay found that one zone in particular exhibited higher rates of crime than any other area. This “zone in transition”

(characterised by cheap housing and successive waves of immigrants) had a consistently higher crime rate than any other zone, regardless of which immigrant group dominated the cultural life of the area. Disorganized neighbourhoods help to produce and sustain criminal tradition.

Shaw and McKay believed that juvenile delinquency can be understood by considering the social context in which youths live. Youths with the misfortune of residing in the socially disorganized zone in transition are especially vulnerable to the temptation of crime. As conventional institutions disintegrate around them, they receive little supervision and are free to roam the streets, where they likely become the next generation of carriers for the neighbourhood's criminal tradition. Thus, crime is culturally transmitted (Lilly, Cullen & Ball, 2007).

In the late 1980s, Sampson and Groves measured structural and social disorganization variables. Consistent with Shaw and McKay's theory, they found that structural factors (such as socioeconomic status, ethnic heterogeneity, residential mobility, family disruption) increase social disorganization and that, in turn, disorganized areas have higher crime levels than organized areas. Sampson added the concept of "collective efficacy," which is a neighbourhood's ability to maintain order in public spaces by informal social control. Informal social control involves residents behaving proactively when they see wayward behaviour, such as by calling the police, rescuing someone in trouble, or telling unruly teenagers to quieten down and behave (Lilly *et al*., 2007; Sampson, Raudenbush & Earls, 1997).

1.2.2. Differential association theory

Sutherland (1947) adopted the thesis that social organization, the context in which individuals are embedded, regulates criminal involvement. He substituted the term social disorganization with "differential social organization." For him, it is not a lack of social organization that characterizes communities and neighbourhoods high in crime, but a differential social organization. Social groups are arranged such that some are organized in support of criminal activity while others are organized against such behaviour.

His view was that criminal behaviour is learnt through social interaction, just like other forms of behaviour. Sutherland defined this learning process as "differential association." The

learning process applies not only to the techniques necessary for committing offences but also to such aspects of offending as motivation, attitudes to crime, and values. “A person becomes delinquent because of an excess of definitions favourable to violation of law over definitions unfavourable to violation of law” (Sutherland, Cressey & Luckenbill, 1992, p.89). He situates people's behaviour within a cultural framework of rules, roles and responsibilities – the people the youth associate with are basically responsible for whether or not he breaks the law, depending upon how “normally” they view criminal behaviour. Anyone, from any social class, is liable to become involved in crime, including the middle and upper classes.

Sutherland held that the concepts of differential association and differential social organization are compatible and allow for a complete explanation of criminal activity. The former explains why any given individual is drawn into crime and the latter why crime rates are higher in certain sectors (Lilly *et al*., 2007).

1.2.3. Social learning theory

Sutherland never went any deeper into the question of how the learning of criminal/conformist behaviour takes place. Akers (1979) proposed a reformulation of Sutherland’s differential association theory. In his social learning theory, he attempted to specify the mechanism and processes through which criminal learning takes place.

Social learning theory postulates that delinquency is learned from others as is learning to respect the law. Social learning theories have behaviourist roots, like cognitivism. It considers how people learn from one another, encompassing such concepts as observational learning, imitation and modelling. What the juvenile learns depends on the people he spends his time with (family, friends, teachers at school, neighbours). Furthermore, juveniles do not have to be in direct contact with others to learn from them; they may learn, for example, from observing people through the media. Whether juveniles learn to abide by the law or engage in delinquency depends on the nature of the people with whom they associate. If the latter are engaged in delinquency and hold beliefs favourable to delinquency, juveniles are more likely to learn and engage in delinquency. To explain why people continue to commit illegal acts, Akers refers to the concept of social reinforcements. Rewards and punishments determine whether any behaviour is repeated (Akers *et al*., 1979; Burgess & Akers, 1966).

Engagement in delinquency increases when reinforcement is frequent – or delinquency is infrequently punished – and when reinforcement is high. The theory can be applied to most criminals and crimes that produce a gain, but is best applied to behaviour in groups that offer reinforcement, such as gangs, peer groups or social groups. The gain can be psychological (e.g., positive attention from other group members) or material (e.g., what was stolen). The degree of positive reinforcement will determine whether the behaviour is continued. According to the theory, juveniles learn to engage in delinquency mainly when others: (i) differentially reinforce their delinquent behaviour, (ii) teach them beliefs favourable to delinquency, and (iii) provide delinquent models for them to imitate (Agnew, 2005; Lilly *et al*., 2007).

1.2.4. Strain theory

Merton did not reject the ideas of social disorganization theory and social learning theory but he thought that other factors produced crime and deviance. His first publication was in 1938 but Merton's paradigm became particularly influential during the 1960s. The key ingredient to crime was not neighbourhood disorganization but the "American dream," a message sent to all citizens that they should strive for social ascent as manifested by economic well-being. Another concept he added to his theory was the notion of anomie, defined as normlessness or deregulation.

The disjunction between what the culture extols (universal striving for success) and what the social structure makes possible (limited legitimate opportunities), places large segments of the American population in the strain-engendering position of desiring a goal that it cannot reach through conventional means. Strain was defined as the disjunction between aspirations and expectations. The consequence of society placing an intense value on economic success is that its institutionalized norms will weaken, allowing anomie to take hold. Anomie and deviance are mutually reinforcing. The weakening of institutionalized norms initially lets a limited number of people violate socially approved standards. Such a deviance, once completed successfully and observed by others, poses a challenge to the norm's legitimacy (Lilly *et al*., 2007).

The original strain theory focussed on delinquency among the lower class whose goal was monetary success or ascending to the middle class. Variations of strain theories tried also to

explain middle class deviance. Juveniles pursue more immediate gratification, such as an active social life, rather than long-range goals like monetary success.

Apart from lack of success in achieving a desired goal, Agnew (1985) added other sources of frustration in his "revised strain theory of delinquency." Individuals not only seek certain goals, they try *to avoid painful or aversive situations,* such as sexual or physical abuse, or living in a conflict family. Adolescents are compelled to remain in certain environments, such as family and school. If these environments are painful or aversive, it is difficult for the adolescents to escape. This blockage of pain-avoidance behaviour is likely to be frustrating and may lead to illegal forms of attempts to escape or anger-based delinquency. Strain can also be generated by the *loss of something valuable*, such as losing one's job, the separation of a relationship, the death of a loved person. Delinquency results when the individual cannot get what he wants through legitimate channels and becomes frustrated. Incapacity to cope with strain, frustration and anger drive the person towards delinquency.

Agnew identified a range of factors that diminish the risk of a criminal adaptation, such as the availability of other goals to substitute for blocked goals, individual coping resources (e.g., self-efficacy, intelligence), the delivery of social support from others, the fear of the consequences through legal punishments, the presence of strong social bonds, and the denial of access to illegitimate means. Other factors foster the predisposition to criminality and increase the likelihood of crime – for example, low self-control, prior criminal learning experience and the internalization of antisocial beliefs. Agnew borrowed many of his conditioning variables from other criminological theories but whereas these others theories argue that such factors have direct effects on crime, general strain theory contends that they increase criminal behaviour only when they occur in conjunction with strain. The principal sources of strain are: (i) the feeling of failing to achieve certain aims (such as money, social status, being a man, being autonomous), (ii) the lack of positive reinforcements, and (iii) the presence of negative reinforcements (such as family problems, negative experience at school, victimization, discrimination) (Agnew, 1985, 2005; Lilly *et al*., 2007).

1.2.5. Social control theory

Hirschi argued that the question asked by Sutherland's differential association theory and Merton's strain theory was the wrong theoretical question. The question is not why people commit crimes but why people do not break the law. According to Hirschi's 1969 social

control theory, social bonds prevent individuals from engaging in delinquency. To explain conformity, Hirschi stressed four control variables, each of which represents a major social bond: attachment, commitment, involvement and belief. Delinquent acts result when an individual's bond to society is weak or broken (Hirschi, 2002).

Attachment: in most cases, it is the bond of a child with its parents but it can also be another adult (family member or a teacher) or peer. Because parents and school have a strong societal control function, their roles consist in making the child respect norms and rules. When the child has a strong bond with key figures, he will care about their expectations and will respect and adopt their norms and values.

Commitment: a person invests time and energy in certain activities such as education or work, giving him a good reputation. By committing deviant behaviour, he risks to lose it.

Involvement: refers to the amount of time spent engaged in conventional activities. When the person is involved in conventional activities such as reading, homework, appointments, deadlines, work or church, he lacks the opportunity to commit deviant acts.

Belief: refers to the individual's commitment to the core value system of the society. Individuals who believe they should obey the rules of society are less likely to engage in delinquency.

Hirschi believed that the two conventional systems through which the adolescent forms key bonds with society are the family and school. These important social institutions have a strong social control function. When they fail in their role of socializing agent, youths are more likely to act on their natural impulses toward self-gratifying and potentially delinquent behaviour (Gottfredson, 2001; Hirschi, 2002).

It is the level of integration of the individual into the society he is part of that determines the extent to which he will respect and follow the rules and norms of that society. Most important in this respect is what one has to win or to lose by respecting society's rules (Junger-Tas & Van Kesteren, 1999). An individual who is worried about upsetting his parents, friends or teachers; is scared to ruin his future; who believes that delinquency is wrong; that he would be sanctioned if he were to commit a deviant act and is fully in control, should be less likely than others to engage in delinquency (Agnew, 2005).

According to Gottfredson and Hirschi's general theory of crime (1990) all illegal activity is the manifestation of a single underlying cause. The authors argue that inadequate child rearing causes individuals to develop a similar type of propensity for criminal and analogous behaviour. They call this characteristic "low self-control." Gottfredson and Hirschi (1990, p. 87) define it as "the differential tendency of people to avoid criminal acts whatever the circumstances in which they find themselves." Individuals with low self-control are impulsive, prefer simple tasks, have a high risk-seeking potential, favour physical (as opposed to mental) activity, are self-centred and, finally, possess volatile tempers. All these characteristics tend to be simultaneously present, forming a "latent trait" (Hirschi & Gottfredson, 1994, p. 2), which in interaction with situational opportunities will give rise to antisocial acts. Gottfredson and Hirschi arrive at these six dimensions through an assessment of the essential features of crime. All must be present for a crime to occur. These dimensions are suggested to comprise a final low self-control trait (Arneklev, Grasmick, Tittle & Bursik, 1993; Gottfredson & Hirschi, 1990; Grasmick, Tittle, Bursik & Arneklev, 1993; Wood, Pfefferbaum & Arneklev, 1993). For Grasmick *et al*. (1993), self-control is a unidimensional construct but the question of whether self-control is a uni- or a multidimensional construct has been, and still is, subject to controversy (Ribeaud & Eisner, 2006).

Low self-control is suggested to be an invariant characteristic, i.e. its form does not change with the age of the individual or context in which the person resides. In accordance with this theory, self-control is acquired during the first few years of life, through the socialising practices of the family, and subsequently remains stable. For the same reasons, the corresponding deviant behaviour likewise tends to be stable: individuals with low self-control will tend to be implicated in crimes and imprudent conduct of various types, including disruptive behaviour at school, consumption of legal and illegal drugs, imprudence leading to accidents, and high-risk sexual behaviours (Hirschi & Gottfredson, 1994). At the same time, low self-control will be responsible for other effects, such as association with deviant peers, failure at school, and an inability to establish close social bonds.

The components of self-control defined by Gottfredson and Hirschi (1990) are similar to other constructs that are widely used in psychology (impulsiveness, sensation-seeking, delay of gratification). The definition of self-control as a stable tendency that distinguishes individuals and gives rise to consistent patterns of conduct appears to be fully compatible with the concept of "trait", as used in the psychology of personality (Romero, Gomez-Fraguela,

Luengo & Sobral, 2003). In fact, Gottfredson and Hirschi themselves frequently use the term trait to refer to self-control and its elements (Gottfredson & Hirschi, 1990; Hirschi & Gottfredson, 1994); likewise, in the literature that has developed around this theory, there are frequent references to self-control as a characteristic of "personality" (Arneklev *et al.*, 1993; Romero *et al.*, 2003; Wood *et al.*, 1993).

1.2.6. Cultural deviance theory

There are different versions of cultural deviance theory. One of them concerns the existence of subcultures of violence. There are situations that lead a specific group to formulate values supportive of behaviour that others outside that group may see as deviant. Within this subculture, these values are seen as normal behaviour in certain situations, and there are penalties in place for not acting in the expected way. The failure to act in a way that is congruent with the subcultural value system leads to an individual not being accepted (Lilly *et al*., 2007).

According to Nisbett and Cohen (1996), there are certain cultures, in particular where historically the law was weak and citizens had to depend on themselves for protection, where violence becomes a powerful force in social interaction and is positively evaluated. In the theoretical framework of the "culture of honour", there is a greater acceptance of violence as a means of restoring one's reputation and honour as a man. This notion has its historical roots in settlement and survival in the American South before and after the Civil War. While communities in the north were settled by farmers, the south was settled by "herding societies" who constantly faced the possibility of losing their herds. Thus, the settlers were inclined to become self-protective by developing aggressiveness and violence. This culture of honour was employed by the first settlers of the South and in turn passed on to future generations through the socialisation process. Moreover, southern law is more punitive and the use of physical force to discipline a child is common. Southerners were not only more likely to approve of corporal punishment in general but also more likely to approve if a teacher was administering the punishment, when compared to residents from other regions.

Nisbett and Cohen add the suggestion that such a culture of honour might also develop in modern societies for economic reasons. In inner-city areas – and particularly among the lower social classes – scarcity of economic resources, social disorganisation of the neighbourhoods and a low probability of State protection creates the need for individuals to protect themselves

and to exhibit physical strength and the capability for self-defence (Enzmann & Wetzels, 2002; Hayes, 2006).

An application of the subculture of violence concept has been made by Anderson (1999). He observed that the behaviour of many low-status youths is influenced by a street culture or street code that prescribes violent reactions to interpersonal attacks and shows of disrespect. According to him, minority youths in the inner city are culturally cut off from conventional society and face economic barriers. Members of low-status groups possess fewer legitimate means of demonstrating their worth and competence. Adherence to the streets represents an adaptation to status insecurity and to the persistent threat of violence that is present in some urban communities. Moreover, these youngsters have a lack of trust in the police and believe that problems must be dealt with alone.

In the urban neighbourhoods described by Anderson, familiarity with the code begins early in life from parents and other streetwise adults. Children are born into disrupted and dysfunctional families. They are neglected and receive hard and physical punishment. Weakly bonded to conventional institutions, the youths of these families turn to the streets. Thus, the code of the street demands that any form of disrespect should be met with the immediate threat or application of physical violence in order not to lose respect. Anderson also adds that street code also affects children from 'decent' families given that at some point they will be in contact with the youths in the street. Even they must learn the survival code in order to avoid victimization (Brezina, Agnew, Cullen & Wright, 2004; Lilly *et al*., 2007).

In brief, members of such cultures are more likely to view violence as a legitimate and even necessary response to threats and insults. For them, violence is an appropriate means of self-protection.

1.2.7. Routine activity theory

Traditionally, theories of crime have focused on offenders. In contrast, environmental criminology is concerned not with criminals but with crime.

The nature of individuals' routine activities refers to what they do each day, with whom they do it, when they do it, and where they do it. Certain types of routine activity increase the

likelihood of being in a situation conducive to crime. This theory is focused on what occurs in the present situation rather what occurred in the past (Cohen & Felson, 1979).

A crime is more likely to occur when a motivated offender is in the same place, at the same moment, as an attractive target in the absence of a capable guardian. These three elements are required for the commitment of most criminal acts (Agnew, 2005). According to this perspective, crime is therefore likely to occur at school or on the way to school (Gottfredson, 2001). Violence within schools is not only associated with the characteristics of the young person but also with the school itself. The school is not only a place where violence is imported. Schools with a higher level of antisocial acts are usually oversized, the number of pupils per teacher is higher than elsewhere, the educative team lacks cohesion and refuses to collaborate with management, the teachers are satisfied to be dispensers of knowledge and school rules are not respected. Conversely, when a school meets the conditions of an effective educational method, it contributes to non-violence (Cusson, 2002). One important situational factor is the carelessness of the school concerning preventive intervention. Through adequate control of potential targets, it is possible to reduce their vulnerability and thus reduce the opportunities for deviant behaviour both in the school and outside it. Indeed, when a programme of prevention is implemented in a specific place, its influence can also affect locations not engaged directly in the programme (diffusion of the benefit phenomenon) (Killias, 2001).

Juveniles who spend a lot of time in unstructured, unsupervised activities with peers, especially delinquent peers, are more likely to encounter situations conducive to crime. Unstructured activities include, for example, hanging out and party going. Unsupervised activities are those where capable guardians, like parents and teachers, are absent.

By saying that crime cannot be committed unless the opportunity to complete the act is present, it is easy to understand that focus on opportunity suggests a pragmatic approach to preventing crime by decreasing opportunities for offending. The advice to reduce crime opportunities often leads to a focus on aspects of the environment that are most easily implemented, such as alarm systems or well-lit streets.

1.2.8. Broken windows theory

High crime rates in inner-city areas were attributed to a breakdown in community control. Communities suffer from social disorganization or, in more recent terms, from lack of collective efficacy (Sampson *et al.*, 1997; Shaw & McKay, 1942). In brief, bad areas, not bad people, cause crime and delinquency.

Wilson and Kelling (1982) propose an alternative vision for why informal controls in impoverished areas become ineffective. They do not talk about structural factors (concentration of disadvantage, heterogeneity, racial segregation, etc). For them, communities are not static entities whose decline into a crime-ridden state is compelled by the weight of structural risk factors but rather communities are dynamic and can change. The metaphor they used is a house in which a window is broken. If it is replaced, the message sent to people is that the owner is present and does not tolerate house disrepair. But if the window remains broken, the message sent is the contrary: the property lacks a guardian. It will incite more vandalism. Wilson and Kelling observed that neighbourhoods function in a similar way. The spiral of decline in a community begins when public signs of social disorganization or incivility are tolerated and thus "disreputable" people take over public spaces (such as drunks, addicts, rowdy teenagers, prostitutes). If disorder is accepted, informal social controls diminish, offenders "invade" the area because they face no threat of punishment and thus crime increases. In brief, broken windows should be fixed and disreputable people should not be allowed to take over public space. Wilson and Kelling propose the police to re-establish control (Lilly *et al.*, 2007).

1.2.9. Societal vulnerability theory

The theory of societal vulnerability attempts to integrate various macrosociological, relational and psychological variables. It is based on an adapted version of the theory of social links, itself adapted to school life. In societal vulnerability, the creation of a link is regarded as an interaction between the social institution and the young person. If the link is not developed, a problem may arise on both sides or in their collaboration. This means that the problem is not only on the side of the young person: it can also be that society cannot offer a link. Hirschi considers that the bonds proposed by society are a firm and undeniable fact whereas Walgrave thinks that the link offered by society is not the same for all children, especially when it

comes to the bonds offered by school, which is one of these institutions where social links are developed (Walgrave, 1992).

> "A person (or section of the population) is in a situation of societal vulnerability if repeatedly confronted with negative aspects of the social institutions (school, labour market, law, etc.) with which they come into contact and therefore benefit less from the positive things which these institutions have to offer. The accumulation of negative experiences with social institutions (particularly school) gives rise to socio-psychological mechanisms and specific psychological characteristics which may lead to greater delinquency" (Vettenburg, 1999b, p. 38).

A pupil who feels accepted by a teacher will tend to become attached to that teacher and receive certain affection in return. In order to preserve this relationship the pupil will apply himself to school work, leading to a positive influence on school results. Thus, he will acquire a higher status in class and in school. In order not to lose this positive relationship and this status, the pupil will accept the discipline imposed by the school. On the other hand, children from less privileged social backgrounds have to bridge a much wider gap between what they learn at home and what they learn at school than children from higher social backgrounds. Those children are less familiar with more abstract ideas and arguments, the informal rules of how to behave, the use of language. Moreover, they are less accepted by the teachers and thus will find it more difficult to develop a personal relationship with them. Feeling stigmatized, these children will be less motivated to dedicate time to school and will therefore develop a negative image of themselves (Vettenburg, 1999b; Vettenburg & Walgrave, 1991).

According to Walgrave, it is important to note that the various explanations found in the literature do not necessarily contradict each other. Many mechanisms described in the various theories can be complementary.

1.3. SCHOOL EFFECTS

School is an important social context of socialization for young people. They spend considerable time at school, meet friends there and are supervised by their teachers. Gottfredson and Hirschi (1990), argue that school has replaced the family in socializing youth in modern society.

Pace & Stern (1958) and Moos (1976), were among the first to examine the influence of school on the behaviour of pupils (LeBlanc, 2004). Moos defines school climate as the social atmosphere of a setting in which students have different experiences, depending upon the protocols set up by the teachers and administrators. He divides social environments into three categories. Relationship includes involvement, affiliation with others in the classroom, and teacher support. Secondly, personal growth or goal orientation includes the personal development and self-enhancement of all members of the environment. Finally, system maintenance and system change includes the orderliness of the environment, the clarity of the rules, and the strictness of the teacher in enforcing the rules. Every school has a distinctive characteristic that makes it different from other schools. In each school, education is delivered within a specific organizational and interpersonal climate. School climate includes communication patterns, norms about what is appropriate behaviour and how rewards and sanctions should be applied, role relationships and role perceptions, and patterns of influence and accommodation (Welsh, Greene & Jenkins, 1999).

Also, each school is different in terms of its structural characteristics such as sex, ethnicity, age, size, location and so on. In criminology, the effects of school-related variables on delinquent behaviour have generally been used at the individual level (e.g., school attachment, school failure).

Schools differ in the amount of delinquency they experience. Delinquency rates are higher in schools that have a higher percentage of pupils who are less able, poor, male, and members of minority groups. The characteristics of effective schools are similar to the characteristics of effective families, both are warm but firm. Warm, because pupils are treated in a fair manner, teachers are interested in students and school staff attempt to create a pleasant environment for the students. Firm, as schools have clear rules about acceptable and unacceptable behaviour, and action is taken immediately when a pupil misbehaves (Agnew, 2005). Schools

can be seen as places where a large number of members of the most delinquent part of the population (teenage boys) is assembled in the same place and where desirable targets are present (electronics, jackets, victims) (Gottfredson, 2001).

Considering the fact that in the life of young people situational variables and opportunity play a considerable role in favouring deviant behaviour (Felson, 1994), it would follow that school is an important environment that can play a significant role in bullying.

1.4. SUMMARY

The theme of this dissertation, bullying, has been little studied among adolescents in Switzerland. We have approached it through the optic of delinquency as for both victims and perpetrators this form of aggressive interpersonal behaviour is often a defining experience of that wider field. Delinquency theories attempt to explain why someone commits a deviant act or why he does not. Moreover, we have highlighted the importance of the school context and its influence on pupils' behaviour, and shown the seriousness of the psychosocial consequences for victims and offenders in the short as well as the long term. In addition to psychosocial problems, the impact on society is important, as bullying is correlated with other types of antisocial behaviour and delinquency. By understanding more about bullying and thus identifying factors explaining such behaviour in Switzerland, this dissertation should help select appropriate programmes of prevention. To the knowledge of the author, this study is the first to bring an overview of the situation of bullying in Switzerland among young people aged 13–16 years, attempting to cover the principal dimensions of this age-old but pernicious problematic.

CHAPTER TWO: METHODOLOGY

2.1. INTRODUCTION

This chapter starts with some information on self-reported surveys. Then, a summary of the different surveys carried on between 2003 and 2006 is given and the general hypotheses are presented. Finally, we present the analytical strategies and a theoretical overview of multivariate analysis.

2.2. SELF-REPORTED SURVEYS

Self-reported surveys are widely used in sociology and criminology. The first self-reported surveys were developed before World War II in an effort to measure attitudes and public opinion. The aim in those days was to measure behaviour in fields such as education, health, and family relationships. One of the reasons for developing self-report surveys in the delinquency field is the dissatisfaction of researchers with official crime statistics (Junger-Tas & Marshall, 1999).

A main criticism has been that one cannot be sure of obtaining honest answers by "simply" asking people. Reviews of methodological research in the self-report crime and delinquency studies show that self-reported delinquency studies are a valid measure of delinquency for teenagers as well as for some categories of offenders such as prison inmates or hard-drug addicts under heroin treatment. A methodological study showed that with the method of self-

report questionnaires it is possible to measure with remarkable precision the delinquency of the people interrogated, whereas the data coming from police files often prove to be rather fragmentary and vague. Methodological research shows that self-report delinquency research is a fairly reliable and valid means of estimating criminal behaviour, especially in child and adolescent populations (Aebi, 2006; Junger-Tas & Marshall, 1999).

Self-report delinquency studies generally have two main goals: (i) to measure rates of prevalence (i.e. the proportion of persons who have committed one or more offences) and incidence (i.e. frequency with which offences have been committed) within specific population groups, with a higher validity than official crime statistics; (ii) to search for correlations of types of offence and to test etiological theories on crime. In addition, self-reports are increasingly used in evaluating prevention and intervention programmes, to test the effectiveness of these programmes in changing the behaviour of experimental subjects.

An important argument for the validity of prevalence and incidence rates found in self-report surveys is the fact that they converge with crime trends identified in police and victim studies, according to several studies (Junger-Tas, Marshall & Ribeaud, 2003).

A weakness of self-report samples in schools is the likely absence of subjects such as truants and dropouts who tend to commit more serious offences (Oberwittler & Naplava, 2002). On the other hand, self-report studies provide more background information than police data, for instance socio-demographic and socio-economic data, as well as information on school, work and leisure.

2.3. SURVEYS AND HYPOTHESES

This dissertation combines four surveys carried out between 2003 and 2006. The methodology used to collect the data varies (paper and on line questionnaires) and two different questionnaires were used. The first one was created with the Interior Department and the Youth Department of Canton Vaud (DFJ questionnaire, Vaud sample) and the second one under the aegis of the International Self-Reported Delinquency steering committee (ISRD-2 questionnaire, national sample).

The first issue relates to the methodology used in the collection of the data and in particular the development and validation of on-line questionnaires. The second issue concerns the

understanding of the bullying behaviour. The latter has been studied on the individual level by analyzing the profile of the authors of bullying and on the school level by taking into account the influence of the school context on this behaviour. In this dissertation, three sets of hypotheses will be tested. In the current chapter, the general hypotheses are presented and the operationalized ones are stated in chapter 3 and 4.

The first hypothesis relates to the methodology used in the collection of the data. Two methods are compared in the survey administered in Lausanne.

Hypothesis 1 (paper vs CAWI)

We expect no differences in the rates of bullying (offenders and victims) when comparing the two methods used: paper-and-pencil and computer-assisted Web interview (CAWI).

The second set of hypotheses analyzes the profile of the authors of bullying on the individual level. Hypothesis 2 relates to the Vaud sample and hypothesis 4 to the national sample.

Hypotheses 2 and 4 (individual level)

Based on the theoretical arguments and empirical evidence discussed in sections 1.1 to 1.3, we expect a relation between certain independent variables and bullying. Hypothesis 2 and 4 will use this relationship uniquely on the individual level.

The third set of hypotheses analyzes the school context. Hypothesis 3 relates to the Vaud sample and hypothesis 5 to the national sample.

Hypotheses 3 and 5 (school level)

We expect the school context to influence the rate of bullying.

A detailed presentation of the different surveys, the questionnaires and the samples are given in the following chapters: chapter 3 is dedicated to the Vaud sample and chapter 4 to the ISRD-2 sample. The operationalized hypotheses 1 to 3 are stated in chapter 3 and hypotheses 4 and 5 in chapter 4.

The following synoptical table gives a summary of the available data and of the hypotheses.

Table 2-1 Surveys and hypotheses

Year	Location	Method	Questionnaire	Sample	Hypothesis
2003	Morges, Vevey, Montreux and Echallens	Paper	DFJ	2,502	
2004	Lausanne	Paper and Web	DFJ	588 paper 616 Web	1: test the influence of the methodology used
2005	Yverdon	Web	DFJ	988	
2003-2005	Merging of the 3 previous datasets (Vaud sample)		DFJ	4,694	2: relationship between independent variables and bullying 3: influence of the context on bullying
2006	National (ISRD-2)	Web	ISRD-2	3,648	4: relationship between independent variables and bullying 5: influence of the context on bullying

2.3.1. Analytical strategies

The *first hypothesis* is related to the influence of the method used in the collection of the data. This is an essential hypothesis to test, as it will allow the merging of the different surveys used in the canton Vaud. We verify that the methods used do not influence the results obtained for the rates of bullying (offenders and victims).

In order to test *the second and fourth hypotheses* (individual level), we start by univariate descriptions of the authors and victims of bullying. The differences between gender, the relationship between authors and victims, and between delinquency/problem behaviour and bullying, will be presented. Our interest in the influence of the school context will lead us to observe the percentage of bullies by school. These descriptive analyses will be followed by a study of bivariate relationship between independent variables and bullying. The chi-square test as well as the measures of association (Phi/Cramer's V) are used.

Multivariate analyses measure the association existing between all the predictors. Three types of analysis will evaluate these associations. First, multiple correspondence analysis (MCA) allows describing the association among categorical variables and visualizing it graphically. Secondly, logistic regression selects the variables that are the most pertinent for predicting bullying. This will assess the impact of the several independent variables once the influence of other contributing factors is taken into account. Finally, discriminant analysis builds a predictive model of group membership based on several observed characteristics of each respondent. Discriminant analysis creates a linear combination of the predictor variables that provides the best discrimination between the groups (in our case the bullies from the non-bullies). These three types of analysis will be performed in the Vaud sample (hypothesis 2) whereas in the national sample (hypothesis 4) only logistic regression analyses will be performed to select the variables that are the most pertinent for predicting bullying.

In order to test *the third and fifth hypothesis* (school level), the school context effects on bullying are investigated using hierarchical linear modelling (HLM). Multilevel modelling is a complex statistic in which several levels of nested data are considered in relation to one another. *Nesting* mean that several observations are not independent of one another. HLM allows for the inclusion of both individual (Level 1) and school (Level 2) data. Characteristics of both individuals and their school can be evaluated for their contribution to bullying behaviour. HLM 6.02 software is used to perform non-linear multilevel models (Bernoulli

model). The development of a two-level HLM will start with an estimation of a fully unconditional (null) model. This will be followed by the construction of a Level 1 random-intercept model with fixed slope coefficients and by an evaluation of slope heterogeneity. The last step in model building is to insert, after testing, Level 2 variables (e.g., school climate) that explain Level 1 parameter variation (e.g., negative school climate explaining the variation between schools of the intercept).

2.4. THEORETICAL OVERVIEW OF MULTIVARIATE ANALYSIS

This section presents the theoretical concepts of the statistical method performed in this dissertation.

2.4.1. Multiple correspondence analysis

This analysis is a relatively unknown method of analysis within Anglo-American social sciences, yet it is a very powerful tool. The name is a translation of the French "analyse des correspondances," but because MCA has been (re)developed by several scientists independently this method is also referred to by other names such as dual scaling, optimal scaling and homogeneity analysis. MCA was initially developed by Benzécri in the early 1970s (Benzécri, 1973).

With Correspondence Analysis, the relationship between two nominal variables in a multidimensional space can be examined graphically. The technique is a tool to analyze the association between two or more categorical variables by representing the categories of the variables as points in a low-dimensional space. The plots illustrate the underlying relationships between categories and between variables. Categories similar to each other appear close to each other in the plots. Thus, we can see which categories of a variable are similar to each other or which categories of the two variables are related (Clausen, 1998).

The Correspondence Analysis procedure also fits supplementary variables into the space defined by the active variables, which in our case is done by adding the variable "bullying." This supplementary variable does not influence the analysis in any way.

Multiple Correspondence Analysis (MCA) is a multivariate method for categorical data, which analyses the pattern of relationships between various factors. MCA is a weighted principal component analysis of a contingency table, summarizing the associations between a

set of categorical variables in a small number of dimensions (Greenacre, 1984). It describes the associations among categorical variables. It can also be seen as a generalization of principal component analysis when the variables of interest are categorical instead of quantitative. The method permits representation of data according to the proximity between variables.

2.4.2. Logistic regression

Logistic regression (LR) is used to explore the relationship between a dichotomous outcome (dependent or response variable) with one or more categories and a number of independent variables that are either categorical or continuous, or a mix of both in the model. Thereby we can predict which of two categories (bullies and non-bullies) a pupil is likely to belong to, given certain information. Logistic regression tells us how well a set of variables is able to predict a particular outcome (bullying) and which variable in a set of variables is the best predictor of an outcome. The goal of LR is to find the best fitting and most parsimonious model to describe the relationship between the outcome and a set of independent variables. In order to select the variables that are the most pertinent for predicting bullying, we use a stepwise logistic regression (the backward LR method) (Tabachnick & Fidell, 2007, ch.10).

Several studies show that automatic variable selection methods with logistic regression results in the identification of non-reproducible models. It is demonstrated that spurious noise variables are mistakenly identified as independent predictors of the outcome. Furthermore, the number of noise variables included increases with the number of variables, and the probability of correctly identifying variables is inversely proportional to the number of variables under consideration (Austin & Tu, 2004a, 2004b). Austin and Tu propose a method for developing predictive models that combines bootstrap resampling with automated variable selection methods. Bootstrapping allows getting robust confidence intervals. It also guarantee that the results calculated with one sample are not depending on the characteristics of this specific sample. Austin and Tu's method proposes repeating bootstrap samples from the original dataset. Within each bootstrap sample, backwards elimination is used to develop a parsimonious predictive model. For each candidate variable, the proportion of bootstrap samples is determined in which that variable was identified as an independent predictor of the outcome. Bootstrapping is usually used to assess the variability of test statistics, but Austin and Tu used this statistical method to assess the distribution of an indicator variable denoting

the inclusion of a specific predictor in a model obtained using backwards elimination. Bootstrapping consists in repeatedly drawing random samples from the original sample. These random samples are of the same size as the observed sample, and individual samples may be included several times in any given bootstrap sample. In our analysis, 1,000 bootstrap estimates of the regression coefficients are computed using Matlab®, and only the variables that remain in at least 60% of the models will be retained.

2.4.3. Discriminant Analysis

Discriminant analysis models the value of a dependent categorical variable based on its relationship to one or more scale independent variables. Usually, the main purpose of a discriminant analysis is to predict group membership. The procedure begins with a set of observations where both group membership and the values of the independent variables are known (*training sample*). The result of the procedure is a model that predicts the group membership when only the independent variables are known (*validation sample*). This is known as *supervised pattern recognition*. A second purpose of discriminant analysis is the selection of a subset of variables that are the most discriminating. One of the variable selection procedures is a stepwise method, based on a greedy search that sequentially adds or deletes variables from the pool of candidate variables. The addition or deletion of a single variable is performed regarding the greatest improvement in the classification, and the process goes on until the search gets trapped in the first local optimum.

One of the most important aspects of pattern recognition is the validation of the models obtained by supervised techniques. A model validation process demonstrates that the models obtained by the supervised pattern-recognition techniques are good enough to perform classification of unknown samples. This can be done by observing how successful the model is at classifying known objects, i.e. by evaluating the recognition and prediction abilities of the model. The recognition ability is defined as the percentage of the samples in the training set correctly classified during the training step; and the prediction ability, as the percentage of the samples in the validation set correctly classified by using the models developed in the training step. Models can also be evaluated in terms of sensitivity and specificity. The sensitivity of a class model is known as the rate of objects belonging to the class and correctly identified by the mathematical model, and its specificity as the rate of objects foreign to the class and classified as foreign.

Linear discriminant analysis (LDA) is one variant of discriminant analysis. It is a parametric technique because classes (in our case, bullies vs non-bullies) are supposed to follow a multivariate normal distribution. However, the method is fairly robust to violation of this assumption. Given a set of independent variables, discriminant analysis attempts to find linear combinations of those variables that best separate the groups of cases, i.e. which maximize the ratio of between-class variance and minimize the ratio of within-class variance. LDA can be considered a feature-reduction method in the sense that it determines a smaller dimension hyperplane on which points will be projected from the higher dimension. LDA selects a direction that achieves maximum separation among the given classes. The latent variable obtained in LDA is a linear combination of the original variables (Berrueta, Alonso-Salces & Héberger, 2007; Klecka, 1980; Massart *et al*., 1998; Nakache & Confais, 2003).

Both logistic regression and discriminant analysis allow predicting a dependent variable from a set of independent variables. Hastie and colleagues point out that although logistic regression seems safer and is a more robust model than the LDA model, both models give very similar results (Hastie, Tibshirani & Friedman, 2001). Saporta mentions that the logistic regression is usually used for modelizing and the LDA for classifying (2007). In the framework of this dissertation, we use logistic regression for selecting the variables and the discriminant analysis for predicting group membership.

2.4.4. Multilevel analysis

The multilevel analysis development of modelling is adapted to problems of ecological analysis in social sciences, i.e. capable of taking into account the effects of context on the behaviour of individuals. The term individual applies to any unit that is micro relative to some other macro level in the analysis whereas the notion of context/environment is quite general and can include spatial contexts (such as countries, states, communities), temporal context (i.e. history), organizational context (such as classrooms, schools, firms) and social/cultural/economic contexts (ethnic groups, social classes, economic sectors) (Diprete & Forristal, 1994). Multilevel analysis permits observation of the influence that an environment can have on the behaviour, attitudes or beliefs of persons.

The context can be conceptualized as a hierarchical configuration made up of various overlapping levels one within another. Education represents one of the phenomena where the hierarchy is clearly visible. For example, in the education system, each pupil (Level 1) learns

in a class (Level 2), itself belonging to a school (Level 3) and so on. The ecological analysis must account for the hierarchical structure of the context in which each level is likely to influence the individual. With the study of the effects of context, we need to build variables that characterize units located at various levels, such as the characteristics of the pupils, the classes and the schools. Traditional methods do not integrate the individual and his context simultaneously in the analysis, whereas the multilevel model respects the hierarchical structure of the data (Bressoux, Coustere & Leroy-Audouin, 1997).

To understand juvenile delinquency or aggressive behaviour, it is important to consider the individual aspect as well as the contextual aspect. Indeed, individual behaviour does not depend solely on the characteristics of the individuals but is also influenced by the environment (on all levels: economic, political, legal, cultural...) in which they live. Thus, the goal consists in integrating the individual model with a contextual model, the multilevel analysis making it possible to determine the structural effects better since it draws diagnosis closer to the reality. More is to be gained from the linking of the individual and the ecological approaches to the study of crime than from continuing to develop them separately (Wikstrom & Loeber, 2000).

Statistical progress led to the development of models that allow treatment of data belonging simultaneously to several hierarchical levels. Various techniques known under the names of multilevel models, or linear hierarchical models, or models with random coefficients have been developed (Bryk, Raudenbush, Seltzer & Congdon, 1988; Longford, 1990; Mason, Anderson & Hayat, 1991; Prosser, Rasbah & Goldstein, 1992) [4].

Generally speaking, multilevel models explain micro-level outcomes in two ways: firstly by showing that parameters of models specified at the micro level are a function of context and, secondly, by showing that this micro–macro relationship can be expressed in terms of characteristics of the context, which take the form of macro-level variables (Diprete & Forristal, 1994).

Numerous studies show that criminal offending is linked to different kinds of individual characteristics. Few have been done on school effect and bullying, which is a form of

[4] Each of these four teams have developed their own software: HLM (Bryk, Raudenbush, Seltzer, Congdon, 1988), ML3 (Prosser, Rasbah, Goldstein, 1992), GENMOD (Mason, Anderson, Hayat, 1991) and VARCL (Longford, 1990).

behaviour occurring in the school context. Moreover, not many studies of bullying have included both school and individuals factors. Therefore, only a limited knowledge of the interaction of schools and individuals factors in producing bullying is available.

Multilevel models will be used to account for the clustered nature of the sample, with pupils nested within schools (Bryk & Raudenbush, 1992). The key research question is whether prevalence of bullying is invariant by school context when controlling for individuals sets of risk and protective characteristics. Hierarchical generalized linear models are used in this dissertation, which allows intercepts as well as slopes to vary randomly. This means that in our study in which pupils are nested within schools, the average value of bullying can differ between schools (random intercepts) and, for example, the effect of school failure on bullying can also differ between schools (random slopes). Moreover, our dependant variable being dichotomous, the models used are based on logistic regression. Here below, an example for a model with one explanatory variable such as school failure is given.

Level 1

$$\ln(p_{bullies} / 1 - p_{bullies}) = \eta$$

where $p_{bullies}$ is the probability that the dependant variable equals 1 (being a bully).

$$\eta = \beta_{0j} + \beta_{1j}(schoolfail_{ij})$$

where β_{0j} is the intercept for bullying in school *j* (Level 2) and β_{1j} is the slope for the relationship in school *j* between the variable bullying and the school failure (predictor on Level 1).

Level 2

$$\beta_{0j} = \gamma_{00} + U_{0j}$$

$$\beta_{1j} = \gamma_{10} + U_{1j}$$

where γ_{00} is the average intercept, γ_{00} is the average regression coefficient of the variable school failure, the deviations U_{0j} is a random error at the school level and U_{1j} is an error for the slope. U_{0j} and U_{1j} follow a hypothetical normal distribution with mean 0 and variance τ^2_0 , respectively τ^2_1 .

The mixed model is therefore

$$\ln(p_{bullies} / 1 - p_{bullies}) = \gamma_{00} + \gamma_{10}(schoolfail_{ij}) + U_{0j} + U_{1j}(schoolfail_{ij})$$

Since our dependant variable is dichotomous, the Level 1 residuals' variance is approximated by $\pi^2/3=3.29$ and thus the proportion of variance in Level 2 (intra-class correlation) is approximated as:

$$\rho = \frac{\tau_0^2}{\tau_0^2 + \frac{\pi^2}{3}}$$

The intra-class correlation (ICC) is the proportion of variance accounted by the group level. This parameter is a correlation coefficient, because it is equal to the correlation between values of two randomly drawn micro-units in the same, randomly drawn, macro-unit. The intra-class correlation measures the similarity of the observations within the same group. The more important this correlation is, the more the assumption of independence between the observations is questionable; thus the traditional statistical methods based on this assumption are likely to give erroneous results.

For the approximation of the intra-class correlation coefficient for binary response variables, see Snijders and Bosker (1999, ch.14).

The design effect (Deff) is an indicator allowing the determination of the influence of the sampling procedures on the results:

$$Deff = 1 + (n - 1) \cdot \rho$$

where n is the group size (the number of pupils per school) and ρ the intra-class correlation. A Deff of 1 means a total absence of influence of the design effect.

Different steps will be followed. First, a fully unconditional (null) model will be estimated and the ICC can be computed. If the ICC reveals that between-group variation in the outcome variable exists, the second step will be to create a Level 1 random-intercept model. To start with, the Level 1 random-intercept model with fixed slope coefficients will be tested followed by an evaluation of slope heterogeneity. Finally, Level 2 variables, hypothesized to explain Level 1 parameters variation, are tested.

The type of centring of independent variables at Level 1 is an important aspect in bulding multilevel models. As our independent variables are binary and since the value 0 have a well defined meaning, the centering of the variables are actually not necessary (Snijders & Bosker, 1999).

CHAPTER THREE: SELF-REPORTED SURVEYS IN THE CANTON VAUD

3.1. INTRODUCTION

This chapter presents in detail the surveys carried out between 2003 and 2005 in Canton Vaud. The research method (material, population and procedure) and the operationalized hypotheses related to this sample follow. The hypotheses 1 to 3 are tested. To start with, some information about the Swiss education system is given as it is one of the variables taken into account in the analyses.

3.2. EDUCATION SYSTEM[5]

In Switzerland, the cantons are responsible for the school system. According to their various political, economic and cultural situations, each of the 26 cantons develops its own education system. Preschool (not compulsory) starts between four and five years old and compulsory school between five and six. In most cantons, primary school last six years and secondary school three. In general, compulsory school lasts nine years. Some schools offer an additional year for youngsters who have either not yet decided what to do after school, have not found a job to start an apprenticeship or have not yet reached the age to start what they would like to do. For primary and secondary school, the average number of pupils per class is about 20.

[5] See the Internet site of the Swiss Conference of Cantonal Ministers of Education (EDK), http://www.cdip.ch

There are two main kinds of school system:

- Systems with tracks: they can vary between 2 and 4 tracks. Pupils are allocated to classes depending on their performance.
- Mixed systems: pupils follow some subjects together without any selection but they are sorted into different levels for other subjects, depending on their ability.

Moreover, some classes named "special classes" are a form of schooling between ordinary school and a specialized establishment and are located with all the others classes in the same building. This arrangement concerns children that either have behaviour problems[6] or have just immigrated to Switzerland and do not speak the language yet. In general, they have a maximum of 12 pupils per class.

Finally, in Switzerland, most children go to public schools. Private schools represent approximately 5% of all schools and do not use the tracks system.

After compulsory school, adolescents can chose between vocational training (apprenticeship), another general education school, or college (a baccalaureate school for preparing entrance to university). The apprentice works in an enterprise to receive practical training and follows theoretical courses at vocational school. For most apprenticeships, school takes one day a week. An apprenticeship usually lasts between two and four years, depending on the professional branch. Apprenticeships include all kinds of professions, from trades (mechanic, carpenter, baker, hairdresser, etc.) to office worker (secretary, bookkeeper, IT specialist, etc.). After apprenticeship and depending on their education, young people can either start a job or join other schools for further education.

3.3. DATA AND METHODS

3.3.1. Background of the research work

Within the framework of an earlier project, challenging many aspects of policing in a Swiss canton in 2002 ("Police 2000"), safety in schools was assessed using a survey of victimization and of opinion among the population of Vaud. The pilot districts of Echallens and Vevey participated as well as the agglomeration of Morges, a pilot zone. This survey highlighted two elements mainly relating to young people. It showed that young people were the authors and

[6] In general, youth with mental handicap are integrated in adapted institution

the victims of incivilities and offences more frequently than in the 1990s. Moreover, some respondents perceived school as a place of insecurity.

As a consequence of these worrying results, a collaboration was initiated between the Interior Department (Département de la sécurité et de l'environnement) and the Youth Department (Département de la formation et de la jeunesse, hereafter DFJ) in order to look more deeply into the problems of safety in connection with young people. In January 2003, the DFJ asked the Institute of Criminology and Criminal Law (ICDP) of the University of Lausanne to carry out the present study among the pupils of 8th and 9th grades.

In April 2003, 13 schools of the three districts that had been involved in the "Police 2000" project participated in the survey. In October 2004, another seven schools in the city of Lausanne (8th and 9th grades) joined and, in the spring of 2005, four schools from the districts of Yverdon-les-Bains, Grandson, and Yvonnand and surroundings.

3.3.2. Description of the Canton Vaud questionnaire

Within the framework of this study, the research instruments were elaborated mainly on the basis of the following investigations of juvenile delinquency:

- **The International Survey of juvenile delinquency (ISRD-1)** (Junger-Tas, Terlouw & Klein, 1994): In 1992, the first study of juvenile delinquency aiming at an international comparison was realized. Twelve countries including Switzerland participated. In Switzerland, the ICDP conducted this study on the basis of a representative national sample of 970 young persons aged between 14 and 20 years (Killias, Villettaz & Rabasa, 1994). To our knowledge, this investigation is the only one on the Swiss level from which one may get an overview of the development of juvenile delinquency since the early 1990s.

- **The international survey of juvenile delinquency among school children**: The Institute of Criminology (Kriminologisches Forschungsinstitut Niedersachsen, KFN) of Hanover planned this study and performed it in 1999. Nine German cities participated, allowing a sample of 16,000 pupils in the 9th grade. Several researchers used similar plans of investigation in other countries including Switzerland (the Cantons of Zurich and Zug) and in cities such as Ljubljana, Cracow, and Izmir (Wetzels, Enzmann, Mecklenburg & Pfeiffer, 2000).

- **Study among school children of the Canton of Zurich** (Switzerland): In 1999, a team of researchers from Zurich directed by Prof. Manuel Eisner conducted an investigation among 2,653 pupils of the 9th grade (Eisner *et al*., 2000). This investigation followed the scheme of the study of the Institute of Criminology of Hanover, Lower Saxony.

- **Study among school children of Zug** (Switzerland): In 2001, a study similar to that of Zurich was performed with 1,107 students of 7th and 9th grades (Willi & Hornung, 2002).

- **Study among Swiss army recruits**: In 1997, the Institute of Forensic Science and Criminology in Lausanne carried out a study among 21,000 recruits. In this investigation the method of self-reported delinquency survey for serious offences was applied (Haas, 2001).

A working group prepared the questionnaire for Canton Vaud between January and April 2003[7]. The questionnaire underwent preliminary testing in order to verify good comprehension of the questions and acceptance of the questionnaire by the pupils of 8th and 9th grades.

In the questionnaire filled out by the pupils, they were asked whether they had already committed any of the acts described in a list presented to them and whether they had been victimised for different behaviour. As will be presented in section 3.3.4, small variations existed between the questionnaires. The questionnaire included the following topics:

- personal information: age, sex, nationality, number of brothers/sisters, birthplace, parents' nationality, parents' professional training, family structure, information about where they live
- self-control
- perception of social control
- feelings of insecurity
- victimization: robbery, racket, sexual assault, assault
- leisure, pocket money
- parental supervision
- bullying (victims, offenders and bystanders)

[7] The working group was composed of Dr Denis Ribeaud, former scientific collaborator at the ICDP, Mr Serge Loutan, director of the schools of Cossonay and project leader of the DFJ, Mr Froidevaux, project leader of "Police 2000", and the author of this dissertation.

- reaction of the school when pupils fight
- about school: school climate, school failures, school performance, attachment to the school, prospects for the future
- about family: questions evaluating socio-economic level
- attitude towards violence
- childhood
- peer group
- a list of deviant behaviours: truancy, running away, driving without a licence, robbery and various types of theft, assaults, racket, fare dodging, arson, selling of drugs, vandalism;
- drug use: cigarettes/tobacco, beer/wine/alcopops, strong alcoholic drinks, cannabis, heroin, speed/ amphetamines, ecstasy, cocaine, LSD/hallucinogens. Two fictitious substances (called Turd and TDM) were included among the different drugs listed in order to check the veracity of the answers given by the young people.

3.3.3. Procedure followed in Canton Vaud

The present study relates to three surveys performed between April 2003 and April 2005. All three involved pupils of 8th and 9th grades in compulsory schooling. The first survey extended to 2,502 young people in the schools of the districts of Echallens, Vevey and the agglomeration of Morges; the second survey involved 1,203 pupils of the schools of Lausanne; the last survey included 988 young people of the schools of Yverdon-les-Bains, Grandson, Yvonnand and surroundings. The age of the subjects varied between 14 and 16 years.

The DFJ chief informed the parents that a survey among the students of 8th and 9th grades would be performed in the class of their child, and that it was possible for them to refuse participation of their child. Following authorization by the parents, the child still had the opportunity of refusing to answer any or all of the questions in the questionnaire.

In addition, to ensure a correct conduct of the survey, the DFJ guaranteed absolute anonymity to the parents and to the students interrogated. Thus, authorities, schools or the public would have no access to data identifying a pupil, a class, or a school establishment.

a) Survey in the districts of Echallens, Vevey/Montreux and in the agglomeration of Morges (April 2003)

Criminology students trained in advance went into the various schools to distribute the questionnaires and personally ensure a correct conduct of the survey. In an effort to keep answers confidential, a free place separated each pupil from his neighbour. With this condition in mind, the survey was held either in the school assembly hall with sufficient capacity for several classes to fill in the forms in one session, or else in a class divided into two. The survey took two lesson periods (one and a half hours). Depending on the size of the group of pupils, one or two interviewers and a teacher of the school maintained order and ensured the correct conduct of the survey. The interviewer handed out a questionnaire with a reply envelope to each pupil. To guarantee confidentiality and anonymity of the survey as best as possible, the teacher was not allowed to approach the pupils and only the interviewers could answer any questions the pupils might have. Once a pupil had finished filling in the questionnaire, he/she was asked to put it in his reply envelope, seal the envelope, keep it, and remain at his place until the session was finished. Pupils who had finished answering the questions prior to the end of the session were asked to do home or class work without leaving their place. At the end, the interviewers collected the sealed reply envelopes.

The survey included all classes of 8th and 9th grades of the schools of the "Police 2000" areas, representing a population of 2,655 students, except for a Montreux class (Vevey district) excluded in advance as it had already taken part in another survey during the same week. Some pupils were absent, and about thirty questionnaires were invalid. Thus, the final sample includes 2,502 pupils, which corresponds to 94% of the target population. Apart from the excluded class, the pupils absent on the day of the survey and those who failed to answer questionnaires sufficiently seriously, the rate of participation was above 96%. The low number of doubtful or whimsical questionnaires (1.2%) constitutes evidence that the self-reported survey among pupils was taken seriously. Parents and pupils accepted the study very favourably, which is a good omen for future surveys on problems of safety involving young people.

b) Preliminary tests in Cossonay and Penthalaz (June 2004)

Following the above surveys made in April 2003, we came up with the idea of a questionnaire filled in over the Internet. In June 2004, we conducted a small experiment in two local schools near Lausanne among pupils of grade 8 in order to evaluate the feasibility of this new tool and compare the "Internet" method with the "paper-and-pencil" method usually used. In this test, we used a short version of the questionnaire, the primary aim being to compare the relative prevalence of victimization and delinquency items as well as to establish the feasibility of the test as such.

The software chosen was PHP Surveyor, which is a set of PHP scripts that interact with MySQL to develop, publish and collect responses to surveys. With it, we published an online survey (displayed as single questions and groups of questions, with all the questions on one page) that allowed us to get results as soon as a questionnaire had been filled in. The responses were saved on the server of the University of Lausanne. The answers are exportable in .xls, .csv, and – in the last version – directly in SPSS.

The sample consisted of 181 students aged approximately 14 years, from ten classes of grade 8. For a valid comparison of the two methods, students of each class were randomly assigned to two groups, one half of each class going to the computer room equipped with 14 computers. The computer room is large, and provides sufficient privacy for each student while answering the questionnaire. The other half of each class remained in the classroom, with the students spread out in order to be seated with sufficient privacy. In each classroom, a trained criminology student was present.

Prior to this experiment, we had planned that students with an even birthday would go to the computer room, the others remaining seated in the classroom. It turned out, however, that this procedure did not always produce groups of equal size. As a result, we used the class directory, listing the students in alphabetic order, and assigned every other student to the computer room, the remaining ones being the "paper-and-pencil" group.

c) Survey in the city of Lausanne (October 2004)

Seven schools of the city of Lausanne took part in the study. Out of the 113 classes of the 8th and 9th grades, 68 classes representing a population of 1,344 pupils from 14 to 16 years were

drawn at random. Students in each class were randomly assigned to two groups: half of them going to the computer room and answering the questionnaire via the Internet, the other half remaining in the classroom in order to answer the questions in the traditional way, on paper. From the questionnaires, 19 were not valid, 4 pupils were not able to complete the questionnaire via the Internet because of a technical problem, and 118 students were absent. This left a final sample of 1,203 pupils, corresponding to 90% of the target population.

The survey took one and a half hours. An interviewer was present in each room in order to ensure the good conduct of the survey.

d) Survey in Yverdon-les-Bains, Grandson, and Yvonnand and surroundings (April 2005)

Target participants were 1,077 young people from four schools and 55 classes of 8th and 9th grades. Their age ranged from 14 to 16 years. In view of the results of the two surveys performed in 2004 where the "paper-and-pencil" and "Internet" methods were compared, all the pupils in the areas of Yverdon-les-Bains, Yvonand, and Grandson were now asked to answer via Internet. Owing to a problem with the server of the University of Lausanne, 31 questionnaires were lost; two questionnaires were ignored, as their answers did not seem sufficiently serious; 56 students were absent. This leaves a final sample of 988 pupils, which still corresponds to 92% of the target population.

3.3.4. Merging of the data sets

The merging of the data sets was not a straightforward task. One of the difficulties was that some questionnaires had been filled in by hand (Echallens/Vevey/Morges survey and half of the Lausanne sample) whereas others were completed on the computer (second half of the Lausanne sample and Yverdon). The information collected by "paper-and-pencil" questionnaires were all entered in "strings" in the data set, meaning that all the variables (more than 700 in each data set) had to be recoded into numeric values. The data sets obtained by the Internet questionnaires were already pre-coded in numeric values, which decreased the workload and allowed an immediate start to data cleansing. We cleaned up each of the four data sets separately.

The other difficulty to overcome concerned a few questions for which the categories of answer had been changed from the first survey (Echallens/Vevey/Morges) to the second and

third surveys (Lausanne and Yverdon). The questions were the following: self-control, feeling of insecurity, and the reaction of the school when there is an aggression. The self-control and feeling of insecurity scales had at first five possible answers (never, rarely, sometimes, often, very often) which had been changed into three categories (never, sometimes, often). Thus, the concern was to find a way to merge the data while the answers were different. After looking at the answers distribution of each item, self-control was dichotomized in each of the four data sets. Feeling of insecurity was coded into three categories in the Echallens/Vevey/Morges file[8].

The last difficulty of codification concerns the reaction of the school when a pupil is annoyed or attacked by other pupils. The problem is due to a difference that occurred when the Internet questionnaire was constructed. In the first survey, the possibilities of response were multiple whereas on Internet, the pupil could give only one answer. Six possible answers were proposed: (1) They do not see anything, (2) They are unaware of the fight, (3) They intervene and calm the situation, (4) They discuss with the pupils the reasons of the conflict, (5) They inform the principal, (6) They punish the pupils. Answers 1 and 2 are related to "no reaction", 3 and 4 to "a constructive reaction", 5 and 6 to "a punitive reaction". In order to be able to merge the different data sets and when more than one answer was given in the Echallens/Vevey/Morges and in the Lausanne "paper" questionnaires, the following decision was taken. If the pupil had various perceptions (e.g., a pupil answers 2 and 5, meaning that sometimes the school does not react and at others it intervenes in a punitive way), we recoded them into "mixed answer" and the cases were used as missing values. In this manner, we reached a mixed answer rate of 7.5%.

Of course, the coding of these three variables is very tiresome but to the knowledge of the authors nothing better could be done – it was a fair solution. Moreover, as it will be shown later in the analyses, these codings seem to be consistent enough.

Thus, when merging the samples of the districts of Echallens, Vevey and the agglomeration of Morges, the city of Lausanne and the district of Yverdon, the total number of pupils

[8] *Self-control* was coded as follows: in the Echallens/Vevey/Morges file, 'never', 'rarely', 'sometimes' was grouped into 'high self-control', and 'often', 'very often' recoded into 'low self-control'. In Lausanne and Yverdon, 'never', 'rarely' were recoded into 'high self-control' and 'often' as 'low self-control'.
Feeling of insecurity was coded as follows: in the Echallens/Vevey/Morges file, the 5 categories were coded into 3: the categories 'sometimes', 'often' and 'very often' were grouped into 'often'. In Lausanne and Yverdon, the 3 categories were kept as such ('never', 'rarely', 'often').

interviewed was 4,694. Out of these, seven were removed because we did not have the information about the school they belonged to and this information is primordial for the analysis that will be undertaken. We excluded another 116 pupils belonging to the "special classes" because of their specific characteristics as explained in section 3.2. During the discussion with the Youth Department, we agreed that the survey was too long for them and that they would not be able to understand and answer the questions without extensive help. Nevertheless, some principals of a few schools wanted all the children of 8th and 9th to participate. In order not to exclude these children – who had already been told by the principal that they would participate in a survey – the interviewer went to those classes. Indeed, the experience showed that it was difficult for them to answer the questions and that they did not have enough time to complete the entire questionnaire[9].

Therefore, the final sample is composed of 4,574 pupils, representing 90.1 % of the target group, with a mean age of 14.9 years.

3.3.5. Description of the sample

Table 3-1 gives an overview of the distribution of the sample according to gender, age, ethnic background, grade, tracks and districts. As all schools' 8th and 9th grades of the five districts participated to the survey, the distribution of gender, grade and tracks is normal. The mean age of the total sample is 14.9 years.

[9] When looking at the mean rate of missing values of the variables (independent ones and bullying offenders) used in the analysis of Vaud sample, pupils from "special classes" yield 9.7% of missing values and pupils from "normal classes" 3.4%. When looking at the prevalence of deviant behaviour, victimization and bullying, pupils from "special classes" commit less minor offences and drink less alcohol than pupils from "normal classes" but they admit committing more serious offences. However, they are more victims of robbery and extortion. No significant difference is found for bullying behaviour (victim and offender).

Table 3-1 Characteristics of the sample

N=4,574	n	%		n	%
GENDER			GRADE		
Girls	2308	49.5	8th	2344	51.3
Boys	2352	50.5	9th	2225	48.7
AGE			TRACKS		
12	8	0.2	High (VSB)	1809	39.4
13	256	5.8	Medium (VSG)	1576	34.5
14	1255	28.3	Low (VSO)	1189	26.0
15	1741	39.3	DISTRICT		
16	965	21.8	Echallens	471	10.3
17	196	4.4	Morges	712	15.6
18	8	0.2	Vevey/Montreux	1279	28.0
ETHNIC BACKGROUND			Lausanne	1158	25.3
Swiss	3370	74.3	Yverdon	954	20.9
EU	660	14.5			
Balkan	295	6.5			
Africa	90	2.0			
South/central America	54	1.2			
Asia	49	1.1			
Other	19	0.4			

3.3.6. Dependent variables

In the questionnaire, we assessed school bullying with six items, including physical, direct and indirect verbal, and object-related sexual forms. We asked the question as follows:

How many times, in your school or on the way to school, did you carry out the acts described below during the last 12 months?

- hit or kicked a fellow pupil
- threatened, blackmailed or extorted a pupil
- made fun of or upset a pupil (for example, by hurting him/her verbally)
- damaged belongings of a pupil
- sexually harassed a pupil (petting, whistling, repeated gestures or remarks)
- ignored or excluded a pupil (for example, nobody wants to sit next to him/her)

The response categories are (1) never, (2) Once or twice, (3) Sometimes (more than twice), and (4) Once a week, (5) Several times per week. The Cronbach's alpha equals 0.77, which indicates that the items form a scale that has reasonable internal consistency reliability.

To determine the victims of bullying, the question asked was "How many times have you been subjected to the acts described below in your school or on the way to school, during the last 12 months?" As for the offender, the same items were included. The Cronbach's alpha equals 0.67, indicating minimally adequate reliability[10].

The constructs of bullying others and being bullied are based on those six items that were asked for the period of the last twelve months. A child is considered as bullying others when at least two out of the six items were answered with "at least once a week," or if one item is answered with "at least once a week" and more than three items are answered at least "once or twice." We used the same criteria to build the construct of being bullied.

3.3.7. Independent variables

A) Individual-level variables (Level 1)

Demographic variables

- *Gender* (0= female, 1= male)
- *Grade:* 0= 8th grade, 1= 9th grade. Grade is related to age. The choice of variable grade instead of age is due to the very small number of cases in the extreme categories (for example 0.2% are 12 years old).
- *Origin:* "What is your nationality?" (1= Swiss, 2= EU, 3= Other).
- *Socio-economic status*

  Family affluence. A dummy variable has been created from two questions: "the type of housing in which the pupil lives" and "to have his/her own room" (0= high affluence, 1= low affluence).

  Parents' education. A dummy variable has been created from two questions: "the father's education" and "the mother's education" (0= high affluence, 1= low affluence).

[10] Cronbach's Alpha should be ideally above 0.7 but clearly not below 0.6.

Variables related to the personality of the child

- *Self-control scale* is composed of 12 items based on 4 subscales: impulsivity (e.g., "I act spontaneously without thinking"), risk seeking (e.g., "I like to test my limits by taking risks"), self-centred (e.g., "If things I do upset people, it's their problem not mine"), volatile temper (e.g., "I lose my temper pretty easily").

  Since the original publication by Grasmick *et al*. (1993), the question has been debated of whether self-control is a uni- or a multi-dimensional construct. Based on Ribeaud and Eisner's study (2006), the scale used has a one-dimensional construct in the framework of this dissertation. Cronbach's alpha equals 0.70. The scale has been dichotomized at the quartile (0= high self-control, 1= low self-control).

Variables related to the family

- *Parental supervision:* A dummy variable has been created from 3 questions: "Usually when you go out, do you tell your parents where you go?", "Usually when you go out, do you tell your parents with whom you are?", "Usually when you go out at night, do your parents give a time to be back? " (0= strong parental supervision, 1= low parental supervision).
- *Family structure:* "Do you live with both of your parents?" (0= traditional, 1= broken home).
- *Importance of parental opinion:* "Imagine that during a break, you have an argument with somebody from another class. You get angry and you punch him/her in the face. He/she falls; his/her jeans tear and his/her nose bleeds strongly. You are not wounded. If you did something of this kind, what importance would you give to the opinion of your father/mother?". A dummy variable has been construct (0= important, 1= not important).
- *Violence-legitimising norms of masculinity (VLNM)* is based on eight items (e.g., "A man must be strong and protect his family", "A man must be ready to use physical power when somebody says bad things about his family"). The internal consistency in the current sample is 0.79. The scale has been dichotomized at the quartile (0= do not agree with these norms, 1= agree with these norms). These items are derived from Nisbett's descriptions of the attitudes and behaviour that seem to be characteristic features of the culture of honour (Nisbett & Cohen, 1996).

Variables related to school

- *Tracks*: The school system in Canton Vaud offers three different levels of education for the ages at stake: 1= high (VSB), 2= medium (VSG), 3= low (VSO)[11]. The highest track leads to continuing studies, the medium track prepares students for more qualified apprenticeships, and the lower track usually leads to apprenticeships in manual jobs.
- *Perspective of future:* "What do you think of doing after you finish compulsory school?" (1= start an apprenticeship/a professional school or continue studying, 2= do not know, 3= start working).
- *School failure*: "Have you repeated a class at school? " (0= no, 1= yes)
- *Attachment to school:* "When you remember all the good and bad times at school, do you generally like school?" (0= strong attachment, 1= weak attachment).
- *Truancy:* "Did you ever miss school for at least a whole day without a legitimate excuse in the last 12 months (cut school)?" (0= never, 1= at least once).
- *Importance of the teacher's opinion:* "Imagine that during a break, you have an argument with somebody from another class. You get angry and you punch him/her in the face. He/she falls; his/her jeans tear and his/her nose bleeds strongly. You are not hurt. If you did something of this kind, what importance would you give to the opinion of your teacher?" A dummy variable was constructed (0= important, 1= not important).
- *Reaction of the teachers when there is an aggression:* "When a pupil of your school is annoyed or is aggressed by others pupils, what is, in general, the reaction of the teachers? " (1= constructive reaction, 2= punitive reaction, 3= no reaction).
- *School climate* is based on fourteen items. The items are related to the teaching climate of the school (e.g., "In my school we learn a lot of important things for our future"), to the social climate of the school (e.g., "In my school there are often arguments between pupils") and to the affiliation with a teacher (e.g., "In my school there is a teacher who takes me as I am and helps me when I really need it"). The internal consistency in the current sample is 0.74. The scale has been dichotomized at the quartile (0= positive school climate, 1= negative school climate).

[11] In French, VSB : voie secondaire de baccalauréat, VSG : voie secondaire général, VSO : voie secondaire à options.

- *The feeling of insecurity at school* is measured by four items*:* "I feel threatened on the way between home and school, … in the toilets of the school, … in the classroom during the lesson, … during the break in the playground." The internal consistency of the insecurity feeling scale yields an alpha of 0.78. The scale has been dichotomized at the quartile (0= feels secure at school, 1= feels insecure at school).

Variables related to leisure and peers

- *Importance of friends' opinion:* "Imagine that during a break, you have an argument with somebody from another class. You get angry and you punch him/her in the face. He/she falls; his/her jeans tear and his/her nose bleeds strongly. You are not hurt. If you did something of this kind, what importance would you give to the opinion of your friends?". A dummy variable has been constructed (0= important, 1= not important).
- *Leisure:* three subscales have been constructed.

  Activities with friends is composed of 6 items (e.g., clubbing, phoning friends). The internal consistency in the current sample is 0.76.

  Activities done alone at home is composed of 7 items (e.g., read a book) or with the family (e.g., to help mother/father at home, to undertake something with parents). The internal consistency of this scale yields an alpha of 0.65.

  Activities related to sport is composed of 3 items (e.g., to do sport in a club, going to sporting events). The internal consistency in the current sample is 0.69.

  Each of the subscales have been dichotomized at the quartile (0= spend little time with friends, 1= spend a lot of time with friends; 0= spend a lot of time at home/with family, 1= spend little time at home/with family; and 0= spend little time doing activities related to sports, 1= spend a lot of time doing activities related to sport).

B) School-level variables (Level 2)

School-level variables are aggregated from the nested level of data. For example, we have data on family affluence for each pupil. This information is aggregated by school through averaging the data for all of the students nested in each school. Individual-level family affluence is aggregated to make a school-level mean family affluence.

Variation in bullying between schools is captured at Level 2 with the following school-related variables: *proportion of male*, *mean of foreigners*, *proportion of low family affluence*. Individual levels of minor and serious offences are aggregated to make school-level *proportion of minor and of serious offences committed* [12]. Other variables such as the reaction of the teacher, school climate and feeling of insecurity at school are aggregated to make school-level *proportion of teachers not reacting when aggression between pupils, of negative school climate,* and *of high feeling of insecurity at school.* Finally, the *standard deviations of the reaction of the teacher* and *of the school climat*e is created. It might be not only the fact of being in a school with a negative climate that influences bullying but also divergent opinions about school climate within a given school, which may indicate unequal treatment of pupils.

[12] Minor offences has been operationalized by 9 items (e.g., Have you stolen something at school during the last 12 months?) and serious offences by 10 items (e.g., Have you injured someone bodily by beating him/her up during the last 12 months?).

3.4. HYPOTHESES (VAUD SAMPLE)

Hypothesis 1

As mentioned above, the first survey (in 2003) was carried out using the usual "paper-and-pencil" method, which consists of sending an interviewer into the classroom, taking with him the number of questionnaires needed. In view of the high financial burden and large time requirements for the examination of these questionnaires, the author was looking for an alternative that would be more advantageous than the paper-and-pencil version, for subsequent surveys planned for Lausanne, Yverdon and the national survey (ISRD-2).

The approach selected was to fill out the questionnaire on a computer, using an inexpensive and efficient programme so that this new technology could become a standard instrument at the Institute. We tested various programmes. Some were not adequate for our purpose, some too expensive, others very complex. The one finally retained was even better than what we had been looking for: there is no need to install special programmes in the school computers, since the questionnaire is on the Web and can be displayed immediately. As soon as the pupils had completed the Web questionnaire, the answers were saved on the server of the University of Lausanne. The programme used is PHP Surveyor.

We expect no differences in the rates of bullying (offenders and victims) when comparing the two methods used: paper-and-pencil and computer-assisted Web interview.

Hypothesis 2

Based on the theoretical arguments and empirical evidence discussed in sections 1.1 to 1.3, we expect that the above independent variables (section 3.3.7) are related to bullying. Hypothesis 2 will use these variables uniquely on the individual level.

The extant **empirical work** suggests on the one hand that bullying would differ with sex, with males reporting greater frequency than females and, on the other hand, it is expected that older youths bully more often than the younger. As age is associated with grade, we expect students in grade 8 to be less involved in bullying than those in grade 9.

According to **social control theory**, adolescents with a strong attachment to institutions such as family and school are less likely to commit bullying. Therefore, we hypothesize that little parental supervision, living in a broken home, doing badly at school (school failure, being in the lowest track at school and having no perspective for the future), a weak attachment to school, and playing truant are related to committing bullying. Moreover, the youth that cares about authority figure expectations is less likely to engage in delinquency. Thus, it is expected that pupils who consider their parents' and teacher's opinion unimportant will tend to commit more bullying. As during adolescence friends are an important part of life, bonds with peers become salient. Thus, pupils who consider their peers' opinion unimportant will tend to commit more bullying. Adolescents involved in sport and those doing activities with the family or at home have fewer occasions to participate in delinquent acts compared to those that spend time with friends. This also relates to the **routine activity theory,** which states that certain types of routine activities increase the likelihood of being in situations conducive to crime. We expect that youth spending little time with the family or at home are more likely to commit bullying. This also applies to youths spending more time with peers. Lastly, youths involved in sport activities are less likely to be implicated in bullying. According to the **general theory of crime**, we suppose that the adolescent with low self-control has an increased risk of engaging in bullying behaviour.

Strain theory relates delinquency to juveniles belonging to the lower class. Therefore, low socio-economic status (parents' education and family affluence) and not being Swiss (which is correlated to SES) should influence bullying. From the **general strain theory**, it is expected that schools with unpleasant working conditions for the pupils create strain that in turn increases the risk of bullying. In our study, the questions evaluating the working conditions at school measure the teaching climate, the social climate and affiliation with a teacher. Similarly, being in a school in which the pupil feels insecure increases strain, which can lead to commit behaviour such as bullying.

Broken windows theory suggests that crime tolerant areas incite other crimes to be committed if there is no intervention from someone susceptible to react. Therefore, a non-intervention of teachers when a pupil is attacked gives the information that delinquency is authorized leading to an increased risk that a youth commit bullying. Moreover, in the literature, an increase of school violence appears to be related to teachers who are too strict, so we can expect that punitive reaction by the teacher relate to bullying.

According to **cultural deviance theory**, the context in which the youth grows up influences the perception of violence. Consequently, adolescents from milieux approving the use of violence are likely to commit bullying.

We hypothesize that boys commit more bullying than girls and that older pupils (grade 9) commit more bullying than younger ones (grade 8). We expect that living in a family with a low SES and being a migrant relate to bullying. Also, pupils weakly supervised by the parents or living in a broken home will show a higher level of bullying. Moreover, pupils spending little time with the family or at home, those not involved in sport activities and those spending a lot of time with friends are expected to commit more bullying. We also expect that low self-control increase the risk of perpetrating bullying behaviour. Failure at school, being in the lowest track, having no perspective for the future, having a weak attachment to school and playing truant should relate to bullying. In addition, we expect that a negative school climate relate to the risk of bullying others. The non-reaction of teachers when a pupil is victimized relate to bullying; furthermore, when there is an intervention from teachers, a punitive reaction increases the risk of bullying compared to a constructive teachers' intervention. Pupils not caring about authority figure expectations are more likely to engage in bullying. We hypothesize that pupils who do not consider their peer opinion will tend to commit more bullying. Finally, we expect that the acceptance of the use of violence relate to bullying.

Hypothesis 3

Hypothesis 3 involves variables related to the school-level.

Based on **social disorganization theory**, social structures have significant effects on delinquency. Therefore, we expect that the school-level proportion of foreigners and the proportion of low family affluence increase propensity to delinquency. Since boys have higher delinquency rates than girls, and if the proportion of boys is high in a given school, this is considered a possible indicator of an increased propensity to commit bullying.

As mentioned above, **broken windows theory** suggests that crime tolerant areas incite other crimes to be committed if there is no intervention from someone susceptible to react. The same applies in considering the proportion of teachers not reacting per school. Therefore, being in a school in which a high proportion of teachers do not intervene when a pupil is attacked increases the risk of bullying. A high proportion of offences committed by pupils per school also increases the risk of bullying. The non-intervention of a guardian is further linked

to a weaker control in the **social control theory**. The latter theory suggests as well that a positive attachment to teacher/school is important to internalizing beliefs condemning delinquent activities. Following **routine activity theory**, crime is likely to occur at school or on the way to school, if no capable guardians are present. We hypothesize that a higher level of weak school attachment relates to a greater risk of bullying behaviour.

From the **general strain theory**, we expect that schools with unpleasant working conditions and those in which the pupil feels insecure create strain, which in turn increases the risk of delinquency. Thus, high proportions of negative school climate and of feeling insecure increase the risk of bullying others.

Finally, it might be not only the fact of being in a school with a negative climate that influences bullying but also divergent opinions about school climate within a given school, which may indicate unequal treatment of pupils. This can lead to an increased impression of unfairness. This feeling can also be generated when divergent opinions are given concerning the non-intervention of teachers when a pupil is aggressed by another one. Thus, the larger the standard deviation of the school climate, the greater the risk of bullying. The same is expected with the standard deviation of teachers' reaction.

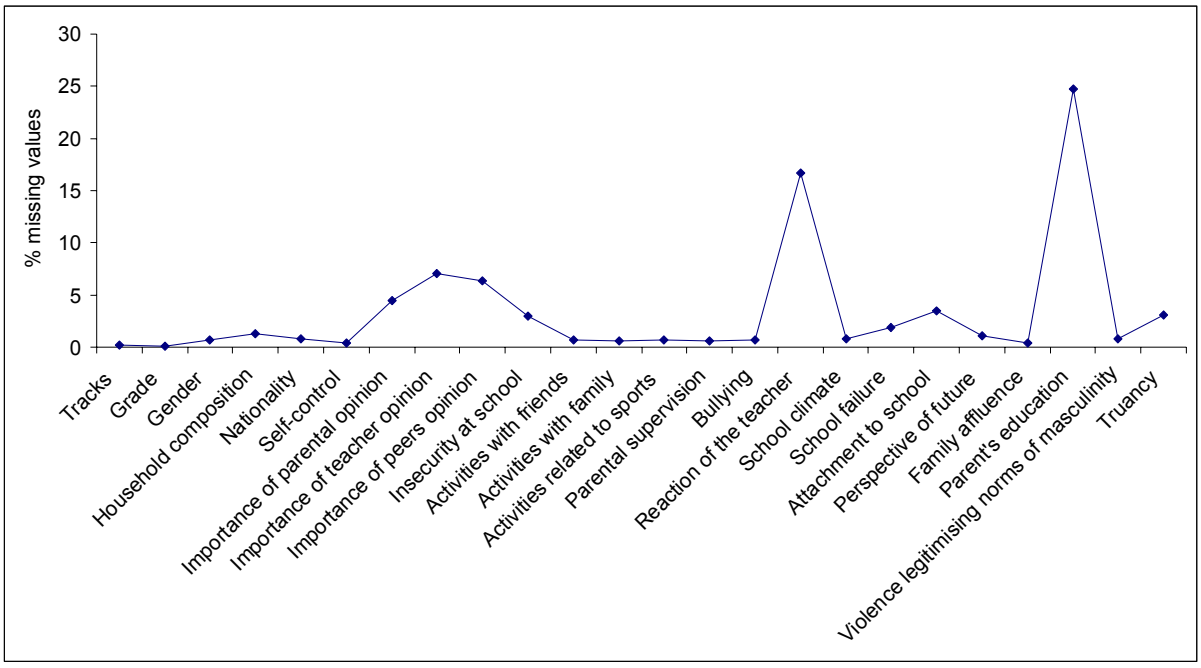
The proportions of males, of foreigners, of low family affluence, of minor and of serious offences committed by pupils, of teachers not reacting when there is aggression between pupils, of negative school climate, and of high feeling of insecurity at school, as well as a large standard deviation of the school climate and of the feeling of insecurity at school, relate to committing bullying behaviour.

3.5. DESCRIPTION OF THE MISSING VALUES

Missing values are a recurrent problem in quantitative social science. It is important to distinguish two types of missing values: non-response (i.e. when single questions in an interview are not answered or entire parts of the questionnaire are not completed) and responses that cannot make a category in itself (i.e. a category such as "I don't know" or "I don't wish to answer" that will be considered as missing values).

When handled inappropriately, non-response items can yield biased sample estimates. Different techniques exist to decrease biased results but none of them can be used as such, without analyzing the data set in order to choose appropriate analytical strategies. However, a reflexion on which missing data technique to use would lead to a specific thesis on the subject. In the framework of this dissertation, a simple descriptive analysis of missing values will be performed in order to be aware of this problematic (Präg, 2007). In Figure 3-1, each variable is displayed on an axis in the order it was placed in the questionnaire and the rate of missing values of each variable used in the later analysis of the Vaud sample is plotted.

Figure 3-1 Rate of missing values in the Vaud sample



The Vaud sample is composed of 4,574 pupils. The graph shows that for the majority of the items, the rate varies between 0% and 4%. Questions related to the importance given to the

opinion of parents, teacher and peers have a slightly higher rate of missing values (4.5%, 7.1%, respectively 6.4%). The category "I don't know", which was explicitly included as a possible answer in the questionnaire, leads to a higher rate of missing values. They are not true non-responses but responses that cannot be used in the analyses. As an example, the rates of missing values related to the question asked about the importance of the opinion given to the teacher are the following: 1.2% of non-response and 5.9% of "I don't know." Similar observations were made for the others items including this possible response. This finding leads us to think that asking this question without such a response category would force pupils to take a decision. Two variables have many missing values. The first concerns the reaction of the teacher when a pupil of the school is annoyed or attacked by other pupils. The rate of missing values yields 16.7% of which 1.5% are those who have not answered the question (item non-response), 7.6% answered "I don't know" and 7.5% is related to the problem of merging datasets (see section 3.3.4). Here again, the category "I don't know" allows the student to easily avoid answering the question. The last problematic variable concerns the education of the parents, which yields about 27% of missing values (when taking the 2 questions together: father's and mother's education). Item non-response is about 1.5%, "I don't know" around 20%, and about 5% are "I don't wish to answer." In this case, the category "do not know" obviously makes sense as the respondents are teenagers who often really do not know if their parents have studied or not, or whether they have gone to a vocational school or done an apprenticeship. On the other hand, the category "do not wish to answer" could probably have been avoided. This possible answer has been also given for questions such as school failure and attachment to school where fewer respondents used this option. Because of the high rates of unusable cases, the variable "parent's education" will only be used in the bivariate analyses and "family affluence" will be preferred in estimating the socio-economic status.

Scholars consider it appropriate to continue bivariate and multivariate analyses with standard pairwise or listwise deletion methods when the rate of item non-response is below the threshold of 5%. In our sample, the variables "importance given to the opinion of the teacher" and "importance given to the opinion of peers" have a rate that is slightly higher than the threshold of 5%. The only problematic variable is the reaction of the teacher but as part of the problem is due to the merging data, no other solution could be found. Our sample being large enough, we can support some loss of cases in the multivariate analyses (Pauwels & Svensson, 2008).

Listwise deletion has been chosen to deal with missing data. This method implies that only complete cases are taken into consideration for analysis and all incomplete cases are discarded. The advantage of listwise deletion is that it is easy to perform and it can be used for any type of statistical analysis. An important loss of cases can diminish the power of statistical tests and type II errors may be the consequence (the alternative hypothesis is rejected – instead of the null hypothesis – when in fact it is true) (Präg, 2007).

In the Vaud sample, we kept only the pupils that answered all the questions of interest to us before effecting multivariate analyses. In our study, 23 variables have been introduced in the analyses. This means that, if one of the 23 variables is missing, all that respondent's answers are removed from the data set. When creating variables from scale items, two thirds of the scale items needed to have a valid answer. For construct variables – for instance, parental supervision (based on three questions) –, the same logic as for scales has been followed, meaning that two out of the three questions had to be valid. From the 4,574 pupils in our database, only 2,822 are left, thereby losing about 38% of cases.

At that point, our concern was to know if this operation influences more our population of interest (the group of bullies) than the control group (the non-bullies). In the complete data set, the rate of bullies is 7.1% whereas 6.8% are found in the database prepared for multivariate analyses. The sample and subsample are presented in Table 3-2. As we observe, the proportion is kept in the subsample.

Table 3-2 Presentation of the sample and subsample related to bullying

	Entire sample		Subsample	
	n	%	n	%
Non-bullies	4221	92.9	2630	93.2
Bullies	321	7.1	192	6.8
Total	4574	100	2822	100

This presentation of missing values led to the following observations. Firstly, it is very important to think carefully about the categories proposed in the questionnaire. This avoids losing people in the data set when doing multivariate models where fractions of missing values are cumulated. Secondly, we can be satisfied in saying that after listwise deletion more

than 60% of the cases were kept. In fact, literature mentions that a loss of 50% of cases occurs frequently after listwise deletion (Präg, 2007). Finally, these results show that the proportion of bullies and non-bullies are not statistically affected.

3.6. TESTING HYPOTHESIS 1: PAPER-AND-PENCIL COMPARED TO COMPUTER-ASSISTED WEB INTERVIEW METHOD

Results related to the use of Computer-Assisted Web Interview as a new method to interviewing pupils are published in a peer review: Journal of Experimental Criminology, 2007 (see appendix B).

3.6.1. Background: current methods of interviewing on self-reported delinquency

Except for a few early surveys (Wallerstein & Wyle, 1947), the method of self-reported delinquency survey made its entry in criminology with the research of Short & Nye in 1957 (Short & Nye, 1957).

Interviewing involving self-reported delinquency remained relatively traditional. During the methodological debate preceding the first International Self-reported Delinquency Survey of 1992 (ISRD-1, Junger-Tas *et al.*, 1994), the question of computer-assisted telephone surveys was briefly discussed, but dismissed because of a lack of relevant preliminary tests (Klein, 1989). Rapidly, a consensus was reached that face-to-face interviewing was the most reliable method, interviewing in the classroom being excluded at that time because the samples were supposed to include age-brackets beyond compulsory school age (i.e. up to age 20).

Whether findings based on interviews in a home setting will produce results comparable with those of written interviews in the classroom is not clear. Some behaviour that may be too sensitive to report at home may not be too sensitive to report in a classroom setting and vice versa (Gfroerer, 1996). While some researchers found no differences in adolescent reports of sensitive information obtained in at-home and at-school settings (O'Malley, Bachman & Johnston, 1983; Zanes & Matsoukas, 1979) other researchers did. Nowadays, it is common practice in empirical adolescence research to use paper-and-pencil surveys in classrooms (Eisner *et al.*, 2000; Köllisch & Oberwittler, 2004; Naplava & Oberwittler, 2002; Oberwittler & Naplava, 2002; Wetzels *et al.*, 2000) .

3.6.2. Interviewing through the Internet in the classroom

In recent years, schools have made considerable progress in the use of computers. Many secondary schools throughout Europe have by now a computer room where students are taught how to use computer technology. Thus, it should become possible to replace classical self-administered questionnaires using paper-and-pencil with computer-assisted interviews (CAI) in the school's computer room. A major school-based survey has been conducted in the Netherlands using computer-assisted Internet interviews (Weerman *et al.*, 2003). Haines and his colleagues (Haines, Case, Isled & Hancock, 2004) used interactive computer-assisted self-interviewing over a five-year period for over 5,000 young people in Wales and internationally. They demonstrated that this instrument provides reliable and valid results (Haines *et al.*, 2004).

Several studies suggest that the level of privacy maintained in the different modes of interviewing may dramatically affect survey measurements of sensitive behaviour (Jones & Forrest, 1992; Turner, Danella & Rogers, 1995). Traditionally, surveys have attempted to encourage more accurate reporting of sensitive behaviour by combining face-to-face interviews with a self-administered paper-and-pencil questionnaire (P&P), to be handed over to the interviewer in a sealed envelope (Becker & Günther, 2004; Killias *et al.*, 1994). Still, some respondents remain suspicious as to the privacy of their answers, especially if an identification number is recorded on the questionnaire. Another criticism of P&P involves the difficulties in the extensive use of contingent questioning (that is, branching or skip patterns). Even well educated respondents may have trouble following instructions for navigating through a complex self-administered form (Turner *et al.*, 1998) .

Choi and Tinkler (2002) mentioned that, despite the straightforward nature of the process of "computerising" P&P items, one cannot simply assume that a computer-based (CB) or a Web-based (WB) system is equivalent to P&P items and that findings from previous studies should not be generalised to other, similar situations. Thus, it is important to compare the scores in order to have comparable answers, for which reason experimental comparison of methods was done before generalising the use of the computer-assisted Web interview (CAWI) in Switzerland.

3.6.3. Summary of experimental comparison of methods

In June 2004, a small experiment was conducted in two local schools near Lausanne. The sample consisted of 181 students aged approximately 14 years, from ten classes of grade 8. Students of each class were randomly assigned to two groups: one half of each class went to the computer room equipped with 14 computers. In this test, we used a short version of the questionnaire, the aim being to compare the relative prevalence of victimization and delinquency items as well as the feasibility of the use of CAWI.

In October 2004, a second trial was undertaken involving a larger sample. A controlled experiment was conducted with 1,203 students in Lausanne, where "paper-and-pencil" questionnaires were compared with "computer-assisted interviews through the Internet." The students were randomly assigned either to the Internet version (615 students) or to the paper-and-pencil version (588 students) of the questionnaire. For valid work with the merge data, we had to demonstrate that there is no methodological effect on the results. Data using an on-line questionnaire compared to the paper-and-pencil method show equivalent results. Few significant differences were found between the results obtained by the two methods in the answers concerning victimization, self-reported delinquency, drug use and failure to respond (missing data) (Lucia, Herrmann & Killias, 2007). Results regarding bullying will be presented in detail hereafter.

3.6.4. Bullying by interview method

Within the framework of this thesis, since the subject of our study is bullying, we verify that the methods used do not influence the results obtained for the rates of bullying (offenders and victims). Considering the results found for victimization, the commission of offences, and the consumption of drugs, we expect the same pattern of behaviour for bullying, i.e. no significant differences when comparing the rates of bullying obtained from the Internet method with those obtained by the P&P method.

Not having enough cases by cells, the items have been dichotomized (cut-off at "once a week"). Rates in the following tables have been tested for significance using chi-squared. The two following tables show the prevalence of the different items of bullying over the previous 12 months as well as the overall measure of bullying. In addition to prevalence rates, we

added the missing values, i.e. situations where respondents did not answer, to see if one of the two methods produces higher or lower rates of missing values.

Table 3-3 concerns the offender of bullying and Table 3-4 the victims of bullying. The results shown in Table 3-3 indicate that reports on bullying do not differ between the two interview methods. The only significant difference found concerns the item "threaten and extortion" for which the chi-square test is not valid. Concerning the rates of missing data, we observe a very stable rate of missing value in both methods, indicating that the method did not influence the respondent in answering or not to the items.

Table 3-3 Last year prevalence of bullying in the two groups by interview method (in %)

Offenders of bullying	P&P (N=588)		Internet (N=616)	
	%	% missing	%	% missing
Hit, kick	1.5	0.7	3.3	0.8
Threaten, extortion *	0.2	0.9	1.1	0.5
Made fun of, upset	4.5	0.9	5.6	0.8
Damage belongings	1.4	0.3	1.8	0.5
Sexual harassment	1.4	0.5	1.1	0.8
Ignore, exclude	6.7	0.5	8.9	1.0
All items of bullying	5.5	0.3	5.9	0.5

*p ≤ .05, ** p ≤ .01
Threaten, extortion: 2 cells (50.0) have expected counts of less than 5.

The results shown in Table 3-4 indicate that rates of being bullied do not differ significantly with interview conditions. Again, we also observe a very stable rate of missing value in both methods.

Table 3-4 Last year prevalence of being bullied in the two groups by interview method (in %)

Victims of bullying	P&P (N=588)		Internet (N=616)	
	%	% missing	%	% missing
Hit, kick	1.2	0.5	2.6	0.5
Threaten, extortion	0.2	0.9	0.8	0.6
Made fun of, upset	6.2	0.9	6.5	0.6
Damage belongings	1.2	1.0	2.0	1.3
Sexual harassment	2.1	1.0	3.3	1.1
Ignore, exclude	3.2	0.5	3.6	1.5
All items of bullying	3.6	0.7	5.4	0.5

*p ≤ .05, ** p ≤ .01
Threaten, extortion: 2 cells (50.0) have expected counts of less than 5.

Interaction effects between the two methods and several possibly intervening variables, such as gender, place of birth, and school tracks were considered. This has been checked for the

variables of offenders and of victims of bullying (which have been created from the six items, see the definition of the construct in section 3.3.6). Three logistic regressions were done. Each regression contained the main effects and the interaction between the controlled variable and the interview mode.

As Table 3-5 shows, students from less demanding school tracks or of different cultural background do not react differently to questionnaires over the Internet. However, an interaction between gender and method exists solely for the offenders of bullying. Girls admit to committing more bullying behaviour when answering via Internet than with paper-and-pencil.

Table 3-5 Significance of the interaction between the controlled variables and the interview mode

	Variables introduced in the logistic regression	Offenders of bullying	Victims of bullying
1	Sex, method, sex * method	*	ns
2	Place of birth, method, place of birth * method	ns	ns
3	School tracks, method , school tracks * method	ns	ns

*p ≤ .05, ** p ≤ .01

In our case, the same control was done and it was found that boys admit more victimization over the Internet, and more delinquent acts on P&P, while the responses among girls were more balanced, except for drug use, which girls admit more easily on the Internet. Depending on the type of answers we are looking at (victimizations, deviant behaviour, consumptions of drugs, offenders of bullying and victims of bullying), there is no clear trend of over/under-reporting between "P&P" and "Internet" (Lucia *et al.*, 2007).

For a full control of the confounding influence of socio-demographic differences in the samples, we ran regression models where the socio-demographic composition is entered as a control variable, and interview mode is entered as an additional predictor. The question of significant mode effects is judged by the significance found for this predictor. The sex, place of birth and the school tracks are taken into account.

In the next table, we can observe that when adding the variable "method", the model does not significantly improve. Concerning the offenders of bullying, when controlling for the socio-demographic variables, the method has no effect at all (chi-square = 0.000). A similar pattern is found for the victims of bullying (chi-square=1.344).

Table 3-6 Hierarchical logistic regression of offenders and victims of bullying on method

	Variables introduced in the model	Offenders of bullying		Victims of bullying	
		Sign	Chi-square	Sign	Chi-square
Model 1					
	Gender	0.025	10.269	0.254	2.160
	Place of birth	0.656		0.664	
	Low track *(vs high)*	0.066		0.992	
	Medium track *(vs high)*	0.139		0.453	
Model 2					
	Gender	0.025	10.269	0.266	3.504
	Place of birth	0.656		0.650	
	Low track *(vs high)*	0.066		0.974	
	Medium track *(vs high)*	0.139		0.436	
	Method	0.997	0.000	0.251	1.344

3.6.5. Summary

Results confirm that the two methods are comparable. In the light of these findings, interviewing juveniles on self-reported experience with victimization, drug use, delinquency and bullying (offenders and victims) can be done with CAWI without risk of major distortions in the results, but with many other obvious advantages. Students are more motivated to respond through the Internet, take less time for filling out the questionnaires, and may be more confident about enjoying privacy. The Internet also eliminates the requirement of data entry, and therefore leads to considerable cost savings. On balance, the Internet may be particularly helpful in research on self-reported delinquency (Lucia *et al*., 2007).

3.7. TESTING HYPOTHESIS 2: INDIVIDUAL EFFECTS (VAUD SAMPLE)

3.7.1. Introduction

Before testing the second hypothesis, some general information is given. First, the rates of the behaviour of the groups of bullies and of victims are presented separately by gender and by age. Then, we investigate the relationship between bullying others and being bullied. This is followed by a part dedicated to the relationship between bullying and delinquency. Finally, the differences of bullying rates between the 24 schools are shown.

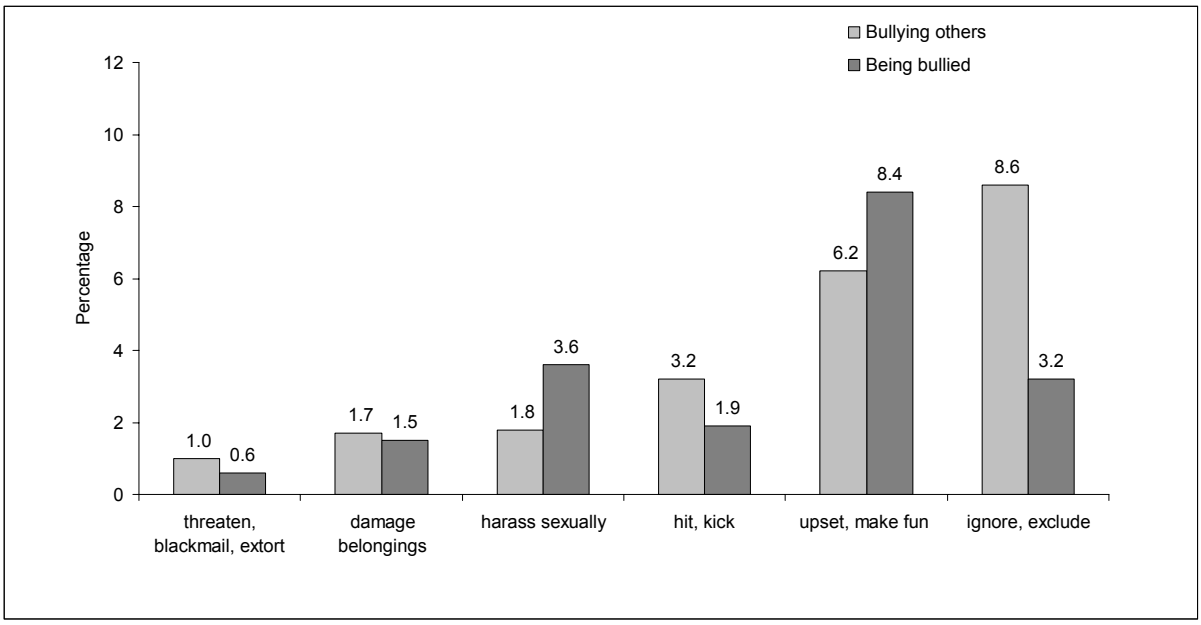
Once the general information given, bivariate analyses are presented. This is followed by multiple correspondence analysis, discriminant analysis and logistic regression in order to test the second hypothesis.

3.7.2. General information

Offenders and victims

Confirming what may be expected, girls have a lower participation with regards to bullying. Before observing gender differences, the following chart presents the rates of pupils admitting to having bullied others and of those declaring to have been a victim at least once a week during the last 12 months (Figure 3-2). Depending on the type of behaviour, the rates vary from 1.0% to 8.6% for the offenders and from 0.6% to 8.4% for the victims. The most frequent behaviours the bullies adopt is to ignore/exclude a pupil and making fun of/upsetting someone. Besides being frequently upset, the victims of bullying are sometimes sexually harassed.

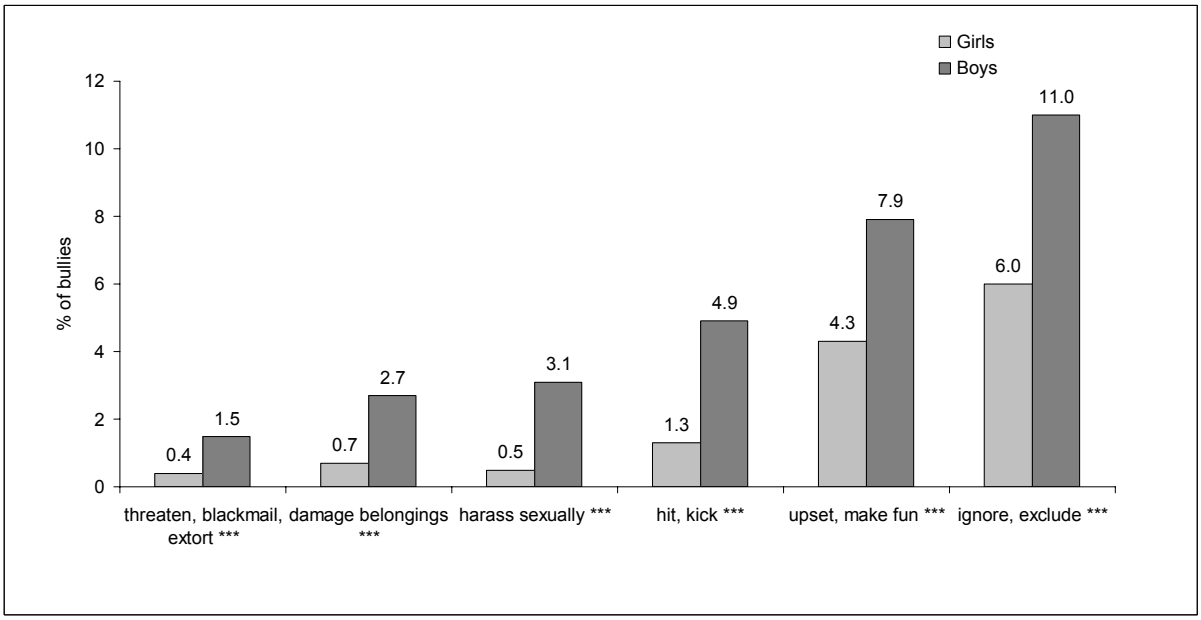
Figure 3-2 Percentages of pupils who reported having bullied others or being bullied at least once a week in the last 12 months, by types of behaviour



Bullying and gender

Let us see the difference between boys and girls regarding types of behaviour. The next chart shows that boys bully more than girls, and this for all the six types of behaviour. For both sexes, the two behaviours most adopted are to ignore/exclude and to make fun of/upset.

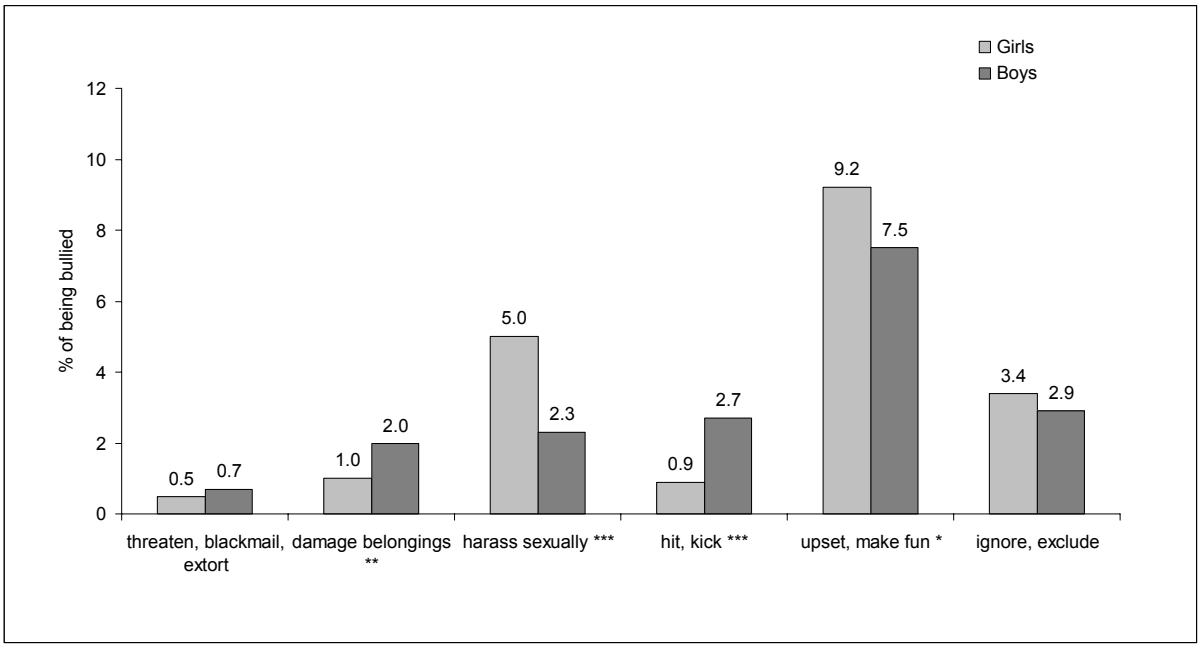
Figure 3-3 Percentages of girls and boys who reported having bullied others at least once a week in the last 12 months, by types of behaviour



* p≤0.05, ** p≤0.01,*** p≤0.001

Concerning the victim of bullying, there is no significant difference between genders for the behaviour of threat/blackmail/extort and ignore/exclude. Girls are clearly more victim of sexual harassment and a bit more victim of make fun of/upset. Boys are more victim of physical aggression such as having there belongings damaged and being hit/kick (Figure 3-4).

Figure 3-4 Percentages of girls and boys who reported being bullied at least once a week in the last 12 months, by types of behaviour



* p≤0.05, ** p≤0.01,*** p≤0.001

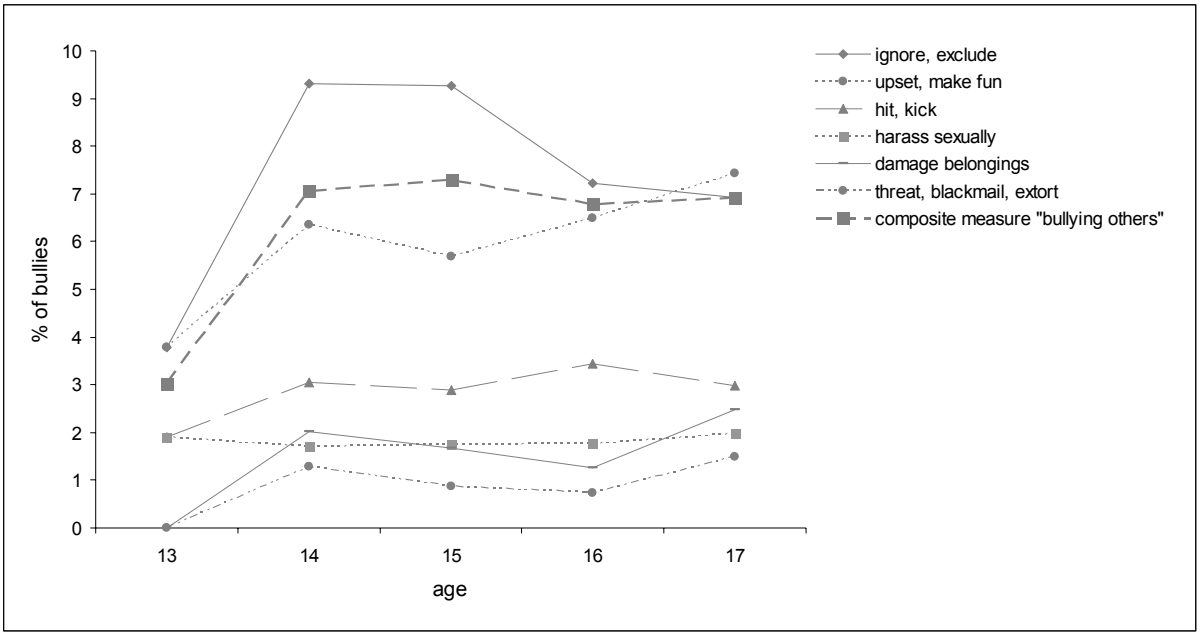
When taking into account the six items, the sample contains 7.1% of bullies and 5.9% of being bullied. Among the bullies, 28.7% are girls and 71.3% are boys, the difference being significant. Among the victims of bullying, 53.4% are girls and 46.6% are boys, the difference being not significant (see section 3.3.6 to know how the constructs of bullying others and being bullied have been done).

Bullying and age

When we consider the relation between bullying and age, we observe a relatively important gap between pupils of age 13 and the older ones. This can be observed in Figure 3-5, in which the percentage of each behaviour is presented as well as the composite measure of bullying others. Looking at the hit/kick behaviour at the age of 13, about 2% admit having done such behaviour at least once a week during last year. This rate is slightly higher in the following

years – about 3% – but the difference is not significant. If we look at the composite measure, we observe that the number of offenders regularly bullying their peers increase from 3% among 13-year olds to about 7% among 14-year olds; then we observe a stable curve in the following ages: 14, 15, 16 and 17 (see the construct presented in section 3.3.6). The trend observed is similar to the one in Norway but different to that of the Netherlands (Smith *et al.*, 1999). In Norway, Olweus found a relatively marked drop in the curve around age 13 and interpreted this as the fact that these students are the youngest in their schools and thus, they do not have yet access to suitable victims. In the Vaud system, pupils also usually change school at the end of the 6th grade (at around 12 years old), leaving primary school to enter secondary school. Thus, Olweus's hypothesis applies also to our results, as the 13-year old pupils do not have younger ones to bully.

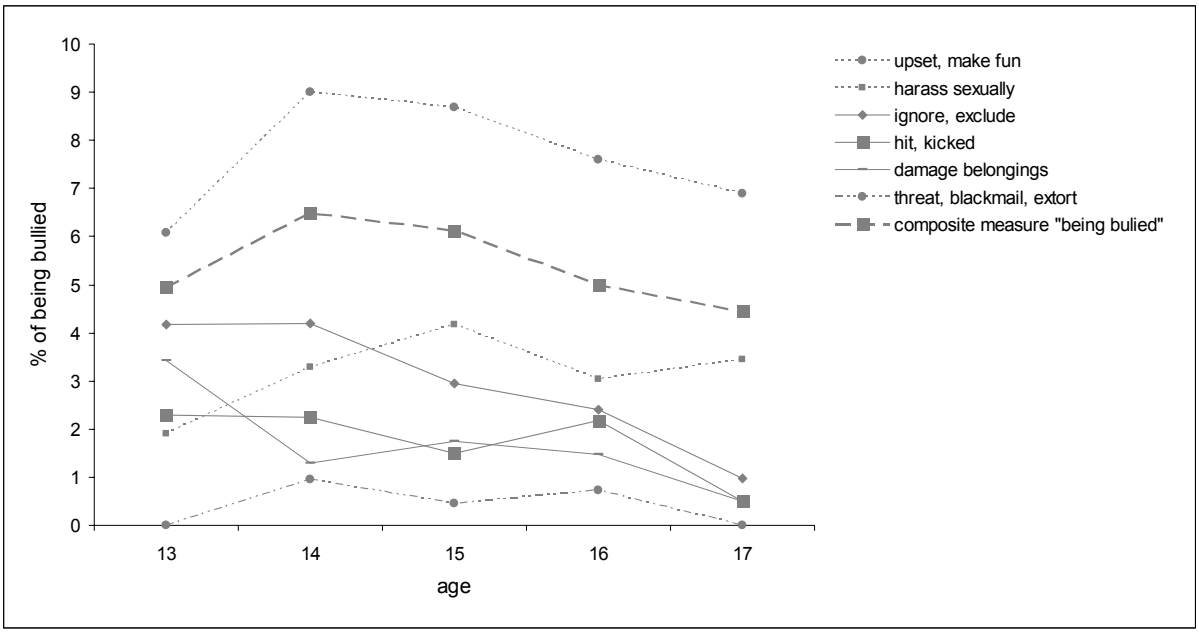
Figure 3-5 Relation between age and bullying others (in %)



As regards the tendency to be bullied, depicted in Figure 3-6, the change with age is not significant. The small trend observed (the older pupils being less bullied than the youngest one) is not consistent with other studies (Netherland, Norway, Belgium and Spain, see Smith *et al.*, 1999). However, in these studies the range of the age taking into consideration is different (usually between 11 and 15 years old) leading to manifold representations and interpretations of the tendencies. We also observe that the 13-year old pupils have the lowest rate of bullies, which contradicts the hypothesis given above. If the youngest pupils in the

school do not have access to suitable victims, they should on the contrary be a "good target," which is not the case in our sample.

Figure 3-6 Relation between age and being bullied (in %)

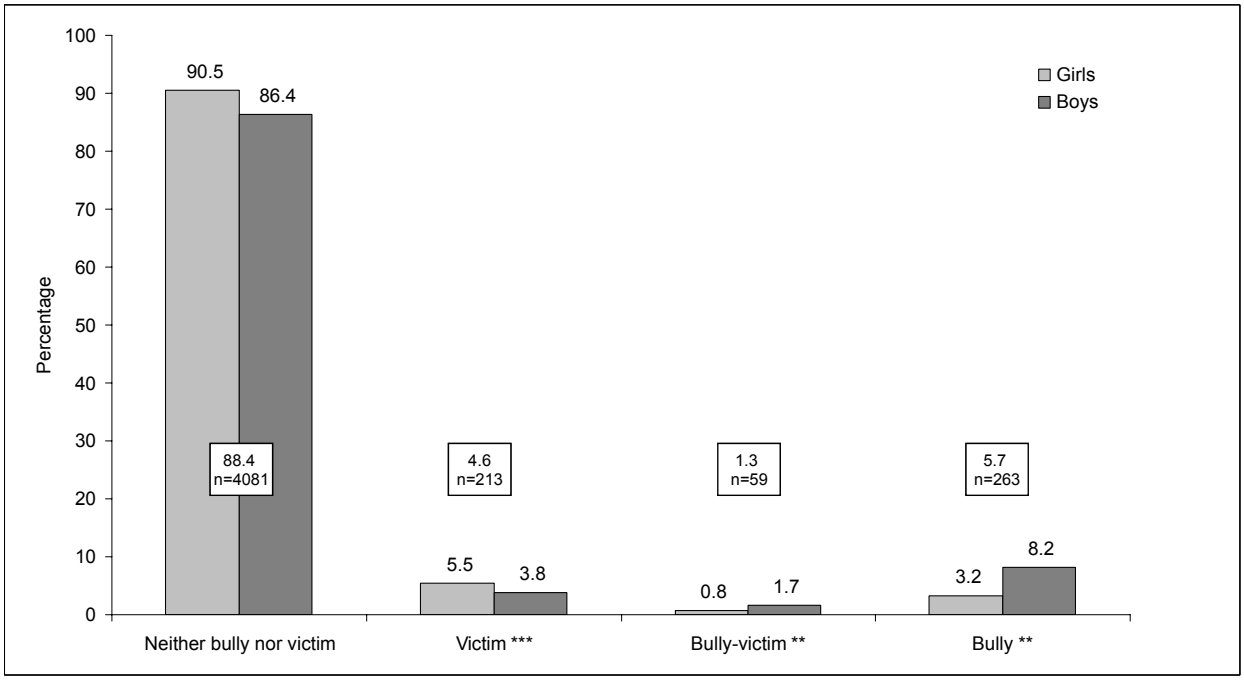


Bullying others and being bullied

In our sample, some 6% of the pupils are victims of bullying. It is interesting to note that of these about 21% also bully others. Out of the 94% that are not victims, only 6% bully others. The same effect is also found among the bullies who are more often bullied than non-bullies. These findings show that there is a relation between bullies and their victims, which leads us to look separately at the four different categories of involvement and non-involvement in bullying: the one that has neither offenders nor victims, the one composed only of bullies, that composed only of victims, and the group of being both offender and victim (bully-victim). Figure 3-7 shows the rates of children assigned to the different categories of involvement and non-involvement in bullying. In total, 11.6% of the pupils of grade 8 and 9 in Switzerland are concerned by the problematic of bullying.

Boys are more present in the groups of bully-victim and of bully. In our sample, the rates of bully, victim and bully-victim (5.7%, 4.6% and 1.3%) are very similar to the those found in the canton of Zug (6%, 4% and 3%) (Perren & Hornung, 2005).

Figure 3-7 Percentages of pupils assigned to the different categories of involvement and non-involvement in bullying, by gender



* p≤0.05, ** p≤0.01,*** p≤0.001

The bully and bully-victim groups are each composed of about 70% of boys and the victim group of about 40% boys. In Netherland, a study shows that 80% of the group including both victims and bullies were boys and two-third of the total of bullies were boys (Junger-Tas & Van Kesteren, 1999).

From the literature, the bully-victim group is highly at risk. They appear to be extremely problematic children who may develop serious anti-social behaviour at a later age (Junger-Tas & Van Kesteren, 1999). In one study in Finland, more than 16,000 Finnish students ages 14 to 16 were surveyed and an association was found between depression, severe suicidal ideation and involvement in bullying. The highest risk of depression was seen among those students who were both victim and bully, followed by those who were victims of bullying, then the bullies. The highest risk of severe suicidal ideation was seen among students who were both bullied and bullies, followed by bullies, then the victims (Kaltiala-Heino, Rimpelä, Marttunen, Rimpelä & Rantanen, 1999).

Bullying and delinquency/problem behaviour

An important question is whether delinquency/problem behaviour, being bullied and bullying others are correlated. Here, we look separately at the four different categories of involvement and non-involvement in bullying: neither offender nor victim, only bully, only victim, and both offender and victim. With regard to delinquency, 9 delinquency items have been used to create the variable of "minor offences"[13] and 10 items for the concept of "serious offences"[14]. The construct of the variable "all offences" consists in committing at least one of all the 19 items in the previous year. Problem behaviour is defined by those pupils that have abused one of the following substances during the last 12 months: alcohol, tobacco, cannabis or hard drugs.

Table 3-7 shows the rates of delinquent behaviour and problem behaviour in the Canton Vaud sample.

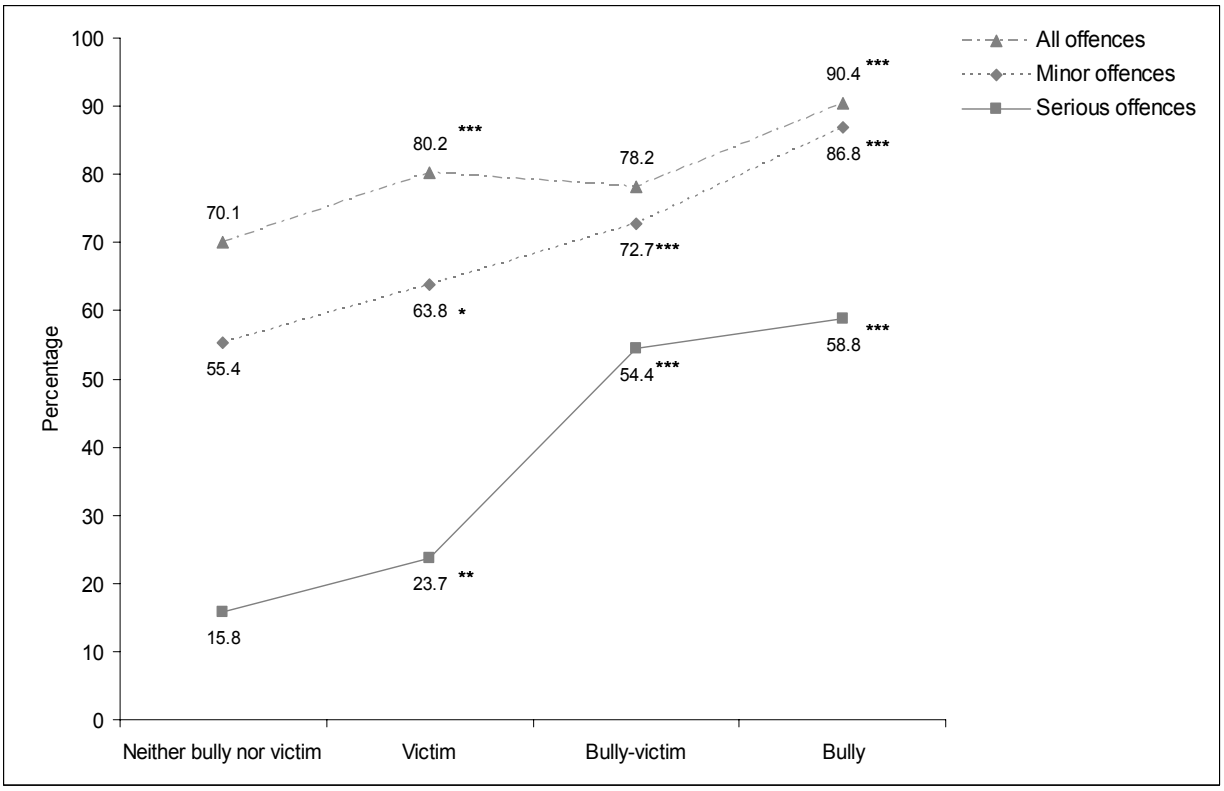
Table 3-7 Percentages of delinquent behaviour and problem behaviour during the last 12 months

Delinquent behaviour		Problem behaviour	
Minor offence	57.7	Alcohol	70.3
Serious offences	19.1	Cigarettes	42.6
All offences	71.7	Cannabis	22.9
		Hard drugs	4.5

Figure 3-8 shows the relation between bullying and delinquency. When looking at minor offences, we observe that among the reference group (pupils who are neither bullies nor victims of bullying) 55.4% committed a minor offence during the last 12 months. This rate increases to 63.8% for the victims of bullying, 72.7% for the group that is both offender and victim and to 86.8% for the group of bullies. The same trend is found for the serious offences and for all offences. The three groups of victim, bully-victim and bully are at risk in committing delinquent acts compared to the group of the children not involved in bullying. The groups at higher risk are the bully-victim and the bully.

[13] The items used to construct minor offences are the following: truancy, driving without a license, shoplifting, theft at school, harassment of a person in the streets, spraying graffiti, vandalism, steal from someone.
[14] The items used to construct serious offences are the following: breaking into a car, theft of a vehicle, theft of an object on a vehicle, assault, threat with a weapon, extortion, robbery, arson, sell of cannabis, sell of hard drugs.

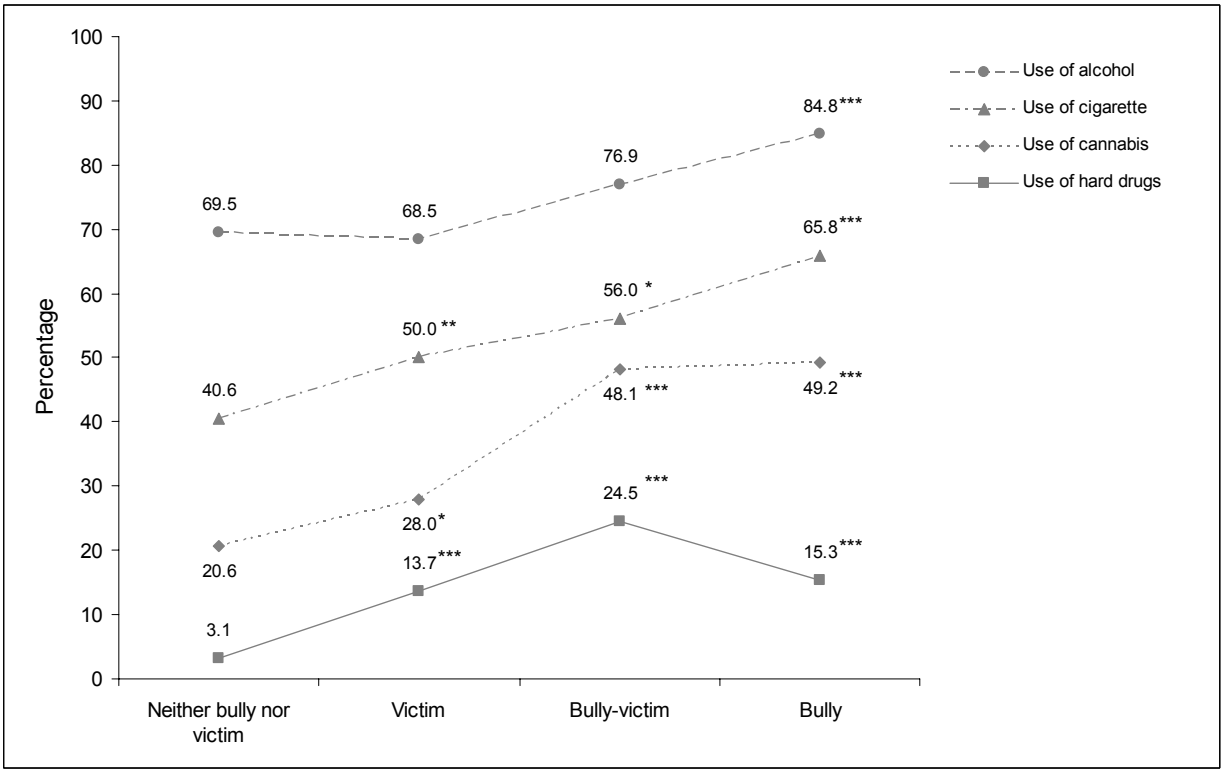
Figure 3-8 Relation of victims, bully-victims and victims with delinquency



* p≤0.05, ** p≤0.01,*** p≤0.001

Figure 3-9 shows the relation between bullying and problem behaviour. The trends are similar to those observed for delinquent behaviour in all its forms apart from the use of alcohol for where the only significant difference is found between the reference group and the bullies. Regarding the other substances, the use of cigarettes, cannabis and hard drugs is higher when a child is in one of the three groups of victim, bully-victim and bully, compared to the group of children not involved in bullying. The peak observed for the bully-victim group in the use of hard drugs has to be taken with caution as the number of children in that category and admitting to using hard drugs is low, only 13.

Figure 3-9 Relation of victims, bully-victims and victims with problem behaviour



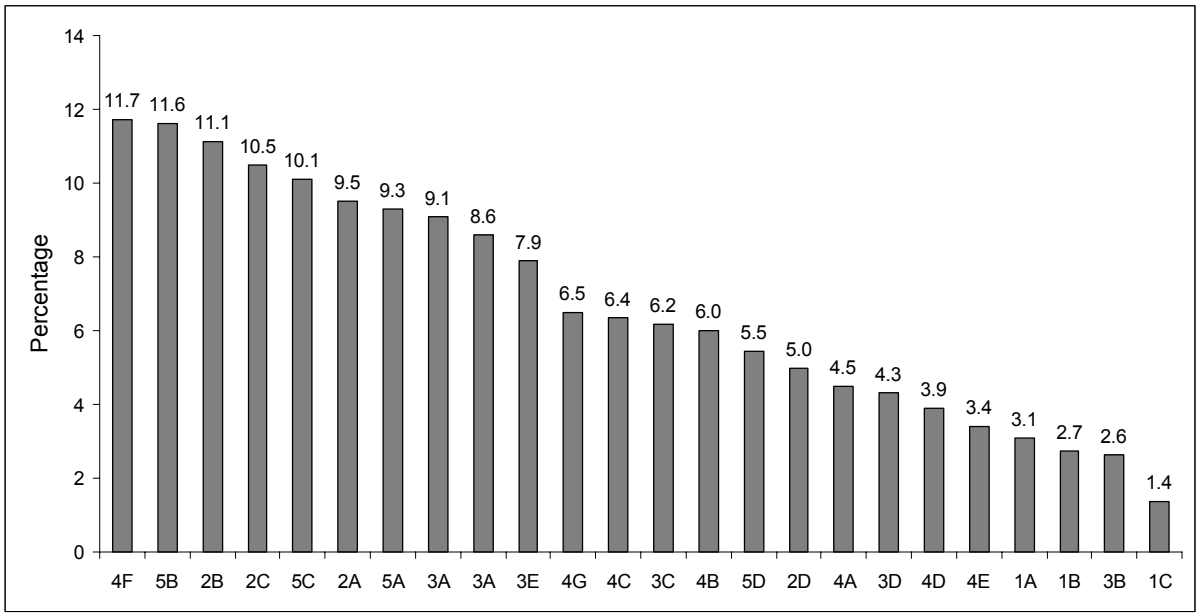
* p≤0.05, ** p≤0.01,*** p≤0.001

Our study indicates that there is a relationship between involvement in bullying and delinquent behaviour. As for problem behaviour, a relationship is also found with bullying apart from alcohol where only the group of bullies drinks significantly more than the reference group. Kuntsche *et al*. (2007) investigated the direct link and indirect links, through alcohol use, between adolescents' drinking motives and bullying. They found that out of four different motives – enhancement, social, coping and conformity – the strongest direct predictor of bullying is the conformity motive. Drinking to fit into a group and to avoid peer rejection appears to be the main motive among adolescents who act violently. Other studies also found a relationship between delinquency, problem behaviour and involvement in bullying (Hindelang, Hirschi & Weis, 1981; Junger-Tas & Van Kesteren, 1999). A relationship between violence at school and at a later age was found in a study carried out among army recruits (Haas, 2001). Among those admitting having been violent at elementary school, 17% also admit to having committed frequent and/or serious violent acts (2% among the other recruits).

Bullying by school

As mentioned earlier, every school has distinctive characteristics that make it different from other schools. Illustrated in Figure 3-10, the prevalence of bullying others varies from 1.4% to 11.7%. Thus, this observation supports our aim of understanding the reason for this considerable variation in bullying between schools. In order to respect school confidentiality, their names do not appear in the chart.

Figure 3-10 Prevalence of bullying others by school



3.7.3. Bivariate analyses

In this section, bivariate analyses are presented before the application of multivariate analyses in section 3.7.4. In order to look at the strength of the link between two variables, the coefficient of association Phi (for table 2 X 2) or Cramer's V (for bigger tables) was used, based on Jacob Cohen's suggestion (1988)[15]. This section is organised in 5 subsections: demographic variables, child factor, family context, school context and peers/leisure context.

[15] $0 \leq$ Phi/Cramer's V ≤ 0.10 is a null relationship
$0.10 <$ Phi/Cramer's V $\leq$ 0.30 is weak relationship
$0.30 <$ Phi/Cramer's V ≤ 0.50 is a moderate relationship
< 0.50 is a strong relationship

Demographic context

Table 3-8 presents the relationship between demographic variables and prevalence of bullying. As mentioned earlier, there is a difference between *gender*, boys being more active than girls, and the younger adolescents (8^{th} *grade*, mean age being 14.4 years) are slightly more involved in bullying than then older (9^{th} *grade*, mean age of 15.5).

Social class and socio-economic status have been considered key variables in delinquency over many decades (e.g., the strain theory). Nationality, family affluence and parents' education relate to each other. Among foreign pupils, 13% belong to a family with low affluence compared to 2.2% among Swiss pupils. Similarly, 22.6% of foreign pupils have parents with no professional training compared to 1.7% among Swiss pupils. The prevalence rates found in Table 3-8 suggest slightly higher bullying rates among foreign children, pupils from families with low affluence and pupils with parents having no education compared to Swiss pupils, pupils from families with high affluence and pupils with parents having an education. Nevertheless, those differences are not significant, apart from family affluence (at $p \leq 0.05$), and the strength of the relationship (Phi/Cramer's V) between bullying and those three variables – nationality, family affluence and parents' education – is null.

Table 3-8 Relationship between demographic variables and bullying

		%	p	Phi/Cramer's V
Gender (df=1)	Girls	4.0	***	0.115
	Boys	9.9		
Grade (df=2)	8^{th}	7.9	*	-0.032
	9^{th}	6.2		
Nationality (df=2)	Swiss	6.5	ns	0.036
	EU	8.4		
	Other	8.7		
Family affluence (df=1)	High	6.8	*	0.034
	Low	10.8		
Parents' education (df=1)	Yes	6.3	ns	0.018
	No	8.2		

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Personality

For Gottfredson and Hirschi (1990), people with low self-control tend to engage more frequently in criminal and deviant acts than others. In that context, people with low self-control tend to be impulsive, self-centred and more risk-taking. They also prefer simple tasks and physical activities and have a volatile temper. In our analysis, only items related to impulsivity, risk-taking, self-centredness and temper have been used to create a scale of self-control. The scale as a whole measures the disposition of an individual to master his behaviour and to adequately react to various situations and impulses. As Table 3-9 shows, the relationship between self-control and bullying is significant. Among the pupils with a low self-control, 18% admit having bullied others whereas it is only the case for 3.6% among pupils having a high level of self-control.

Table 3-9 Relationship between self-control and bullying

		%	p	Phi/Cramer's V
Self-control (df=1)	High	3.6	***	0.241
	Low	18.0		

* p≤0.05, ** p≤0.01, *** p≤0.001

Family context

Parental supervision turned out to be an important variable, whose influence is comparable to that of the importance given to the parents. Adolescents whose parents are not well informed about their whereabouts bully more often than the others, and children who consider their *parents' opinion* unimportant, tend to bully more than those for whom it is important what their parents think. This is in accordance with the overall concept of social control theory: the child that cares about authority figure expectations is less likely to engage in delinquency (Table 3-10).

The debate of the role of *household composition* on adolescents' deviant behaviour is a recurrent topic. Usually, children coming from broken homes live with their mother, and father absence often entails a lack of guidance and of supervision. The evidence so far has shown a strong impact in the USA, but mixed results in Europe (Haas, Farrington, Killias & Sattar, 2004; Junger-Tas *et al.*, 2003). When talking about bullying, this variable is rarely

taken into account. As Table 3-10 shows, the difference is significant only at 5% and the strength of the phi coefficient is null.

There is a significant difference in *violence-legitimising norms of masculinity* (VLNM) between bullies and non-bullies. Among the pupils approving the use of violence, 15.5% admit having bullied others whereas among the pupils disapproving it, only 4% are bullies (Table 3-10).

Table 3-10 Relationship between family context and bullying

		%	p	Phi/Cramer's V
Parental supervision (df=1)	Strong	4.7	***	0.173
	Weak	15.6		
Importance of parental opinion (df=1)	Important	5.4	***	0.163
	Unimportant	17.9		
Household composition (df=1)	Traditional	6.6	*	0.035
	Broken homes	8.6		
Violence-legitimising norms of masculinity (df=1)	Disapprove	4.0	***	0.197
	Approve	15.5		

* p≤0.05, ** p≤0.01, *** p≤0.001

School context

Apart from family, the school also serves as an important control factor on children. Variables related to school context have been divided into two groups; the first includes variables related to the individual (Table 3-11) and the second those related to the school (Table 3-12).

As observed in Table 3-11, pupils in the lower track are more involved in bullying than those in the other tracks (medium, high). Pupils who have repeated a year, played truant and/or who have a weak bond to school are more implicated in bullying. If school failure seems to be strongly linked in Anglo-Saxon countries, it is not the case in Europe (Junger-Tas *et al*., 2003). The alternative opportunities proposed by the continental system (apprenticeship, professional school) could explain the non-correlation between school failure and deviant behaviour (Killias, 2001). Moreover, a teenager who does not have any perspective for the future or who wants to start working directly is more at risk than someone wanting to get a training. Probably due to the nature of the Swiss education system, 92% of the adolescents wish to complete some king of vocational education after mandatory school and only 3.5% prefer to start working. Although children give less importance to the teacher's opinion

compared to the importance given to the parental opinion, the link between these two variables is important (68% find teacher's opinion relevant and 86% find parental opinion important). Among youths finding their parents' opinion important, about 77% also take into account the teacher's opinion, and among those taking their parents' opinion as unimportant about 70% also give no importance to their teacher. When looking at the relationship with bullying, children who consider their teacher's opinion unimportant tend to bully more than those that care about it.

Table 3-11 Relationship between school context and bullying

		%	p	Phi/Cramer's V
Tracks (df=2)	High	6.0	***	0.063
	Medium	6.3		
	Low	9.8		
School failure (df=1)	No	6.4	**	0.041
	Yes	9.0		
Perspective of future (df=2)	Get a formation	6.4	***	0.073
	Do not know	9.0		
	Working	15.2		
Attachment to school (df=1)	Strong	5.5	***	0.084
	Weak	10.2		
Truancy (df=1)	Never	4.7	***	0.163
	At least once	14.9		
Importance of teacher's opinion (df=1)	Important	4.6	***	0.151
	Unimportant	13.1		

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

The *reaction of the teacher* when pupils are fighting correlates with bullying. No significant difference is found between a constructive and a punitive reaction. Whatever the reaction is, it is better than not intervening. Thus, it is not surprising that the Olweus programme defines firm limits to unacceptable behaviour. There is also a relationship between *school climate* and bullying. Amongst those perceiving school climate as positive, only 4.1% admit having bullied others; whereas when school climate is perceived as negative, 16.1% are involved in bullying. The final variable tested concerns the *feeling of insecurity at school*. Pupils feeling insecure at school or on the way between home and school are more likely to be a bully-victim or a victim than those feeling in security. However, the pure bullies are similar to the control group of neither bullies, nor victims (Table 3-12).

Table 3-12 Relationship between school context and prevalence of bullying

		%	p	Phi/Cramer's V
Teacher reaction (df=2)	Constructive reaction	5.4	***	0.123
	Punitive reaction	6.6		
	No reaction	14.0		
School climate (df=1)	Positive	4.1	***	0.200
	Negative	16.1		
Feeling of insecurity at school (df=1)	Secure	6.3	***	0.050
	Unsecure	9.7		

* p≤0.05, ** p≤0.01, *** p≤0.001

Peers/leisure context

Table 3-13 contains the percentage of bullies among the pupils depending on the *importance they give to their friends' opinion*. Only 6.1% are bullies out of the 91% having answered that the opinion of their friends are important whereas out of the 9% remaining (pupils for whom the opinion of the friends are unimportant), 17.6% are bullies.

Within the study, questions were asked about how the respondents spend their *leisure time*. In the next table (Table 3-13), the percentages of bullies are reported depending on how often they are with friends, their family or doing activities at home and doing activities related to sport. Pupils spending more time with friends and little time with the family or at home admit to bullying others more often (around 5% vs 14%). Concerning activities related to sport, we were expecting sport to be a protective factor. However, bullies are more present among pupils playing sport often or going to sporting events. No information on the type of sport played is given. Analyses carried out on Swiss data in 1992 showed that belonging to an organized association (e.g., sportive, cultural, religious) can be a protective or a risk factor depending of the type of offence. Moreover, depending on the activity (sport such as football or fighting sports), this can be a factor of risk for specific type of offences (Lucia, 2002).

Table 3-13 Relationship between importance of peers' opinion, leisure time and prevalence of bullying

		%	p	Phi/Cramer's V
Importance of peers' opinion (df=1)	Important	6.1	***	0.133
	Unimportant	17.6		
Activities with peers (df=1)	Rarely	4.9	***	0.152
	Often	14.1		
Activities with family/at home (df=1)	Often	5.1	***	0.152
	Rarely	14.6		
Activities related to sport (df=1)	Rarely	6.0	***	0.067
	Often	10.0		

* p≤0.05, ** p≤0.01, *** p≤0.001

3.7.4. Multivariate analyses

Table 3-14 synthesizes the p-value and the strength of the association coefficient for each independent variable. They have been classified by the coefficient Phi/Cramer's V. No significant difference between bullies and non-bullies regarding the variables *nationality* and the *parent's education* have been detected. Small differences are found for *household composition, family affluence* and *grade* (at $p \leq 0.05$). Variables such as *attachment to school, perspective of future, sport activities, school failure, tracks, feeling of insecurity at school* and *school failure* show a significant difference between bullies and non-bullies but their respective coefficient of association is very weak. For all the other variables (from *gender* up in the table below), a significant difference exists between the two groups and the strength of the association's coefficients is stronger – although still weak.

Table 3-14 Significance and strength of the coefficient of association for each independent variable, with bullying

Independent variables	p	Phi/Cramer's V
Self-control (df=1)	***	0.241
School climate (df=1)	***	0.200
Violence-legitimising norms of masculinity (df=1)	***	0.197
Parental supervision (df=1)	***	0.173
Activities with family/at home (df=1)	***	0.152
Activities with peers (df=1)	***	0.152
Importance of parental opinion (df=1)	***	0.163
Truancy (df=1)	***	0.163
Importance of teacher's opinion (df=1)	***	0.151
Importance of peers' opinion (df=1)	***	0.133
Teacher reaction (df=2)	***	0.123
Gender (df=1)	***	0.115
Attachment to school (df=1)	***	0.084
Perspective of future (df=2)	***	0.073
Activities related to sport (df=1)	***	0.067
Tracks (df=2)	***	0.063
Feeling of insecurity at school (df=1)	***	0.050
School failure (df=1)	**	0.041
Nationality (df=2)	ns	0.036
Household composition (df=1)	*	0.035
Family affluence (df=1)	*	0.034
Parent's education (df=1)	ns	0.018
Grade (df=2)	*	-0.032

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

Before proceeding to the multivariate analyses, it is necessary to check bivariate correlations between the independent variables significantly related to bullying in order to avoid multicollinearity.

The largest correlation (Spearman's rho) among these variables is 0.352, between the importance of the parents' and of the teachers' opinion. It is followed by the correlation between school climate and attachment to school (0.307) and finally the correlation between school climate and the importance given to teacher opinion (0.306). As these correlations are not too important, we will keep all of the variables in the multivariate analyses.

How are the categories of the independent variables related to each other? What is the relationship between the categories of the independent variables and the categories of the dependent variables (bullies and non-bullies)?

Bivariate analysis allows comparison between bullying and various predictors. Now, we are interested in observing the relationship between all the predictors by using **Multiple Correspondence Analysis** (MCA). MCA is a multivariate method to describe and visualize on a graph the pattern of relationships between categories and between variables (see the theoretical overview in section 2).

Another reason to use MCA is to transform categorical variables into continuous variables for subsequent LDA analysis. Therefore, fifteen[16] active variables have been taken into account in the MCA (see variables in Table 3-15). Catell's scree test (Figure 3-11) helps to decide the number of dimensions to retain from the 15 variables used in the MCA (Cattell, 1966). This consists in plotting each of the eigenvalues of each dimension and looking at the plot to find the "elbow" and keep the dimension above it, as these factors contribute the most to the explanation of the variance in the data set.

[16] The number of active categories is 65 and the number of variables are 23, leading to 42 factors (number of categories minus the number of variables used) (Saporta, 2006).

Figure 3-11 Eigenvalue of the 15 active variables

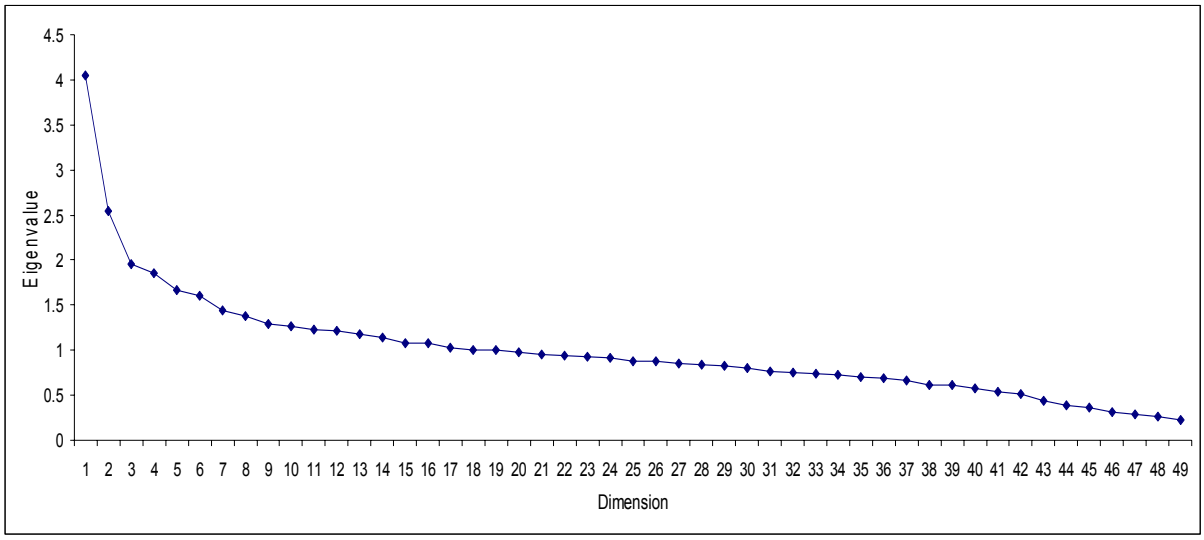


Figure 3-11 Figure 3-11 shows a drop between the second and the third dimension. Thus, we consider the first two dimensions. The dimensions on the shallow slope (from the third dimension) have a limited contribution to the solution. The variance in the data is accounted for at 40% by the two first dimensions (respectively 23% for the first and 17% for the second). Therefore, the first two dimensions (VI1 and VI2) remain for the interpretation of the contribution of the 15 initial variables. The discrimination measures of the variables on each dimension are presented on Table 3-15.

The first dimension relates to the importance given to parent, teacher and peers' opinion and to parental supervision. School attachment and truancy load less importantly on the first dimension. The second dimension relates to the importance given to authority figures and to peers. All the other variables (tracks, gender, perspective of future, school failure and teacher reaction) do not discriminate at all in both dimensions.

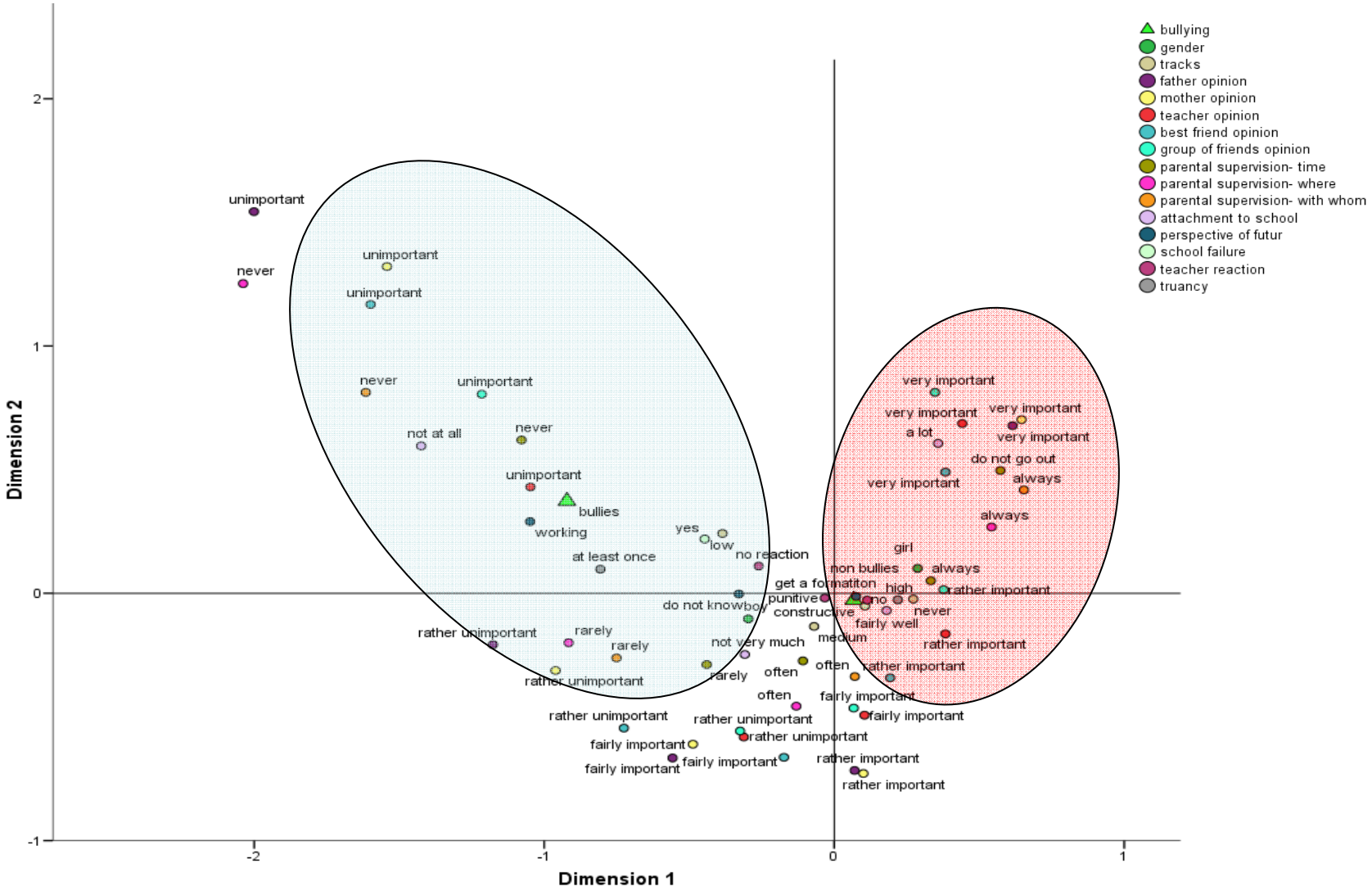
Table 3-15 Discrimination measure of the 15 actives variables

Independent variables	Dimension 1 (VI1)	Dimension 2 (VI2)
Importance father opinion	**0.502**	**0.562**
Importance mother opinion	**0.440**	**0.562**
Importance best friend opinion	**0.297**	**0.325**
Importance group of friends	**0.252**	**0.274**
Importance teacher opinion	**0.283**	**0.239**
Parental supervision- where	**0.438**	**0.171**
Parental supervision- with whom	**0.414**	**0.156**
Parental supervision- time	**0.203**	0.093
Attachment to school	**0.176**	0.002
Truancy	**0.162**	0.078
Tracks	0.087	0.011
Gender	0.068	0.019
Perspective of future	0.056	0.003
School failure	0.047	0.011
Teacher reaction	0.019	0.003

Figure 3-12 presents a refined view of the loading variables by representing the categories of each active variable. For interpretative purpose, the variable bullying has been introduced as a supplementary variable.

On Figure 3-12, a green triangle represents the dependant variable. By observing, the variables loading strongly on dimension 1 and 2, two opposite zones have been identified. The blue circle surrounds the modalities close to the pupils defined as “bullies”. Modalities related to the unimportant or rather unimportant opinion given to the people surrounding the pupils (father, mother, teacher, best friend, groups of friends) and to a low parental supervision (parents that never/rarely give a time to get back home, never/rarely know where the teenager is and never/rarely know with who the teenager is) are close to each other. The group of “non-bullies” is situated near the centroid and is poorly described in this two-dimensional solution. Nevertheless, in the red circle, we see that close to the “non-bullies” are the categories linked to an important opinion given to the authority figures and peers and to a strong parental supervision. When considering the categories of the variables loading strongly on dimension 1 and 2, we oppose clearly the categories of variable *being at risk* and *protector*.

Figure 3-12 MCA. Representation of the modalities of the active variables according to the first 2 dimensions and of the supplementary variable "bullying others"



Although, the other variables are less important to explaining the solution, interesting observations can be highlighted. Pupils in the lowest tracks, planning to work in the future (without learning a profession), who played truant during the last 12 months and pupils who say they are not liking school at all or not very much are modalities very close to each other. Moreover, those categories are close to the bully category. Furthermore, we see that girls are more supervised than boys. Girls are nearer to the category "do not go out in the evening", but when going out, they always have a time to come back home, parents always know where they are and with whom they spend their time. Near to the non-bullies are also pupils that never missed school without any reason, are attached to school, are in the highest tracks and intend to get a professional training.

MCA enables us to interpret a few components (the first and second dimension) instead of a large number of variables. In our case, it seems clear that the first dimension is related to social control but there is not enough variation on the second dimension to interpret it.

Which of the independent variables predict best whether a pupil will bully others?

All independent variables whose relationship with bullying shows a p-value smaller than 0.05 in the bivariate analyses are introduced in the **logistic regression** (Table 3-16). All the variables are dichotomous and variables with more than two categories are transformed into dummies (tracks, perspective of future and reaction of the teacher).

As mentioned in section 2-7, a logistic regression of 1,000 bootstrap samples (backward LR) was carried out. Table 3-16 shows the percentage rate of each variable that remains in the models.

Table 3-16 Percentage rate of variables remaining in the models

Self-control *(low vs high)*	100
School climate *(negative vs positive)*	99
Gender *(boys vs girls)*	99
Violence-legitimising norms of masculinity (*approve vs disapprove)*	96
No reaction of the teacher *(vs constructive)*	82
Activities with peers *(rarely vs often)*	79
Parental supervision *(low vs high)*	78
Truancy *(at least once vs never)*	77
Activities with family/at home *(rarely vs often)*	72
Activities related to sports *(rarely vs often)*	58
Importance of peers' opinion *(unimportant vs important)*	54
Medium track *(vs high)*	51
Perspective of future: do not know *(vs get a formation)*	50
School failure *(yes vs no)*	49
Lower track *(vs high)*	33
Importance of teacher's opinion *(unimportant vs important)*	32
Attachment to school *(weak vs strong)*	31
Perspective of future: working *(vs get a formation)*	23
Feeling of insecurity at school *(insecure vs secure)*	17
Importance of parental opinion *(unimportant vs important)*	12
Punitive reaction of the teachers *(vs constructive)*	12

Only variables selected in more than 60% of 1,000 bootstrap samples are kept. Concerning the variable reaction of the teacher, one of the dummies has been selected whereas not the other. The variable has three categories: constructive reaction, punitive reaction and no reaction. The reference was “constructive reaction” and the only dummy selected is “no reaction.” It indicated that teachers not reacting affect bullying, whereas a punitive reaction has no effect. Thus, the variable is dichotomized into having a reaction (either constructive or punitive) vs having no reaction.

Below, the results are presented of the logistic regression with the variables selected using bootstrapping (Table 3-17). All of the variables selected were included in a logistic regression in SPSS using the “Enter” method and ordered by their odds ratio. As our variables are dichotomous, one category is compared to the other category of the same variable defined as the category of reference. An odds ratio over 1 indicates that a category has a higher bullying rate than the reference category. As an example, the odds ratio of self-control is 3.7,

indicating more than a triple bullying rate for the pupils with a low self-control compared to the category of pupils with a high self-control.

The odds of "bullying others" are increasingly greater when the pupil has a low self-control, is a boy and is in a school described as having a negative climate (between 2.2 and 3.7 times). The others significant variables vary between 1.5 and 1.9 times. The odds of "bullying others" increase when the adolescent approves the use violence, has a teacher that does not react when there is an aggression, spends a lot of time with peers and little with the family or at home, and is little supervised by parents. Truancy also increase the odds of bullying others, showing in a certain way that the child does not like school. This final model explains 25.5% of the variance (Nagelkerted R Square).

Table 3-17 Logistic regression predicting bullying

	B	S.E.	Odds ratios	p-value
Self-control *(low vs high)*	1.319	0.174	3.7	0.000
Gender *(boys vs girls)*	0.846	0.190	2.3	0.000
School climate *(negative vs positive)*	0.769	0.174	2.2	0.000
Violence-legitimising norms of masculinity *(approve vs disapprove)*	0.617	0.174	1.9	0.000
Reaction of the teacher *(no reaction vs contructive/punitive)*	0.563	0.181	1.8	0.002
Activities with peers *(rarely vs often)*	0.473	0.178	1.6	0.008
Activities with family/at home *(rarely vs often)*	0.432	0.178	1.5	0.015
Parental supervision *(low vs high)*	0.426	0.176	1.5	0.016
Truancy *(at least once vs never)*	0.406	0.180	1.5	0.024
Constant	-4.841	0.212	0.0	0.000

What combination of the chosen independent variables best distinguishes non-bullies from bullies?

Discriminant analysis can be used when independent variables are continuous. Thus, scales such as self-control, school climate, violence-legitimising norms of masculinity, feeling of insecurity at school, activities with peers, activities with family/at home and activities related to sports can been used as such (in the logistic regression, these scales have been dichotomized). All the others variables are categorical (gender, parental supervision, grade, school failure, attachment to school, perspective of future, truancy, teacher reaction) and need to be transformed into continuous variables. This was done by using the scores obtained by

multiple correspondence analysis (Saporta, 2006). Each pupil has received a score for both dimensions. These two scores will be combined to the seven scales for subsequent linear discriminant analyses (LDA).

In our study, LDA will be mainly used to classify the pupils. The 2 groups being unequal (93.2% non-bullies vs 6.8% bullies), the sample has been stratified and a trained sample containing nearly equal subsample sizes was created. This general technique is called resampling. In the validation sample, the proportion of non-bullies/bullies has been nearly kept (Table 3-18). Were this was not done, we would get a very high rate of non-bullies correctly classified and a very low rate of bullies classified correctly.

Table 3-18 Description of the subsamples

	Trained sample	Validation sample	Total
Non-bullies	94 (48.2%)	2536 (96.5%)	2630 (93.2%)
Bullies	101 (51.8%)	91 (3.5%)	192 (6.8)
Total	195	2627	2822

Moreover, we use a jackknife procedure (leave-one-out method) as a cross-validation technique on the trained sample. Jackknife sampling involves removing one observation from the data set and then classifying that observation based on a LDA of the remaining data. That observation is subsequently returned to the data set, and the entire procedure is repeated for each observation.

Thereafter, we repeat this procedure 100 times. This can been seen as the "repeated k-fold cross-validation" procedure (Berrueta *et al.*, 2007, pp. 203-204). Because each time the sample has been randomly selected, Table 3-18 shows one of the 100 selections.

This procedure allows us to obtain:

- an estimation of the percentage of the samples in the training set correctly classified during the training step;
- an estimation of the percentage of the samples in the training set correctly classified by the cross-validation procedure;
- an estimation of the percentage of samples in the validation set correctly classified by using the models developed in the training step (prediction ability).

Moreover, when using the stepwise method, LDA also allows selecting the "best discriminating" variables. As mentioned earlier (section 2), the literature advocates that logistic regression and LDA give very similar results. We will then compare the variables selected in the LDA with those selected in the logistic regression. The number of time that each variable stays in the model will be counted and all the variables selected more than 60 times will be kept in our final model.

Selection of the variables

The stepwise analysis generates a selection of variables. The following table gives, out of the 100 runs, the rates with which each variable came out. *Self-control* and *violence-legitimising norms of masculinity* have been selected clearly more than 60 times (Table 3-19). *School climate* and the first dimension of VI1 are at the limit. Behind them, all the other variables were rarely selected. The results of the kept variables appear in bold in Table 3-19.

A comparison followed of the variables selected in the stepwise LDA and those kept in the bootstrap logistic regression (see Table 3-16). The difficulty in this comparison is that, apart from the scales, all the categorical variables are used separately in the logistic regression whereas in the LDA they are grouped on 2 dimensions (VI1, VI2). However, it appears that both analyses retain the most important variables related to bullying (self-control, violence-legitimising norms of masculinity, school climate) whereas activities with family/at home and with peers are not retained in the LDA. Concerning variables such as gender and reaction of the teacher, they load so weakly on dimension 1 and 2 in the MCA, that they are not significant in the LDA.

Table 3-19 Number of times each variable was selected out of the 100 LDA replications

Self-control	**95**
Violence-legitimising norms of masculinity	**84**
School climate	**62**
VI1	**55**
Activities with peers	17
Activities with family/at home	14
Activities related to sports	13
VI2	9
Feeling of insecurity at school	3

The ROC Curve procedure provides a useful way to evaluate the performance of classification schemes that categorize cases into groups. It compares the quality of the results obtained when using the variables kept by the logistic regression and by the variables retained in the LDA. The ROC curve is a visual index of the accuracy of the assay. The diagonal line represents the strategy of a randomly guessing a class. In order to get away from this diagonal into the upper triangular region, the classifier must exploit some information in the data. The further the curve lies above the reference line, the more accurate is the test[17] (Fawcett, 2006).

ROC curves have been used in order to compare the models proposed by the logistic regression and the LDA. In the bootstrap logistic regression, all the variables kept (i.e. self-control, school climate, gender, violence-legitimising norms of masculinity, reaction of the teacher, activities with peers, parental supervision, truancy and activities with family/at home) have been transformed by MCA into continuous variables and reduced into 3 dimensions. By performing an enter LDA, the scores of each pupil have been saved and have been used to create the ROC Curve. The variables retained in the stepwise LDA (i.e. self-control, violence-legitimising norms of masculinity, school climate, VI1) have also been used in an enter LDA and the individual scores have been saved.

There is little difference between the two curves and both analyses are efficient enough to discriminate the two groups (Figure 3-13). Accuracy is measured by the area under the ROC curve, which represents the probability that the assay result for a randomly chosen positive case will exceed the result for a randomly chosen negative case. Being a probability, its value varies between 0 and 1. The accuracy of the models obtained with the variables retained with the variables kept in the stepwise LDA and in the bootstrap logistic regression are respectively 0.84 and 0.81. In both cases, the groups can be well discriminated, meaning that these variables allow predicting the pupils who are more at risk of committing bullying behaviour. It is not surprising that the area under the stepwise LDA curve is greater than the one under the bootstrap logistic regression curve, indicating thereby a better average performance. Indeed, the individual scores based on the variables retained in the stepwise

[17] Given a classifier and an instance, there are four possible outcomes. If the instance is positive and it is classified as positive, it is counted as a *true positive*; if it is classified as negative, it is counted as a *false negative*. If the instance is negative and it is classified as negative, it is counted as a *true negative*; if it is classified as positive, it is counted as a *false positive*.

LDA include more information than the ones based on the variables kept by the bootstrap logistic regression, given that the VI1 variable is composed of 15 variables.

Figure 3-13 ROC Curves based on the individual scores (using enter LDA) of the variables kept in the discriminant analyses and in the bootstrap logistic regression

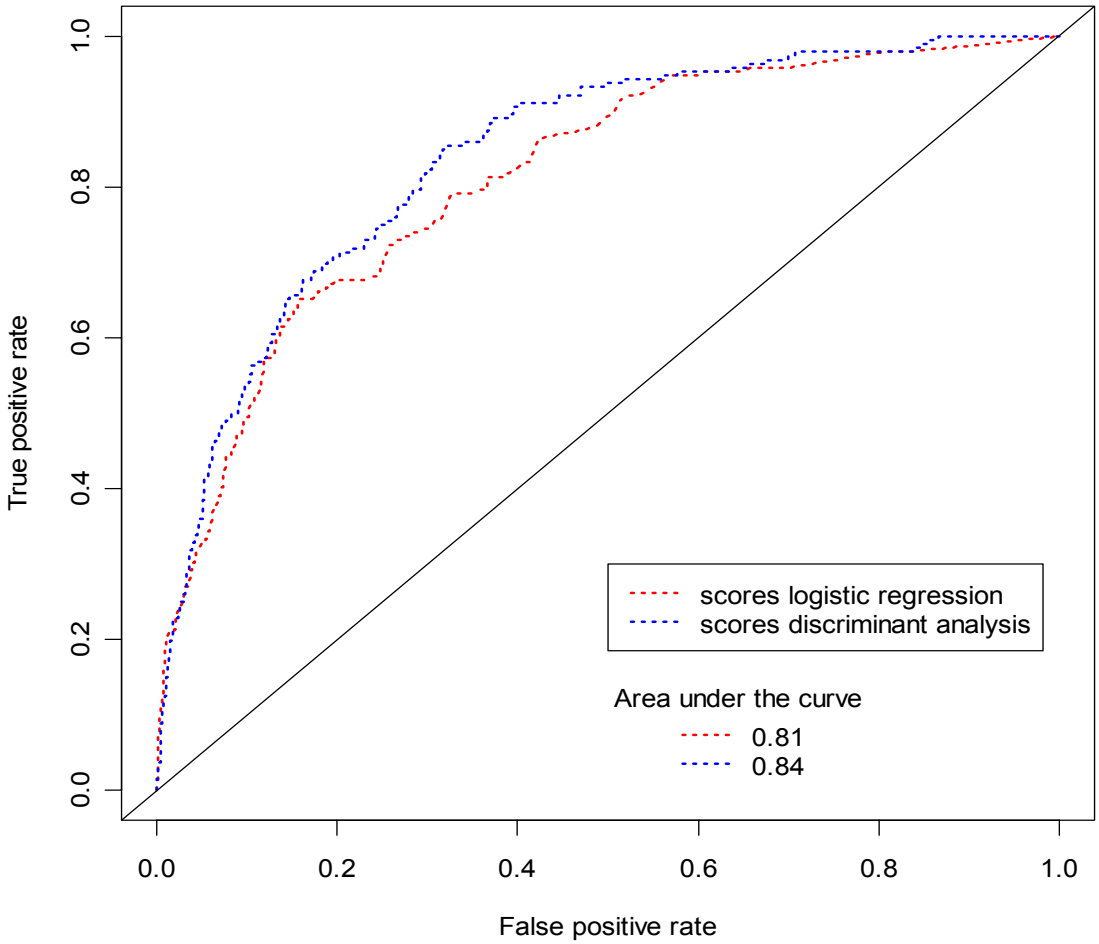
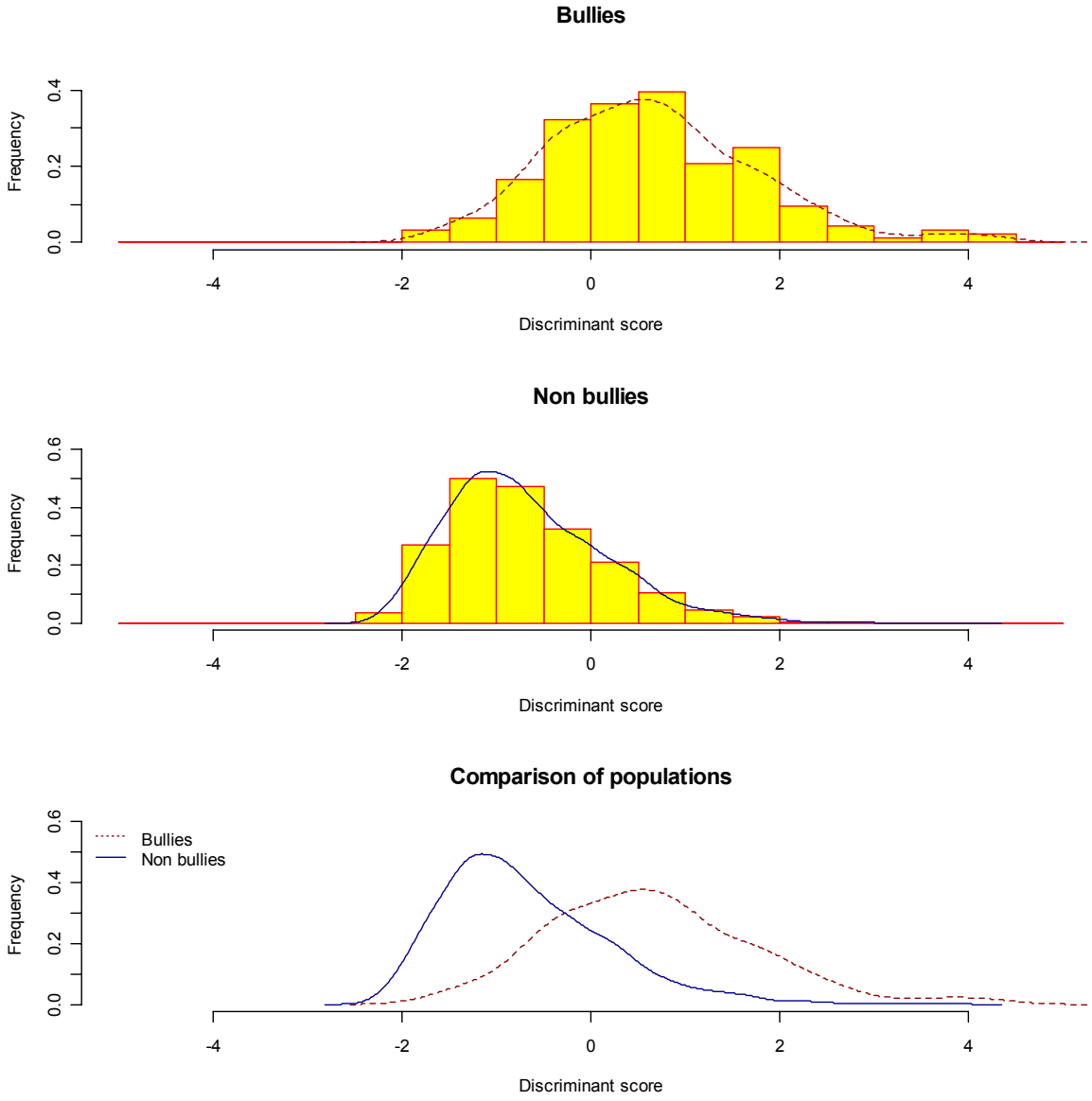


Figure 3-14 shows the distribution of the individual scores taking into account the variables selected in the stepwise LDA. As we can see, the bullies sample is skewed on the right whereas the non-bullies sample is skewed on the left which show that the 2 populations have different characteristics. At the bottom of the Figure 3-14, the superposition of the two distributions indicates that some cases can not be clearly classified into bullies and non-bullies with the variables we have.

Figure 3-14 Distribution of the individual scores of the variables selected in the discriminant analysis.



Classification of the samples

The classification table (Table 3-20) shows the results of using the discriminant model after running our analysis 100 times. As a reminder, the training cases are used to develop the classification function and the testing cases are used to validate the classification. In Table 3-20, the first two columns concern the classification run on equal groups. The last column gives the classification obtained with the pupils not taken into account in the trained subsamples. Thus, in the validation subsamples, the groups (bullies and non-bullies) are unequal but represent the distribution observed in reality.

In the training subsamples, a mean of 75.9% cases are correctly classified. The stability of the classification procedure was checked by cross-validation runs (jackknife procedure). There is not much difference: 74.7% are correctly classified and the standard deviation is identical. The subset validation is obtained by classifying the cases that were not used to create the model. On average, 79% cases are correctly classified with a small standard deviation. This last result is not surprisingly higher, considering the 90% of non-bullies. Overall, these results confirmed a high degree of consistency in the classification scheme.

Table 3-20 Estimation of the samples correctly classified (%)

	Training subsamples	Cross-validation on the training subsamples	Validation subsamples
Mean	75.9	74.7	79.0
Standard deviation	2.5	2.5	1.8
Lower CI (at 0.95)	71.0	69.8	75.6
Upper CI (at 0.95)	80.9	79.7	82.5

Another important point to consider is the misclassified cases. Ideally, we would like to minimize the false positive rate. Indeed, we wish to avoid predicting a pupil to be a bully when he is not a bully (false positive).

It is crucial, then, to look at the percentage of the cases correctly classified in each group (Table 3-21) and especially in the bullies group due to its small size in the validation subsamples. Here again, we have estimated the percentage on 100 modelizations.

Table 3-21 Estimation of the correct predicted group membership (%)

	Non-bullies	Bullies
Mean	79.5	70.8
Standard deviation	1.8	4.3
Lower CI (at 0.95)	76.0	62.3
Upper CI (at 0.95)	83.0	79.3

Nearly 80% of the cases are correctly classified among the non-bullies and 71% among the bullies. Not surprisingly, the standard deviation is wider for the bullies group due to the small size of this group but the overall rates of classification are of high performance.

Here below, the Table 3-22 gives the coefficient Tau, which measures the improvement of a classification over a random assignment. With two groups, we can expect to get 50% of the predictions right by pure random assignment (Klecka, 1980). The classification based on the discriminating variables made between 60% and 71% fewer errors than would be expected by random assignment leading to a substantial predictive gain.

Table 3-22 Tau coefficient (%)

Mean	65.1
Lower CI (at 0.95)	60.0
Upper CI (at 0.95)	70.6

3.7.5. Summary

The observations of the different types of behaviour adopted by boys and girls were investigated. Offenders are more often boys and for all the various behaviours, they score higher than girls. However, differences in gender are found when looking at the victims of bullying. Girls are more victims of sexual harassment and being made fun of or upset, whereas boys are more victims of having their belongings damaged and of being hit or kicked. Moreover, regarding the categories of involvement in bullying (only victim, only bully, and both bully and victim), boys are more often only offenders and bully-victim than girls, whereas girls are more represented in the only-victim category. These three groups are committing more delinquency and have more problem behaviour than the youth not involved at all in bullying. We should be aware that those adolescents, through their impact on society, thus become a public concern.

Bivariate analysis has been performed in order to observe the relationship between two variables: the dependant variable and the independent variable. This has been followed by multiple correspondence analysis in order to observe not only the relationship two-by-two but to illustrate the link between all the variables and the categories of the variables. Moreover, this statistical tool describes not only the association between the dependant variable and the independent factors but also between all the independent factors. Variables retained from the bivariate analysis were introduced in the logistic regression and the bootstrap technique performed. The most important variables kept are self-control, gender and school climate, with odds bigger than 2. The other variables are violence-legitimising norms of masculinity,

reaction of the teacher, activities with peers, activities with family/at home, supervision of the parents and truancy (odds between 1.5 and 1.9).

The main reason for using linear discriminant analysis concerns its ability to classify the bullies and non-bullies. LDA was performed in order to consider the inequality of the size of our two groups (93.2% non-bullies vs 6.8% bullies). The results indicate a successful classification of our classes, the rate of correctly predicting the group of non-bullies being obviously higher (about 80%) than the prediction of the bullies (about 71%). Another motivation to perform LDA was methodological. We wanted to compare the results obtained from the LDA with the logistic regression. We observed that the two methods selected the same major variables to predict bullying. Furthermore, the ROC curve has showed that both methods of analysis permit to discriminate efficiently the bullies from the non-bullies. The clear advantage of the logistic regression is that the interpretation of the results is more intuitive.

3.8. TESTING HYPOTHESIS 3: SCHOOL EFFECT (VAUD SAMPLE)

Hierarchical models (HLM) are used to account for the clustered nature of the sample, with adolescents nested within schools (Bryk & Raudenbush, 1992).

3.8.1. Individual-level variables (Level 1)

The variables kept at Level 1 are those selected in the logistic regression (bootstrap analysis): self-control, gender, school climate, violence-legitimising norms of masculinity, activities with peers, activities with family/at home, parental supervision, truancy and reaction of the teacher (all these variables are dichotomized).

3.8.2. School-level variables (Level 2)

Let us remember that school-level variables were aggregated from the nested level of data. Variation in bullying between schools is captured at Level 2 with the following school-related variables: *proportion of male*, *proportion of foreigner*, *proportion of low family affluence*. Individual-level of minor and serious offences are aggregated to make school-level *proportion of minor and of serious offences committed*. Other variables such as the reaction of the teacher, school climate and feeling of insecurity at school are aggregated to make school-level *proportion of teacher not reacting when aggression between pupils, of negative school climate and of high feeling of insecurity at school.* Finally, the *standard deviations of the reaction of the teacher and of the school climat*e were established. It might be not only the fact of being in a school with a negative climate that influences bullying but also divergent opinions about school climate within a given school, which may indicate unequal treatment of pupils.

3.8.3. Results of multilevel analysis

The data set includes 2,822 pupils whose data are nested within 24 schools. The question we ask is whether there is sufficient variability between schools that we might want to try to explain. To know if school has an effect on bullying, we examine the unconditional model (empty model) in which the lowest level of data (pupils) is modelled without any predictors. The empty model provides a partition of the variability in the data between the two levels.

The unconditional model reveals that there is a significant variability between schools in bullying, suggesting that it is worthwhile to examine a conditional model that could potentially explain some of this variability. The mean bullying rates of pupils in all school are thus not equal. The empty model shows that 3.3% of the total variance (Laplace estimation) is attributable to Level 2 (school), and such a variance due to schools is significant ($p<0.01$). The mean of pupils interviewed per school is 128 and the design effect (Deff) is about 5, meaning that the grouping effect due to the interrogation of schools is not small. Overall, these results suggest that multilevel modelling is appropriate to understand better why the rates of bullying per school differ.

In the first Level 1 model, the intercept was specified as random and the slope was fixed. Variables were then added individually to the model. All the Level 1 variables have significant effects. To assess improvement of fit between models, the deviance for the two models was compared. The deviance is 6280.23 (11 parameters), which represents a difference of 292.35 from the null model deviance (2 parameters) and therefore indicates a significant improvement of fit over the null model. The second Level 1 model consists in evaluating the heterogeneity of slopes across schools; this model is estimated allowing slopes to vary randomly. Apart from the variable "reaction to teacher" none of the other random effects are significant. The steepness of the slope varies across schools and might be explained by school-level variables. Indeed, the influence of the reaction of the teacher on bullying is not the same in all the schools ($p= 0.037$).

The Level 2 variables were tested one by one for significance. At first, Level 2 variables were added to the intercept. Only one variable is significant, namely the standard deviation of the school climate. This signifies that where there is a wide variation among students of the same school in their perception of their school climate, the risk of committing bullying behaviour is greater. The standard deviation of school climate appears to have a large influence here; however, two things are to be considered for this estimation. First of all, the variable is coded such that this proportion evolves between two extremes all the pupils have the same opinion of their school climate and half of the pupils thinks the school climate is positive and half thinks it is negative. Secondly, while this estimate is significant, the 95% confidence interval is [0.708; 3321.670]; since this interval is very large, the value given here (48.5) is subject to a large error. Therefore, one should not assign more than informational value to the number in itself.

As a second step, Level 2 variables were added to the reaction of the teacher, because it is the only slope with a significant random effect at Level 2. None of the Level 2 variables is significant on the slope of the teacher reaction, meaning that none of our variables can explain why the influence of the reaction of the teacher on bullying is not the same in all the schools.

Table 3-23 Final multilevel model with random slope for the reaction of the teacher

	B	S.E.	Odds ratios	p-value
Fixed effects - Individual level				
Gender (γ_{10})	0.887	0.210	2.4	0.000
Parental supervision (γ_{20})	0.430	0.141	1.5	0.003
Truancy (γ_{30})	0.420	0.132	1.5	0.002
Self-control (γ_{40})	1.331	0.183	3.8	0.000
School climate (γ_{50})	0.724	0.171	2.1	0.000
Activities with peers (γ_{60})	0.434	0.130	1.5	0.000
Activities with family/at home (γ_{70})	0.443	0.139	1.6	0.002
Violence-legitimising norms of masculinity (γ_{80})	0.628	0.121	1.9	0.000
Reaction of the teacher (γ_{90})	0.625	0.224	1.9	0.011
Intercept (γ_{00})	-6.569	0.728	0.0	0.000
Fixed effects- School level				
Predictor for intercept (γ_{00})				
Proportion of gender (γ_{01})				n.s
Proportion of autochtone (γ_{02})				n.s
Proportion of family affluence (γ_{03})				n.s
Proportion of minor offences (γ_{04})				n.s
Proportion of serious offences (γ_{05})				n.s
Proportion of teacher reaction (γ_{06})				n.s
Proportion of school climate (γ_{07})				n.s
Standard deviation school climate (γ_{08})	3.881	1.529	48.5	0.019
Proportion of feeling insecurity (γ_{09})				n.s
Standard deviation feeling insecurity (γ_{10})				n.s
Predictor for slope β_9				
Proportion of gender (γ_{11})				n.s
Proportion of autochtone (γ_{12})				n.s
Proportion of family affluence (γ_{13})				n.s
Proportion of minor offences (γ_{14})				n.s
Proportion of serious offences (γ_{15})				n.s
Proportion of teacher reaction (γ_{16})				n.s
Proportion of school climate (γ_{17})				n.s
Standard deviation school climate (γ_{18})				n.s
Proportion of feeling insecurity (γ_{19})				n.s
Standard deviation feeling insecurity (γ_{19})				n.s
	Variance component	Chi-square	P-value	
Random effects - School level				
Intercept (u_0)	0.169	42.390	0.006	
Slope (u_9)	0.384	36.953	0.033	

3.8.4. Summary

We observe that all of the Level 1 variables have significant effects. Their odds ratios are similar to those found in the logistic regression (see Table 3-17). The multilevel model gives two supplementary items of information. First, the influence of the reaction of the teacher on bullying is not the same in all the schools. Unfortunately, none of the Level 2 variables are significant on the slope of the teacher reaction, meaning that none of our variables can explain why the influence of the reaction of the teacher on bullying is not the same in all the schools. Second, out of the Level 2 variables only one is significant on the intercept: the standard deviation of the school climate. This means that where there is a wide variation among students of the same school in their perception of their school climate, the risk of committing bullying behaviour is greater.

CHAPTER FOUR: A NATIONAL SELF-REPORTED SURVEY (ISRD-2)[18]

4.1. INTRODUCTION

This chapter describes in detail the national self-reported survey (ISRD-2) carried out in 2006. The research method (material, population and procedure) and the operationalized hypotheses are presented. Some general information is given on Switzerland before testing hypotheses 4 and 5.

4.2. DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS[19]

Switzerland is a small country, with a surface of approximately 41,285 square kilometres, of which 25.5% are non-productive. At the end of 2004, the resident population was 7,415,100 of which 20.6% were foreigners. Among them, citizens from ex-Yugoslavia (22.7%), Italians (19.8%) and Portuguese (10.5%) are the largest groups (Table 4-1). When the total area is considered, the population density is 182 inhabitants per square kilometre. The languages spoken in Switzerland are Swiss-German (63.7%), French (20.4%), Italian (6.4%) and Romansh (0.5%).

[18] This research was funded through the Swiss National Science Foundation grants n° 10-9265 and n° 11-6554.
[19] Data quoted from OFS (OFS, 2006a).

Table 4-1 Nationality of foreign residents in Switzerland in 2004, in %

Country	%
Italy	19.8
Serbia and Montenegro	13.1
Portugal	10.5
Germany	9.6
Turkey	5.1
Spain	4.9
France	4.5
Macedonia	4.0
Bosnia-Herzegovina	2.9
Croatia	2.7
Austria	2.1
Other European Countries	7.4
Other continents	13.3

Source: Mémento statistique de la Suisse (OFS, 2006b, p.5)

In 2005, 56.1% of the resident population was employed, of which 55.5% were males and 44.5% females. The majority of females (56.3%) were part-time workers, compared to only 10% of the men. By economic sector, 72.5% of the active population was employed in the tertiary, 23.7% in the secondary and 3.8% in the primary sector. The unemployment level was 3.8% in 2006. While in 1992 the gross domestic product was approximately US $31,000 per capita, by 2005 it had increased to $48,889.

The age distribution shows that the population is ageing. As in many other Western European countries, this is mainly due to an increase in life expectancy and a low fecundity rate. Marriage rate is 5.3 per 1,000 inhabitants and the divorce rate is 2.4. In 2000, 6% of the households were single parent families.

As far as education is concerned, 18.0% of the population aged 25 to 64 had only attended compulsory school, 53.2% had secondary education acquired in high schools, professional schools or through an apprenticeship combined with school, and 28.8% had higher education (universities, technical schools and higher professional schools). The education level has increased over the last decades and is higher for males.

4.3. DATA AND METHODS

4.3.1. Background of the research work

The first International Self-Report Delinquency study (ISRD-1) was launched in 1992 by the Research and Documentation Centre of the Dutch Ministry of Justice (WODC). The study was based on self-report delinquency data collected in twelve countries, most of which belong to the European Union (Junger-Tas *et al*., 2003; Junger-Tas *et al*., 1994). In 2003, the idea of repeating the study and starting a series of such surveys emerged. Thirty countries participated in 2006, including Switzerland. The survey was carried out using the standardized questionnaire developed for the ISRD-2[20], to which items on three topics were added at the end of the questionnaire, namely about cruelty towards animals, hooliganism and bullying. Between 1992 and 2006, no national surveys on juvenile delinquency had been conducted, though some surveys took place at the cantonal or city level (e.g., surveys with pupils in the cantons of Zurich and Vaud).

[20] The working group to develop the questionnaire was composed of Prof. Junger-Tas (Netherlands), Prof. Marshall (USA), Prof. Killias, Dr Ribeaud, former scientific collaborator at the ICDP and the author of this dissertation (Switzerland).

4.3.2. Description of the questionnaire Swiss ISRD-2

The Swiss ISRD-2 survey was inspired by the ISRD-1 questionnaire and the ones used in Canton Vaud (inspired from other questionnaires, see *supra*), making the content of the ISRD-2 questionnaire very similar to the ones used in Canton Vaud.

In the questionnaire filled out by the pupils, they were asked whether they had already committed any of the acts described in a list presented to them and whether they had been victimised for different behaviour.

The questionnaire included the following topics:

- personal information: age, gender, migrant background, language spoken, discrimination, questions about the work of the parents, questions evaluating socio-economic level, family structure
- victimization: robbery, assault, theft, bullying
- about family: attachment to the parents, time spend with parents (leisure, meal), parental supervision
- life events
- leisure time, life style of the teenager, gang, peer group
- attitude towards violence
- self-control
- about school: attachment to the school, school failures, truancy, school performance, school climate, prospects for the future
- neighbourhood
- delinquent peers
- drug use: beer/wine/alcopops, strong alcoholic drinks, cannabis, ecstasy/speed, LSD/heroin/cocaine.
- A list of deviant behaviours: vandalism, various types of theft, hacking, carrying weapons, group fighting, assault, drug dealing
- cruelty towards animals
- hooliganism
- bullying (victims and offenders)

4.3.3. Procedure followed in the Swiss survey

The sampling was drawn up from a list supplied by the Swiss Federal Statistical Office containing all school facilities (public and private) with 7th to 9th grades existing in each Swiss canton. This list also gave information about the number of classes and students per canton, as well as per school. The sampling was drawn up in three steps: selection of the cantons, schools and classes.

The first step consisted in the selection of cantons, taking into account their relative pupil population. Switzerland has 26 cantons. Seventeen were directly included in the sample while nine others, which are scarcely populated (less than 100,000 populations) and rural underwent a selection process. From these nine small cantons (in which less than three classes ought to have been drawn), we drew three. We increased the number of classes selected in each of the three cantons. In deciding to get a multiple of three classes in each school (at least one of each level: 7th, 8th and 9th grades), we obtained the desired number of schools per canton. Afterwards, and with the aim of having a sample that would allow comparison with the other countries participating in the ISRD-2, the cantons of Zurich and Ticino were oversampled. Once the cantons had been selected, a letter was sent to the 20 selected cantons in order to get their agreement to get in touch with schools. All the Departments supported the project. Copies of the letters from the pertinent Department of Education supporting the project were then sent to each school together with a letter from the Institute of Criminology and Criminal Law of the University of Lausanne requesting their participation.

Subsequently, in order to ensure equal probability of selection, schools were selected proportionally to the size of the student population within each canton and taking into account the number of students per school. The mean number of students registered per class being 19, approximately 160 classes had to be selected. For the oversampled cantons, 10 more schools were added in Zürich and 3 more schools in Ticino. Thereby, the initial Swiss sample comprised 72 schools. Four of the contacted schools refused to participate in the survey. Three of them argued that other studies were already planned in their schools (such as the PISA study) and one did not feel concerned about juvenile delinquency. Thus, the refusal rate was 5.5%. Two of these schools were substituted by two others randomly selected among schools of the same canton. Due to lack of time, the other two schools were not replaced.

Once we had received the schools' agreement, the school directors were asked to provide a list of their classes from 7th to 9th grades. The last step consisted in a random selection of 3 classes in each school, one for each grade, regardless of the school track (i.e. all students were included without taking into account if their track leads mainly to a future college degree or to professional training). Each school principal sent a letter, prepared by our research team, to the parents describing the study briefly. Parents who did not want their children to participate were asked to inform the school of their decision (i.e., passive consent). There were no parents' refusals and only one pupil refused.

Due the successful use of the Computer Assisted Web Interview method to answer our previous questionnaires, the same methodology was deployed in the ISRD-2 project. Thus, instead of the paper-and-pencil questionnaire used in most countries participating in the ISRD-2, Switzerland used a computerized questionnaire accessible – under supervision of the research team – through the Internet. Overall, 3,551 interviews were conducted through the Internet. Due to technical problems, 65 questionnaires failed to be registered, and 97 interviews had to be replaced by paper-and-pencil instruments in the classroom. Thus, the Swiss sample was composed of 3,648 interviews. Out of these, 31 cases were discarded due to a high degree of inconsistency in responses, yielding a total of 3,617 pupils. The questionnaire was translated into French, German and Italian and the three datasets were merged once all the pupils had answered the survey. This experience confirms that this new methodology represents an excellent progress in interviewing pupils and that the cost savings are considerable.

The computer rooms of the schools were used for the survey. The interviewers were graduate students from the Lausanne Institute of Criminology and Criminal Law for the Italian- and the French-speaking areas of the country, and graduate students from the University of Zurich for the Germanic. They were trained to present the survey and to answer possible questions from the pupils in a standardized way. They also had to fill in an interviewer questionnaire.

Taking into account the very low rate of absentees (6.3%) during the interviews, no callbacks were carried out. The presence of a teacher during the survey was not mandatory and usually the teacher actually present was the one in charge of the computer lessons who is often not particularly familiar with the pupils.

As explained before, the Swiss sample is composed of 20 cantons instead of the 26 existing in the country because we randomly selected three of the nine small rural cantons. However, the total number of classes that had to be selected from these 9 cantons was randomly selected in the 3 mentioned ones. Furthermore, Zurich and Tessin were oversampled. Therefore, it was necessary to weight the data in order to have a sample that would be representative of the whole country. In order to establish the weights, the total number of classes in 7th to 9th grade in each canton was taken into account. Thus, a weight was established for each canton. In the case of the three rural cantons that were oversampled, the number of classes in the nine rural cantons was taken into account. This number of classes was distributed among the 3 cantons that are in the sample, keeping a proportional relation to the number of classes that exist in the 3 selected cantons.

4.3.4. Description of the sample

The Swiss ISRD-2 involves a national random sample of juvenile attending the 7th, 8th and 9th grades, which corresponds roughly to ages 13 to 16 years. The sample is composed of 3,617 interviews conducted in 70 schools (of which two are private[21]) within 20 cantons. Table 4-2 gives an overview of the distribution of the sample according to gender, age and grade, place of birth of the pupil, migrant background and the rate of participants by linguistic region.

As we can see, the majority of the youth were born in Switzerland but only 60% are Swiss. In our sample, almost 30% are from the 2nd generation of migrants and 10% are from the 1st generation. These rates correspond to those found in the general population of Switzerland. In the framework of our survey, all four[22] linguistic regions have been interviewed: more than 70% of pupils were interviewed in the German, almost 25% from the French and nearly 4% from the Italian part[23]. The mean age of the total sample is 14.4.

[21] In Switzerland, private schools represent approximately 5% of all schools of the grades at stake. Taking size into account, two private schools in 70 matches their share in the Swiss educational system.
[22] There are four official languages: about 75% of the populations speak German, 21% French, 4% Italian and 1% Romansch.
[23] The two schools from the canton of Grison (Romansch part of Switzerland) have been integrated in the German linguistic region. In the three bilingual cantons (Fribourg/Freiburg, Valais/Wallis, Berne/Bern), the schools have been classified regarding the language spoken in the school. The French-speaking schools have been classified in the French and the German in the German linguistic regions.

Table 4-2 Characteristics of the national sample

N=3617	Unweighted[24] n	%		Unweighted n	%
GENDER			PLACE OF BIRTH		
Girls	1817	50.3	Switzerland	3164	88.8
Male	1793	49.5	Other	398	11.2
AGE			MIGRANT BACKGROUND		
12	117	2.5	Swiss	2051	60.3
13	735	19.2	2nd generation	1172	29.9
14	1197	33.2	1st generation	386	9.8
15	1085	30.9	LINGUISTIC REGION		
16	419	12.5	German	2527	71.6
17	59	1.7	French	797	24.8
GRADE			Italian	293	3.7
7th	1235	33.6			
8th	1223	34.3			
9th	1159	32.1			

4.3.5. Dependent variable

As in the surveys in Canton Vaud, the operationalization of bullying is identical. The question is asked as follows:

How many times, in your school or on the way to school, did you carry out the acts described below during the last 12 months?

- hit or kicked a fellow pupil
- threatened, blackmailed or extorted a pupil
- made fun of or upset a pupil (for example, by hurting him/her verbally)
- damaged belongings of a pupil
- sexually harassed a pupil (petting, whistling, repeated gestures or remarks)
- ignored or excluded a pupil (for example, nobody wants to sit next to him/her)

[24] The rates given are weighted data, whereas the N given are unweighted. The rest of the dissertation will follow this rule.

The response categories are (1) never, (2) Once or twice, (3) Sometimes (more than twice), and (4) Once a week, (5) Several times per week. The Cronbach's alpha equals 0.81, which indicates a good internal consistency.

To determine the victims of bullying, the question asked was, "How many times have you been subjected to the acts described below in your school or on the way to school, during the last 12 months?" As for the offender, the same items were included. The Cronbach's alpha equals 0.79, which indicates that the items form a scale that has reasonable internal consistency reliability.

The constructs of bullying others and being bullied are based on those six items that were asked for the period of the last twelve months. A child is considered as bullying others when at least two out of the six items were answered with "at least once a week," or if one item is answered with "at least once a week" and more than three items are answered at least "once or twice." We used the same criteria to build the construct of being bullied.

4.3.6. Independent variables

A) Individual-level variables (Level 1)

Individual variables are divided into 7 groups: Demographic variables, personality factor, family context, school context, peers and leisure context, neighbourhood context and victimizations.

Demographic variables

- *Gender:* (0= female, 1= male).
- *Grade*: 1= 7th grade, 2= 8th grade, 3= 9th grade. Here again grade is related to age.
- *Place of birth*: "Were you born in this country?" (0= yes, 1= no).
- *Migrant background:* This variable has been constructed from the respondents' answers to the question about their country of birth and that of their father and mother. Are considered as "non-migrant" any respondent born in Switzerland, as also his parents. A respondent born abroad is also considered as "non-migrant" if both his parents were born in Switzerland. A "second generation migrant" is a person born in Switzerland with one of his parents born abroad. A "first generation migrant" is a respondent born abroad with one or both parents born abroad as well.

- *Socio-economic status*

  Family affluence: A variable has been created based on four variables, namely whether or not the respondent has at home a room of his own, whether or not he owns a computer and a mobile phone, and the number of cars owned by the family (0, 1 or 2 cars or more than 2). The high level of family affluence regroups pupils answering "yes" to all three common items and "the family owns more than 2 cars." The medium level of family affluence includes pupils having answered "yes" to all three common items and the family owns 1 or 2 cars. The low level of family affluence gathers families that do not have one of the four items (i.e., either they do not have a room on their own, or no computer, or no mobile phone, or the family does not own a car).

  Parent's employment: Respondents have been asked whether the father/mother has a stable job, whether he/she is currently or frequently out of work, or whether he/she gets a pension or lives on social welfare. The latter category includes, therefore, parents who may be retired due to their age; however, given the relatively young age of the children in our sample, this would rarely be the case. It seems more plausible to believe that some of the parents included in this third category may benefit from welfare payments to disabled persons. In the case of the mother, the questionnaire also included the possibility that she cares for the household without being employed. The two questions "father occupational status" and "mother occupational status" are dichotomized (0= stable work, 1= unstable work). By stable work, we mean having a permanent job or an own business.

Variables related to the personality of the child

- *Self-control scale* is composed of 12 items based on 4 subscales: impulsivity (e.g., "I act spontaneously without thinking"), risk seeking (e.g., "I like to test my limits by taking risks"), self-centred (e.g., "If things I do upset people, it's their problem not mine"), volatile temper (e.g., "I lose my temper pretty easily").

  As in the Vaud sample, in this dissertation the scale has been used as a one-dimensional construct (see section 3.3.7). Cronbach's alpha equals 0.83. The scale has been dichotomized at the quartile (0= high self-control, 1= low self-control).

Variables related to the family

- *Parental supervision:* A dummy variable has been created (0= strong, 1= low) from two questions: "Do your parents usually know who you are with when you go out?", "When you go out at night, do your parents generally tell you at what time you have to be back?".
- *Family structure:* "Are you living with your own mother and father?" (0= traditional, 1= broken homes) .
- *Attachment to the parents:* "How do you usually get along with the man you live with?" and "How do you usually get along with the woman you live with?" (0= strong, 1= weak).
- *Attitude toward violence:* to construct this variable, five items were used (e.g., "A bit of violence is part of the fun", "If somebody attacks me, I will hit him/her back"). The internal consistency in the current sample is 0.78. The scale has been dichotomized at the quartile (0= do not agree with these norms, 1= agree with these norms).
- *Life events:* In the questionnaire, respondents were asked whether they had experienced any traumatic events, such as "Have you ever experienced the death of a brother/sister?" "Have you ever experienced a long and serious illness of one of your parents or of someone else close to you?". Out of the eight items, one has not been taken into account (death of somebody you love) because 60% of the adolescent answered having experienced the death of someone he loved. This can include the death of a grandparent or of their pet and is therefore, although an important event, not a traumatic one. Thus the variable has been dichotomized (0= 0–1 life events, 1= At least 2 life events).

Variables related to school

- *School failure*: "Have you ever been held back, that is did you ever have to repeat a grade?" (0= no, 1= yes).
- *Perspective of future:* "What do you think of doing after you finish compulsory school?" (0= get a formation: apprenticeship, professional school, high school, 1= start working, do not know, other).
- *Truancy:* "Did you ever stay away from school for at least a whole day without legitimate excuse in the last 12 months?" (0= never, 1= at least once).

- *School attachment:* to construct this variable, four items have been combined into a mean score that has been dichotomized at the quartile (e.g., "If I had to move I would miss my school"). The internal consistency of the school climate scale yields an alpha of 0.62. The scale has been dichotomized at the quartile (0= positive, 1= negative).
- *Crime at school:* to construct this variable, four items have been combined into a mean score (e.g., "There is a lot of stealing in my school"). The internal consistency in the current sample is 0.73. The scale has been dichotomized at the quartile (0= no, 1= yes).

Variables related to leisure and peers

- *Leisure time:* This study has queried with who the teenagers spend the majority of their free time. "With whom do you spend most of your free time?" The variable has been dichotomized (0= Alone, with family, 1= with friends).
- *Delinquent friends:* This variable is related to friends that committed deviant behaviour and is based on five items (e.g., "I have friends who used soft or hard drugs like weed, hash, XTC, speed, heroin or coke", "I have friends who entered a building with the purpose of stealing something"). 60% say that they have at least one friend who has committed one of the five behaviours. This rate is not a surprise when taking into account that one item is related to knowing a friend who has used soft or hard drugs. Therefore, it has been decided to classify the youth into the group "having delinquent friends" when they have answered yes to at least two out of the five items (0= no, 1= yes).

Variables related to neighbourhood

The questionnaire included 13 items to measure the attachment of the adolescents to their neighbourhood, if the youths are controlled by their neighbours and if there are signs of crime in the neighbourhood. Two subscales have been constructed.

- *Neighbourhood disorganization:* Six items are used (e.g., "There is a lot of crime in my neighbourhood"). The internal consistency of the scale yields an alpha of 0.80. In order to represent the problematic of neighbourhood disorganization in Switzerland, which is not common, the scale has not been dichotomized at the quartile. When more than three items were answered "very true" or "true", the neighbourhood is considered as disorganized, otherwise as organized (0= no, 1= yes).

- *Attachment to neighbourhood:* Seven items have been used (e.g., "If I had to move, I would miss the neighbourhood"). The internal consistency of the attachment to neighbourhood scale yields an alpha of 0.79. When more than four items were answered "not at all true" or "not true", the youth is not attached to his neighbourhood (0= strong attachment, 1= weak attachment).

Variables related to victimization

- *Discrimination:* "Have people ever treated you badly because of your religion or the language you speak, or the colour of your skin?" (0= never, 1= at least once).
- *Victimization:* This variable has been constructed using three questions of victimization, namely robbery, assault and theft. If the pupil had responded yes to one of the three items, it has been categorized as a victim (0= no, 1= yes).

B) School-level variables (Level 2)

School-level variables have been aggregated from the nested level of data. Variation in bullying between schools is captured at Level 2 with the following school-related variables: *proportion of male*, *proportion of migrants*, *proportion of low family affluence*, *proportion of crime at school*, *proportion of weak school attachment.*

Moreover, the *location* of the school is taken into account. In Switzerland, a town is defined as having more than 10,000 inhabitants, thus a variable has been created: 0 =rural, 1=town.

4.4. HYPOTHESES (ISRD-2 SAMPLE)

Based on the theoretical arguments and empirical evidence discussed in sections 1.1 to 1.3, we expect that the above independent variables are related to bullying. Two hypotheses will be tested. As in the Vaud sample, one hypothesis will use these variables uniquely on the individual level (Hypothesis 4) and the other will involve variables related to the school level (Hypothesis 5).

Hypothesis 4

Based on the extant **empirical work**, it is expected on the one hand that bullying would differ across sex, with males reporting greater frequency than females, and on the other hand that older adolescents bully more often than the younger. As in the Vaud sample, the grade variable is used because it is related to age. Therefore, we expect students in grade 7 to be less involved in bullying than those in grade 8 and in grade 9.

According to **social control theory**, adolescents firmly attached to institutions such as family and school are less likely to commit bullying. Therefore, we expect that a weak attachment to parents, little parental supervision, living in a broken home, doing badly at school (school failure and having no perspective for the future), a weak attachment to school, and playing truant relate to committing bullying. Finally, spending free time with friends rather than with the family or at home increases the risk of committing bullying. This is also related to the **routine activity theory**, which states that certain types of routine activities increase the likelihood of being in a situation conducive to crime. From the **general theory of crime**, we suppose that the adolescent with low self-control has an increased risk of perpetrating bullying behaviour.

Strain theory relates delinquency to juveniles belonging to a lower class. Therefore, low socio-economic status (parents' employment and family affluence) and migrant background (which is correlated to SES) should influence bullying. The **general strain theory** states that the presence of negative stimuli increases strain and in turn raises the likelihood of delinquency. Therefore, we expect that adolescents who have been victimized or discriminated against perpetrate more bullying than others do. Furthermore, traumatic life events (death of a close family member, parents' divorce or separation, a serious illness of him or of the parents, having a parent with alcohol or drug problem or violence between parents) can lead to strain and thus increase the risk of bullying others.

Differential association theory and social learning theory advocate that association with delinquent peers affects adolescents' delinquency. Therefore, the delinquency involvement of adolescents' friends will increase the risk of committing bullying.

Broken windows theory postulates that areas with crimes help produce crime, consequently crime in the neighbourhood increases the risk of committing bullying. In our study, the concept of **collective efficacy**, which is the ability of a community to control the behaviour of adolescents, and attachment to the neighbours have been measured together. Thus, we expect that a weak attachment/low collective efficacy will increases the risk of bullying others. The same hypothesis can be done in the school context. We expect that crime at school is linked to bullying.

For **cultural deviance theory**, the context in which the youth grows up influences the perception of violence. Consequently, adolescents with a positive attitude toward violence are likely to commit bullying.

We hypothesize that being a boy, living in a family with a low SES and being a migrant, relates to bullying. We expect that age relate to bullying, thus pupils in grade 8 show a higher level of bullying than those in grade 7 and those in grade 9 have a higher rate of bullying than pupils in grade 8 and 7. Also, pupils weakly attached to their parents, living in a family in which they are weakly supervised by the parents or living in a broken home show a higher level of bullying. Having failed at school, having no perspective for the future, having a weak attachment to school and playing truant should influence bullying. We also expect that a low self-control increases the risk of perpetrating bullying behaviour. Furthermore, we expect that adolescents who have been victimized, discriminated against and have lived traumatic life events, have an increased risk of bullying others. Having friends involved in delinquency correlates to bullying. Living in a neighbourhood where crimes occur and with a weak neighbourhood attachment/low collective efficacy relates to bullying. Finally, we hypothesize that the acceptance of the use of violence is linked to bullying.

Hypothesis 5

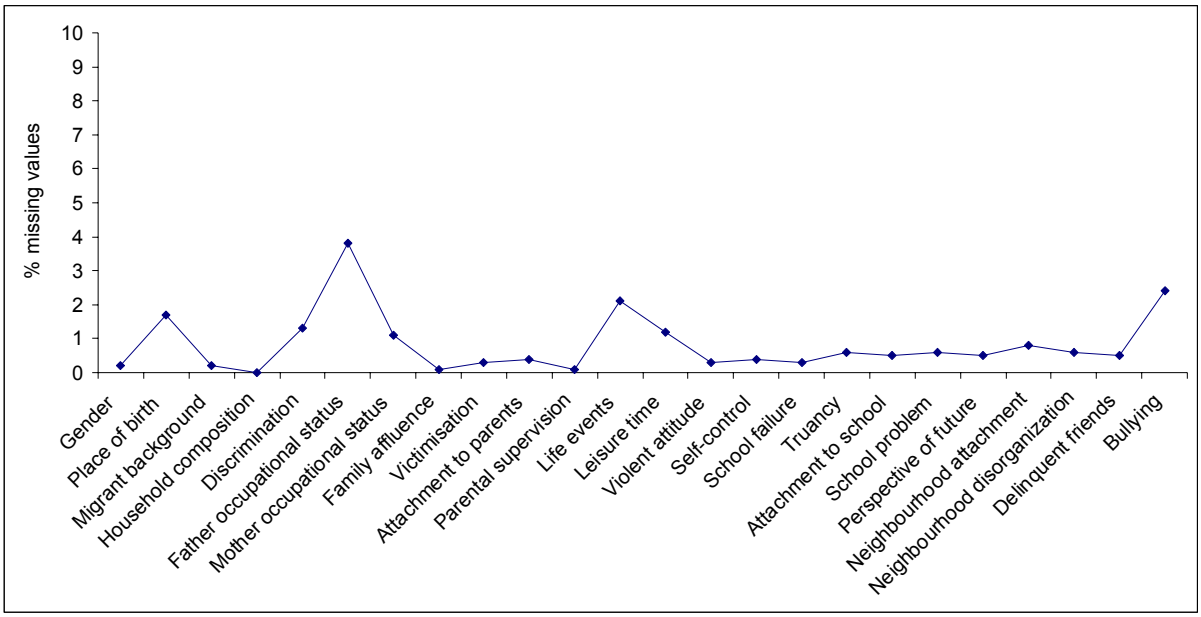
Social disorganization theory demonstrates that social structures have significant effects on delinquency. Therefore, we expect that the school-level proportion of non-Swiss population and the proportion of low family affluence increase the risk of committing bullying others. Since boys have higher delinquency rates than girls, and if the proportion of boys is high in a given school, this is considered as a possible indicator of increased propensity to bullying. Moreover, living in a town, rather than in a rural region, is related to bullying. **Broken windows theory** suggests that areas with crime incite other crimes to be committed, which suggests that a high proportion of crime at school increase propensity to bullying. The proportion of weak school attachment derives from the **social control theory**.

The proportion of male, the proportion of non-Swiss population, the proportion of low family affluence, the proportion of crime at school, the proportion of weak school attachment and being in a school located in a town, are related to bullying behaviour.

4.5. DESCRIPTION OF THE MISSING VALUES

Similarly to chapter 3 (see section 3.5 to know more about missing values), a description of the missing values in the Swiss ISRD-2 is presented in this section. The Swiss ISRD-2 sample is composed of 3,617 pupils. The technique chosen to deal with missing data is listwise deletion. This means that, as in the Vaud sample, we have kept only the pupils that answered all the questions concerned, before effecting multivariate analyses. From the 3,617 pupils in our database, 3,084 are left, losing in this way about 15% of cases, which is an impressive improvement on the 38% lost in the Vaud sample. By examining the missing values we will understand the reason for this difference. On Figure 4-1, each variable is displayed on an axis in the order it has been placed in the questionnaire and the rate of missing values of each variable used in the future analyses of the ISRD-2 sample is plotted.

Figure 4-1 Rate of missing values in the Swiss ISRD-2 sample



The graph shows the rate varying between 0% and 3.8%. The highest values concern the "father occupational status" (3.8%), "bullying" (2.4%) and the "live events" (2.1%). All the other rates are below 2%. Concerning the "occupational status of the father", out of the 3.8%, 3.5% of the pupils answer not having their father around. Among those adolescents, for a quarter their father has died and for the other three-quarters the parents are separated/divorced, suggesting they have little contact with their father and do not know the nature of his employment. Regarding the question about "bullying", it is interesting to point out that the rate of missing values yields 2.4%, whereas it was only 0.7% in the Vaud sample. This difference could be explained by the variation in the location of the question in the survey. In the Vaud sample, the question situated in the middle of the questionnaire, whereas in the ISRD-2 the question is placed at the end. Such observations have also been made in a research focused on missing data (Präg, 2007). The last variable with a notable missing-value rate is "life events", which is composed of seven items. The missing-values rates vary between 1.6% and 2.7%. In this case, we suppose that the explanation is in the design of the question. Some pupils only ticked in the box when the answer was positive (see Figure 4-2 for how the question was presented), leaving it empty when the answer was negative. For example, if a pupil answered yes to items 22.3 and 22.8 but did not tick the other boxes, it

probably means than he was not concerned by any of the other items. In this case, the non-responses are considered as missing values.

Figure 4-2 Question related to life events

22. Have you ever experienced any of the following serious events?

		No (1)	Yes (2)
22.1	Death of a brother/sister	❍	❍
22.2	Death of your father or mother*	❍	❍
22.3	Death of somebody else you love	❍	X
20.4	Long or serious illness of yourself	❍	❍
22.5	Long or serious illness of one of your parents* or of someone else close to you	❍	❍
22.6	Problems of one of your parents with alcohol or drugs*	❍	❍
22.7	Repeated serious conflicts or physical fights between your parents *	❍	❍
22.8	Separation/divorce of your parents*	❍	X

Finally, a comparison of the bullying rate is made between the initial dataset and that obtained after listwise deletion. In the complete data set, the rate of bullies is 3.7%, whereas it is 3.6% in the subsample. As presented in Table 4-3, no significant statistical difference is observed.

Table 4-3 Presentation of the sample and subsample related to bullying

	Entire sample		Subsample	
	n	%	n	%
Non-bullies	3396	96.3	2972	96.4
Bullies	134	3.7	112	3.6
Total	3617	100	3084	100

Compared to the Vaud sample, the number of cases lost in the ISRD-2 survey is lower (15%, whereas 38% in the Vaud sample). If the question related to the reaction of the teachers is not taken into account – because of an error when the web questionnaire was created (see section 3.3.4) –, the rate of missing values in Canton Vaud decreases to about 28%. Even so, the rate is still a significant compared to that of the ISRD-2 survey. This is mainly due to the opportunities given to the pupils to answer, “I don’t know” or “I don’t wish to answer”.

4.6. TESTING HYPOTHESIS 4: INDIVIDUAL EFFECTS (ISRD-2 SAMPLE)

4.6.1. Introduction

In the national sample, the prevalence of bullies and of victims of bullying are 3.7% and 4.4% respectively, which are significantly lower than the Vaud sample (7.1%, 5.9%). This variation could be due to a difference of the mean age of both samples since the 7th grade is included in the national one. However, when removing the 7th grade from the national sample, the rates do not change significantly for the offender (3.9%), and decrease for the victims (3.8%). The main difference between the two data sets is the way the schools were chosen: in the national survey, the schools were randomly selected; whereas in the Vaud sample all schools were selected from the specific districts participating in "Police-2000" and from the city of Lausanne and the district of Yverdon. In spite of this difference in the selection procedure of the two samples, when comparing the rates obtained in the Vaud sample with those of Canton Vaud in the national ISRD2, the prevalence is not significantly different: 5.8% of bullies and 6.4% of victims in Vaud-ISRD2, relative to 7.1% of bullies and 5.9% of victims in the Vaud sample. In a later section the differences between cantons and linguistic region is investigated.

In the present section, we present the rates of the various forms of behaviour for the groups of bullies and of victims by gender and by age. Next, we investigate the relationship between bullying others and being bullied. This is followed by a part dedicated to the differences between cantons and between linguistic regions. Finally, the relationship between bullying and delinquency is evaluated.

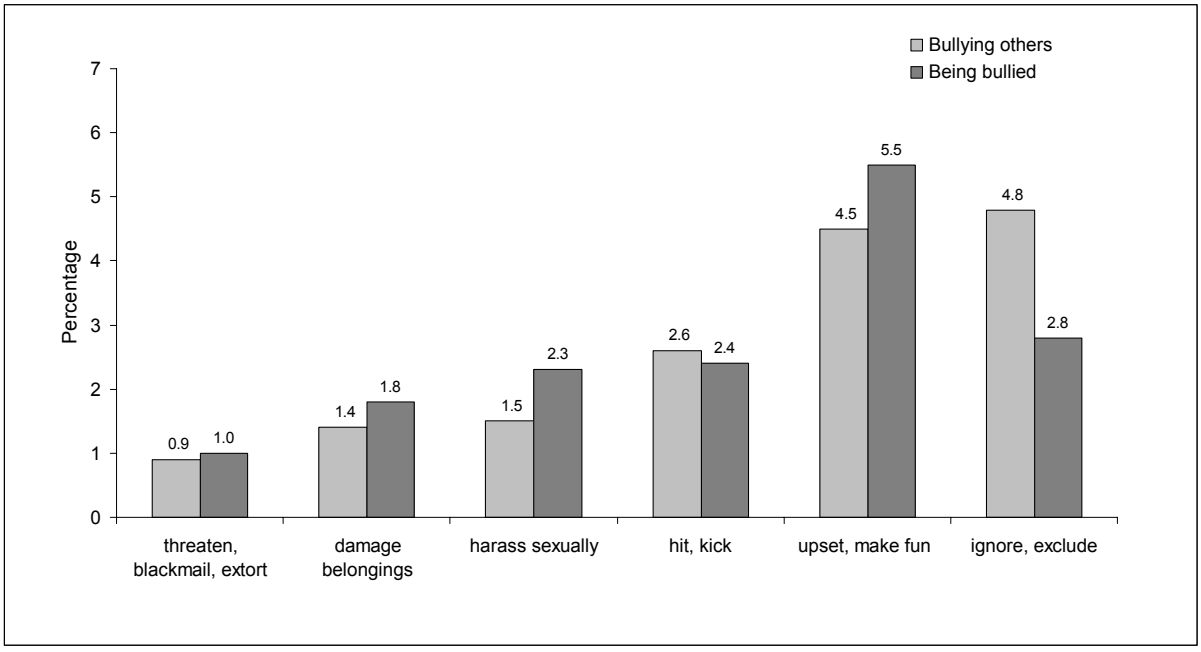
Once the general information given, bivariate analyses is presented. Contrary to the multivariate analyses in the Vaud section (chapter 3, section 3.7.4), here we focus on the importance of the independent variables, using logistic regression to test hypothesis four.

4.6.2. General information

Offenders and victims

When taking into account the six items, the sample is composed of 3.7% of bullies and 4.4% of victims of bullying. When looking separately at the various forms of bullying in the national dataset, the percentages vary from 0.9% to 4.8% for the offenders and from 1.0% to 5.5% for the victims (Figure 4-3). As in the Vaud sample, the most frequent behaviour the bullies adopt is to ignore/exclude and to make fun of/upset a pupil. The victims of bullying are most frequently make fun of/upset.

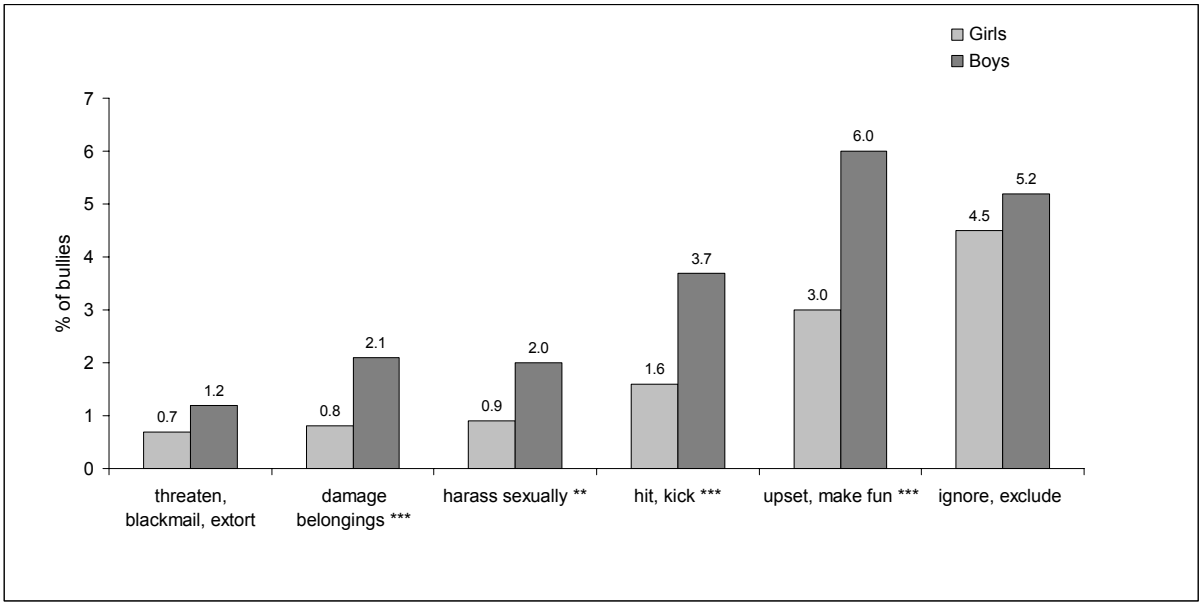
Figure 4-3 Percentages of pupils who reported having bullied others or being bullied at least once a week in the last 12 months, by types of behaviour



Bullying and gender

Boys bully others more than girls, apart from threatening someone and ignoring/excluding a peer for which no significant differences are found; both sexes adopt those behaviours similarly. As in the Vaud sample, the trends are similar and the behaviour more often adopted by boys and girls are to *ignore/exclude* and to *make fun of/ upset* (Figure 4-4).

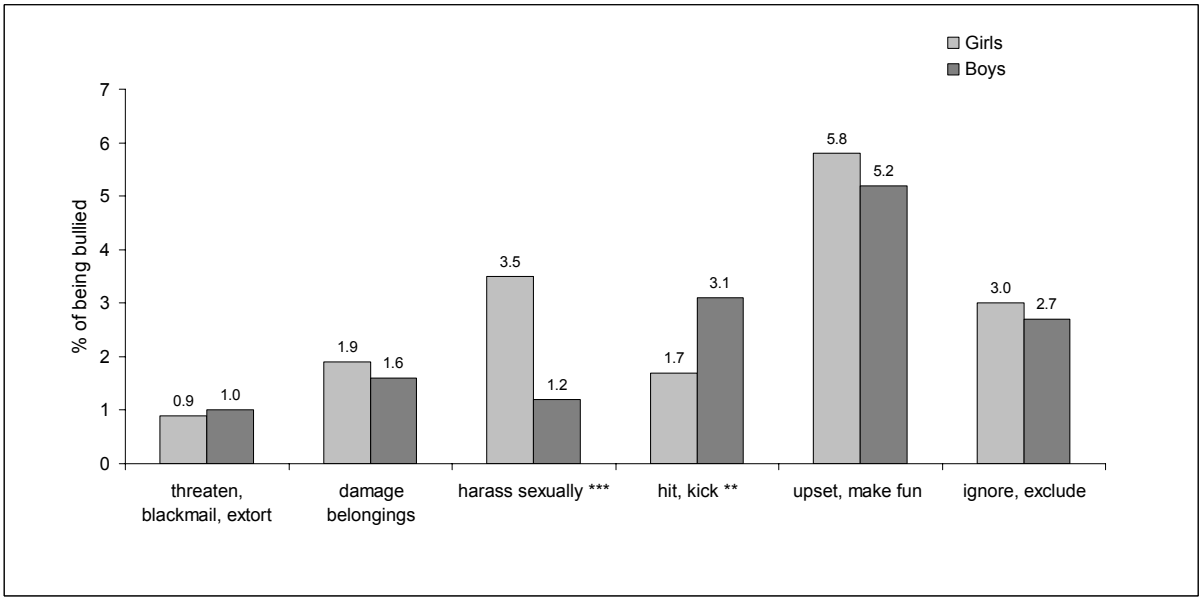
Figure 4-4 Percentages of girls and boys who reported having bullied others at least once a week in the last 12 months, by types of behaviour



* p≤0.05, ** p≤0.01,*** p≤0.001

Figure 4-5 concerns the victims of bullying. Again, in general, the trend is similar to the Vaud sample but here no significant difference is found for *damaging belongings* and for the *make fun of /upset* behaviour (see Figure 3-4).

Figure 4-5 Percentages of girls and boys who reported being bullied at least once a week in the last 12 months, by types of behaviour,



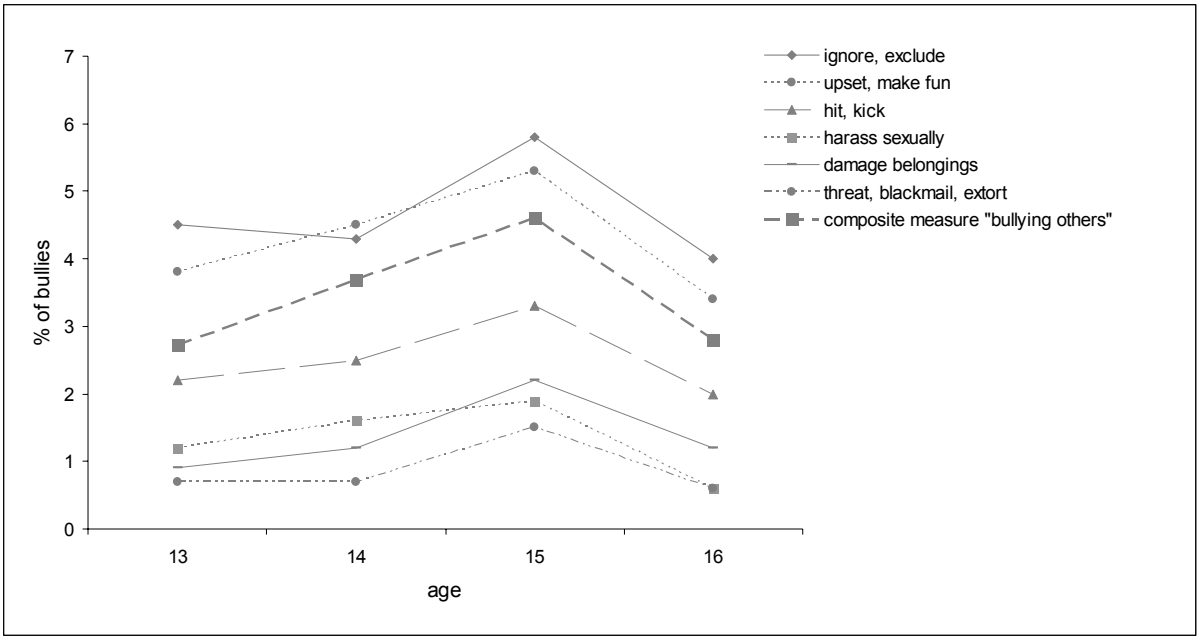
* p≤0.05, ** p≤0.01,*** p≤0.001

When taking the composite measure (all six items), the difference between sex is significant for the offender, girls 2.2% and boys 5.1%. However, the difference is not significant for the victims, girls accounting for 4.2% and boys for 4.5%.

Bullying and age

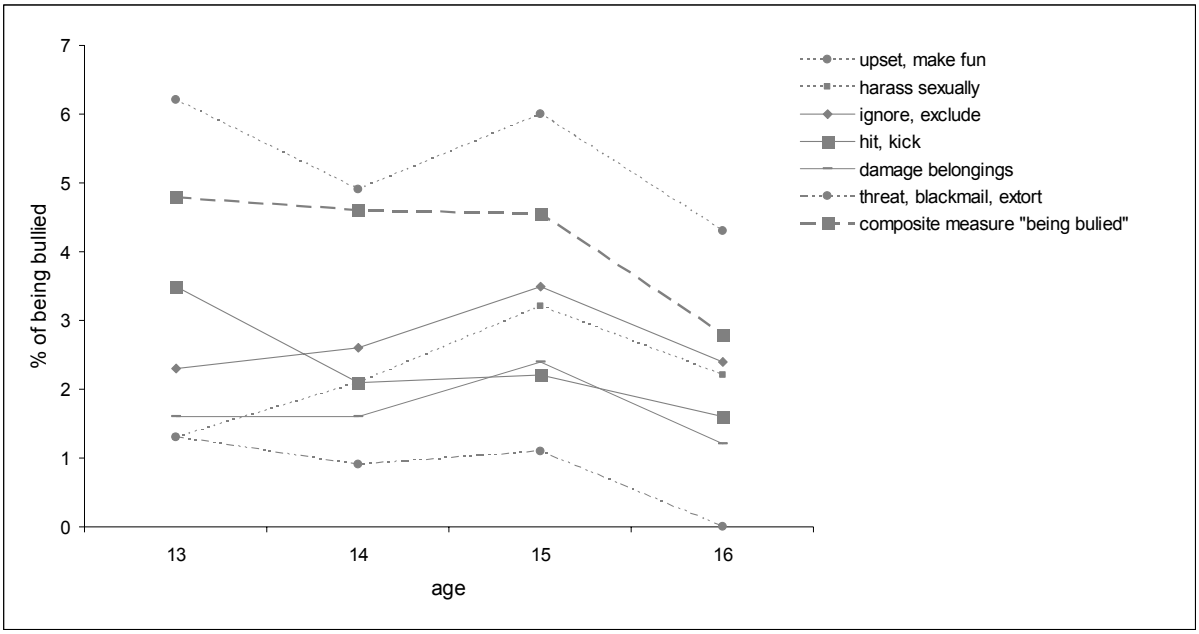
The next chart presents the relation between bullying others and age. Each behaviour is presented separately as well as the composite measure (see the construct elaborate in section 4.3.5). If we look at the latter, we observe that the number of offenders bullying others regularly increase from 2.7% among 13 years old, to 4.6% among 15 years old, than a drop occurs between 15 and 16 years old, yielding the same rate as at age 13. However, the significant difference is between the 13 and 15 years old ($p<0.05$) and between age 14 and 15 ($p<0.001$). In general, we observe that all the separate behaviours follow the same trend.

Figure 4-6 Relation between age and bullying others (in %)



As regards, the tendency to be bullied, depicted in Figure 4-7, the changes with age are not so clear and systematic as in Figure 4-6. The rates of the composite measure of being bullied indicate that the number of victims is stable between 13 and 15 years old and again, as for the offenders, a drop is observed after the age of 15 (significant at $p<0.1$).

Figure 4-7 Relation between age and being bullied (in %)



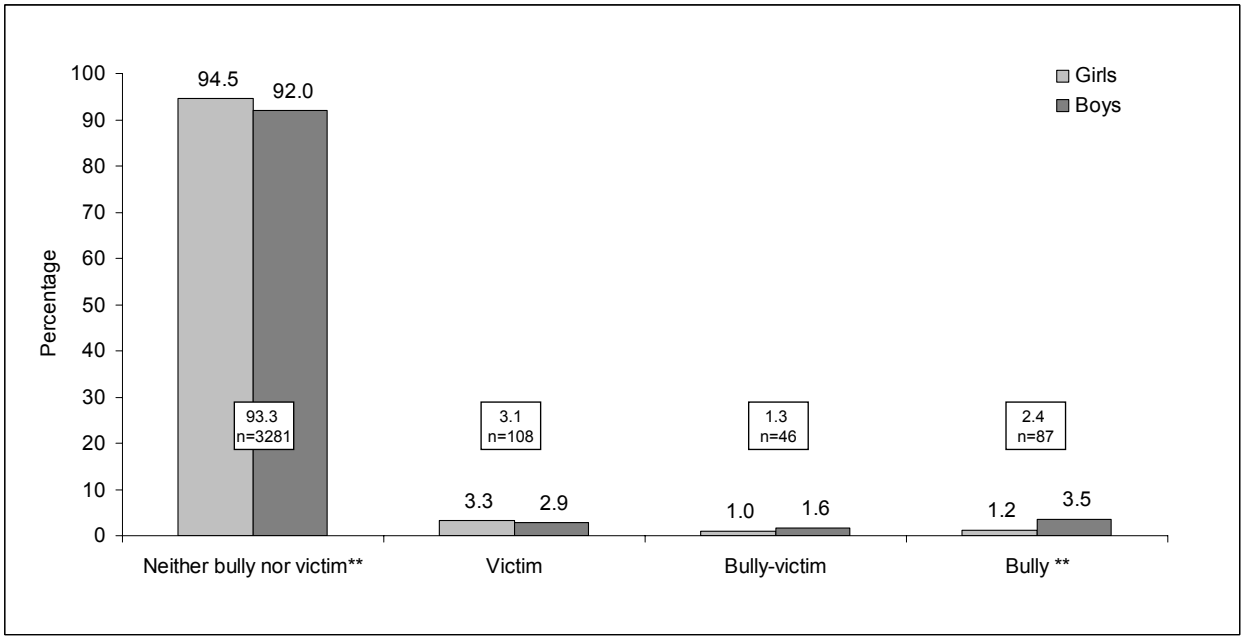
Bullying others and being bullied

In our sample, 4.3% of the pupils are victims of bullying. Among those 30% also bully others. Out of the 96% that are not victims, only 2.5% bully others. The same effect is also found among the bullies who are more often bullied than non-bullies. Indeed, among the 3.6% of bullies, about 30% are victims as well whereas out of the 96% of the non-bullies only about 3% are also victims. As the relation between bullies and their victims is complex, it leads us to look separately at the four different categories of involvement and non-involvement in bullying (neither offender nor victim, only bullies, only victims, both offender and victim). When comparing Figure 4-8 to Figure 3-7, we observe that the rates of victims and of bullies are significantly lower in the national sample compared to the Vaud sample whereas the rate of the group bully-victim is identical in both surveys. The Vaud rates are more similar to the ones found in the canton of Zug than those of the national sample[25] (Perren & Hornung, 2005). In total, 6.8% of the pupils of grades 7 to 9 in Switzerland are concerned by the problematic of bullying (11.6 % in the Vaud sample).

[25] In Vaud, the rates of bullies, victim and bully-victim are respectively of 5.7, 4.6 and 1.3% and in the canton of Zug: 6%, 4% and 3%.

As in the Vaud sample, the bully and bully-victim groups gather more boys than girls (respectively about 70% and 60%) and the group of victims collates slightly more girls (54% whereas in the Vaud sample 60% of this group where girls).

Figure 4-8 Percentages of pupils assigned to the different categories of involvement and non-involvement in bullying, by gender



N= 3617. Weighted data. Percentages based on valid cases.

Bullying and delinquency/problem behaviour

Table 4-4 shows the rates of delinquent behaviour and problem behaviour in the national sample. Minor offences[26] is composed of five items and serious offences[27] of eight items. The construct of all offences consists of having committed at least one of all the 13 items during the last 12 months. Problem behaviour is defined as having used alcohol (beer, wine or strong spirits), cannabis and hard drugs during the last four weeks. As hard drug use concerns only 15 pupils, this category is not included in the next Figure presenting the relation between bullying and delinquency/deviant behaviour.

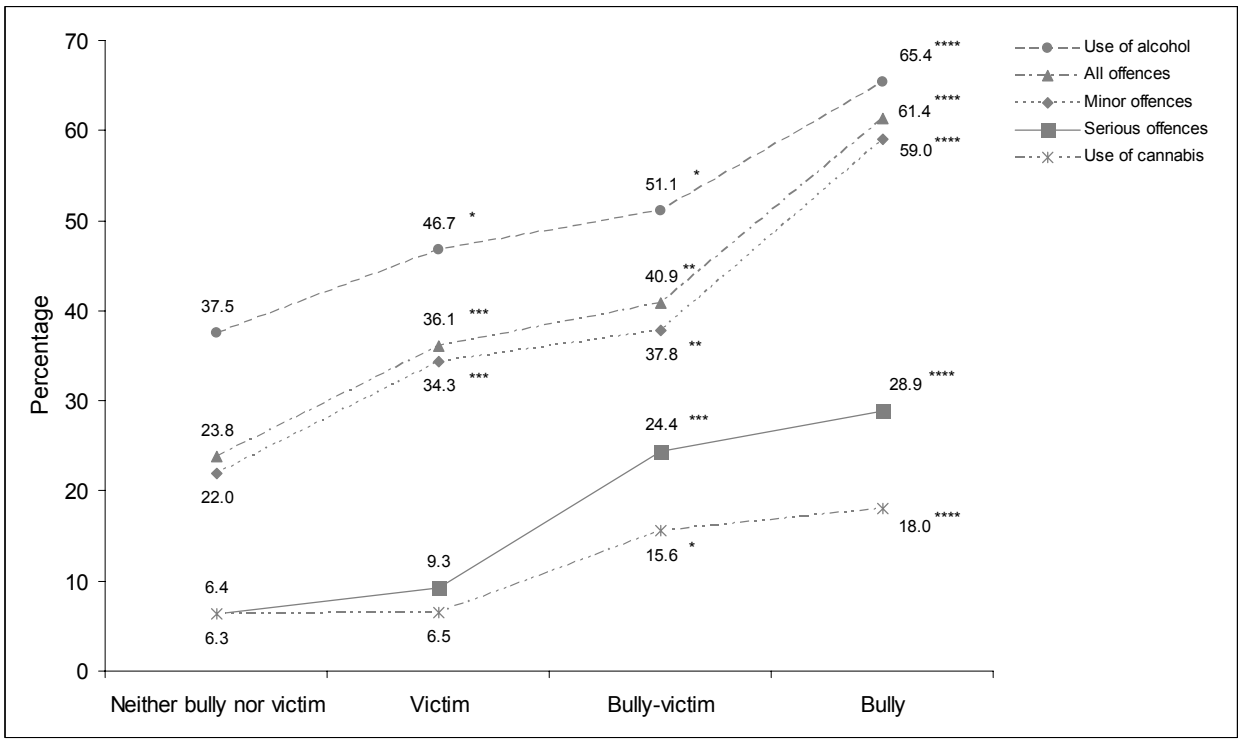
[26] The items used to construct minor offences are the following: group fight, carrying a weapon, vandalism, shoplifting, hacking.
[27] The items used to construct serious offences are the following: assault, robbery, snatching, bicycle theft, car theft, breaking into a car to steal something, burglary, sell drugs (soft or hard)

Table 4-4 Percentages of delinquent behaviour during the last 12 months and problem behaviour during the last month

Delinquent behaviour		Problem behaviour	
Minor offence	23.6	Alcohol	38.8
Serious offences	7.4	Cannabis	6.9
All offences	25.4	Hard drugs	0.4

The next chart (Figure 4-9) illustrates the relationship, on the one hand, between the four different categories of involvement and non-involvement in bullying and delinquency, and on the other hand the link between bullying and the consumption of alcohol and of cannabis. The pupils who are neither bullies nor victims of bullying are considered as the reference group. Among the latter, 37.5% have drunk alcohol during the last month, whereas 46.7% are concerned among the victims of bullying, 51.1% among the bully-victim group and 65.4% among the bullies. The same trend is observed for all the other behaviour variables apart from serious offences and cannabis use in which no differences is found between the reference group and the victims of bullying.

Figure 4-9 Relation of victims, bully-victims and victims, with delinquency (last year) and problem behaviour (last month)



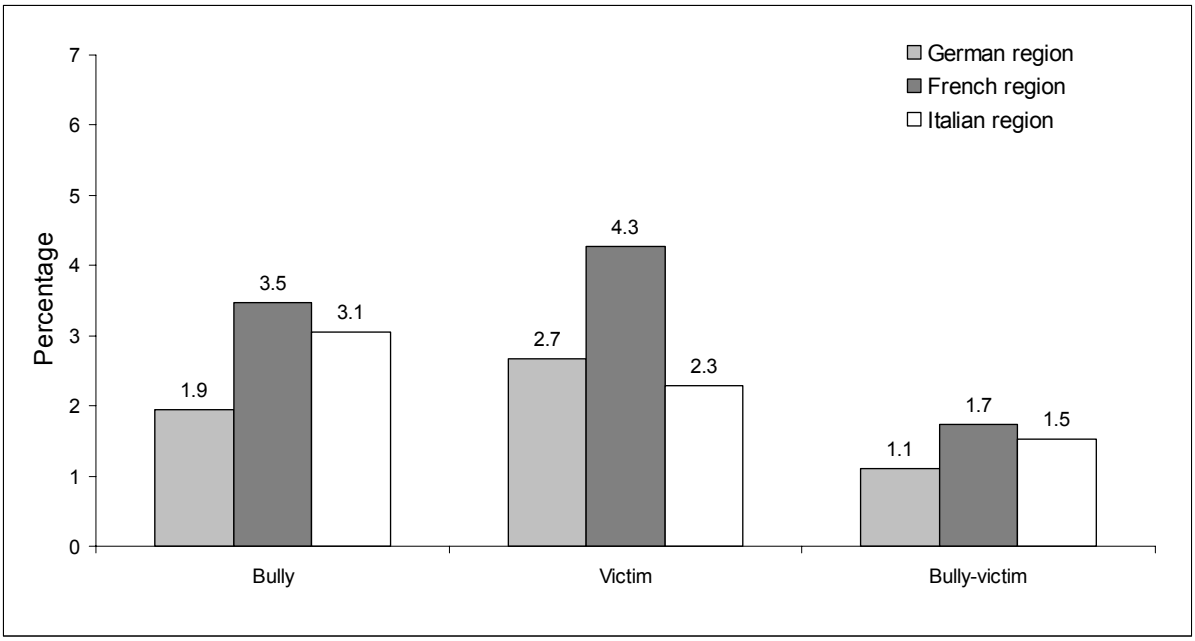
* p≤0.05, ** p≤0.01,*** p≤0.001

Those findings are similar to those found in canton Vaud. In general, the groups of victims, bully-victim and bully are at risk in committing delinquency/problem behaviour compared to the group of the children not involved in bullying. In the national sample, the group at highest risk is the bullies.

Bullying by linguistic region

In this part the prevalence of only bullies, only victims and both offender and victim are observed by linguistic region. At first glance, Figure 4-10 shows a systematic overrepresentation of the French-speaking region in the three categories of involvement in bullying. In the bully and in the victim group, the difference is significant only between the French and the German part ($p<0.05$). There is no significant difference in the bully-victim group between the three regions.

Figure 4-10 Percentages of pupils assigned to the different categories of involvement in bullying, by linguistic region



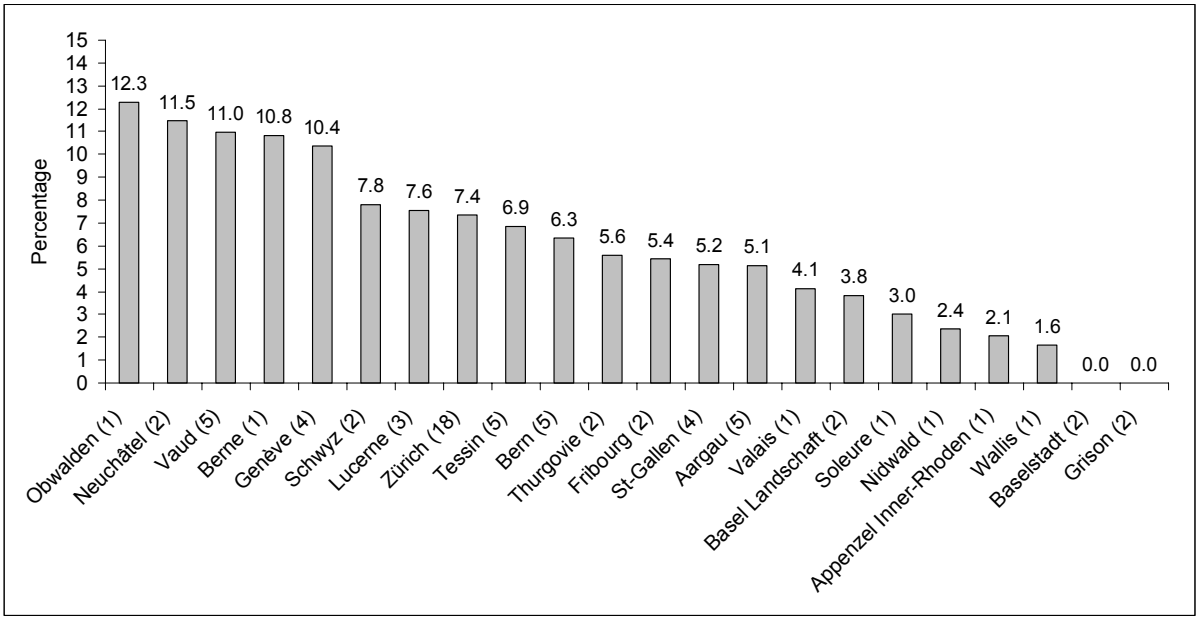
The difference of the French-speaking region being higher, next Figure present the prevalence by canton (or half canton for the bilingual ones) of all the bullying behaviour (the three type of behaviour, bully, victim and bully-victim, have been added).

Finding these results interesting, we investigated if the same pattern could be observed for minor, serious and all offences. Concerning the minor offences, the French-speaking region has the highest rate (28.1%), followed by the Italian-speaking region (26.5%) and the German (21.9%). The difference is significant only between the French and the German part ($p<0.001$). Regarding serious offending, the French-speaking region has the highest rate (8.2%), followed by the German (7.3%) and the Italian (3.8%). In that case, the French and German rates are significantly higher than the Italian ($p<0.05$).

The mean of bullying behaviour in Switzerland is 5.9%.

Figure 4-11 gives the prevalence of bullying problematic (victim, bully-victim and bully) per canton. The rate varies from 0% to 12.3%. Moreover, it indicates that four of the seven French-speaking cantons, have a very high percentage of youths concerned by the problematic of bullying, which is consistent with the results in the previous Figure, 4-10. It is noteworthy that Canton Vaud is very concerned by this problematic, as it was brought out in the Vaud sample.

Figure 4-11 Percentages by canton of all bullying behaviour



In bracket, the number of school in the canton are given

When looking at the prevalence by school, the rate of bullying offenders varies from 0% to 11.7% in the 70 schools.

4.6.3. Bivariate analyses

As in chapter 3, bivariate analyses are now presented. In order to look at the strength of the link between two variables, we will again use the coefficient of association Phi (for tables 2 X 2) or Cramer's V (for bigger tables) was used, based on Jacob Cohen's suggestion (1988)[28]. This section is organised in seven subsections: demographic variables, personality factor, family context, school context, peers/leisure context, neighbourhood context and victimization.

Demographic context

Table 4-5 below presents the relationship between demographic variables and prevalence of bullying.

There is no surprise in finding a difference in *gender*. It is also well known that delinquency and other forms of problem behaviour change with age at school, and age is obviously associated with *grade*. When looking at the bullying behaviour, there is an increase in the rate of bullies between the 7th and 9th grades, which is, however, not significant. The correlation between age and bullying – not shown here – is similar to the association between grade and bullying presented in Table 4-5. Whether pupils are born *in Switzerland* or *in another country* does not have any influence on bullying. On the other hand, a relation can be observed between *migrant background* and bullying. The 2nd generation commits more bullying than the 1st and than the Swiss adolescents, but there is no significant difference between the 1st generation and the Swiss pupils. Among the variables related to *socio-economic status*, only one difference is found: when the father has unstable employment, which concern 7% of the pupils. As mentioned in chapter 3, foreign families have in general a more vulnerable socio-economic status compared to Swiss families. For example, among the migrant 1st and 2nd generation pupils about 16% and 11% respectively have a father with unstable work, compared to only 4% among Swiss pupils.

[28] $0 \leq$ Phi/Cramer's V ≤ 0.10 is a null relationship
$0.10 <$ Phi/Cramer's V ≤ 0.30 is weak relationship
$0.30 <$ Phi/Cramer's V ≤ 0.50 is a moderate relationship
< 0.50 is a strong relationship

Table 4-5 Relationship between demographic variables and bullying

		%	p	Phi/Cramer's V
Gender (df=1)	Girls	2.2	***	0.077
	Male	5.1		
Grade (df=2)	7th	3.2	ns	0.016
	8th	3.8		
	9th	3.9		
Place of birth (df=1)	In Switzerland	3.4	ns	0.029
	In another country	5.2		
Migrant background (df=2)	Swiss	2.7	***	0.062
	1st generation migrant	4.5		
	2nd generation migrant	5.2		
Family affluence (df=1)	High	5.9	ns	0.041
	Medium	3.5		
	Low	3.1		
Mother occupational status (df=1)	Stable	3.7	ns	0.004
	Unstable	3.6		
Father occupational status (df=1)	Stable	3.4	*	0.039
	Unstable	6.3		

* p≤0.05, ** p≤0.01, *** p≤0.00

Personality factor

As in the Vaud sample, the relationship between self-control and bullying is significant (Table 4-6). Among the pupils with low self-control, about 10% admit having bullied others whereas it is only the case for 2% among pupils having a high level of self-control.

Table 4-6 Relationship between self-control and bullying

		%	p	Phi/Cramer's V
Self-control (df=1)	High	1.8	***	0.177
	Low	9.7		

* p≤0.05, ** p≤0.01, *** p≤0.001

Family context

All the variables related to the family context are significant (Table 4-7). According to social control theory (Hirschi, 2002), we can expect that a weak *attachment to family* and weak *parental control* increase involvement in delinquency. For Hirschi, the stronger the bond is, the more parents' values and norms will be internalized, which results in lower involvement in delinquency. A slightly higher prevalence in bullying is found among youngsters with a

weak relationship to their parents. In general, pupils' relationship with their mother is better than with their father. This is also the case for bullies: 5.9% answered to have a weak relationship with their mother compared to 12.1% with their father. When looking at parental supervision, we observe that adolescents with a weak supervision bully more often than the others do. In Switzerland, about 62% of pupils answered that parents always know with who they are when they go out and approximately 80% of the parents give a time to come back home when adolescents go out at night (8% answered not going out at night).

With the questions about the *structure of the family,* two groups were created: the "traditional" family includes the adolescents living with their own mother and father and "broken homes" included pupils living only with their mother or their father, with recomposed family or with other persons. It is worth noting that the majority of the children participating in the study live with both of their parents (76.5%). In terms of broken homes, most of the adolescents live with their mother: 8.5% live with their mother and 6.1% with their mother and her partner. Only 1.6% live with their father and 0.6% with their father and his partner. Approximately 6% stated that they live partly with their mother and partly with their father. Other patterns of family structures (living with other people or foster family) are marginally represented. When we compare juveniles from broken homes with those living with both parents, we find higher rates of bullying for those not living with both parents.

A greater *tolerance toward violence* supports behaviour such as bullying. Among the pupils approving the use of violence, about 11% admit having bullied others whereas among the pupils disapproving it, only 2% are bullies. The tolerant attitude towards violence is more marked among boys than girls: 32% boys and 13% girls approve the use of violence.

Negative events experienced by an adolescent in his lifetime (such as the death of a close family member, parents' divorce or separation, a serious illness of himself or of the parents, having a parent with alcohol or drug problem or violence between parents) are related to bullying. Table 4-7 shows that adolescents who experienced more than one traumatic event in their life tend to bully more often than other juveniles.

Table 4-7 Relationship between family context and bullying

		%	p	Phi/Cramer's V
Attachment to parents (df=1)	Strong	3.2	*	0.037
	Weak	4.6		
Parental supervision (df=1)	Strong	3.1	***	0.092
	Weak	9.0		
Household composition (df=1)	Traditional	3.2	**	0.045
	Broken homes	5.2		
Attitude towards violence (df=1)	Disapprove	1.6	***	0.202
	Approve	10.8		
Life events (df=1)	0-1 life event	2.9	***	0.068
	At least 2 life events	6.0		

* p≤0.05, ** p≤0.01, *** p≤0.001

School context

As in the Vaud sample, respondents having repeated a year and who are weakly attached to school are more implicated in bullying. Again, *school attachment* is more important in connection with bullying than *repeating a year*. A teenager who does not have any *perspective for the future* or who wants to directly start working is more at risk than someone wanting to get training. *Truancy* is also associated with bullying. In our sample, about 18% admit having played truant during the last year and among those, about 10% also admit to bullying their peers. Finally, a relationship between *crime at school* and bullying is found. The higher the school crime rate is, the greater the rate of bullying (Table 4-8).

Table 4-8 Relationship between school context and bullying

		%	p	Phi/Cramer's V
School failure (df=1)	No	3.3	*	0.040
	Yes	5.4		
Perspective of future (df=1)	Get a formation	3.2	**	0.047
	Working, do not know, other	5.6		
Attachment to school (df=1)	Strong	2.9	***	0.064
	Weak	5.7		
Crime at school (df=1)	No	2.4	***	0.116
	Yes	7.4		
Truancy (df=1)	Never	2.3	***	0.151
	At least once	9.8		

* p≤0.05, ** p≤0.01, *** p≤0.001

Peers/leisure context

This study probes who the teenagers spend the majority of their *free time* with. About 68% spend most of their free time with friends, 25% with their family, and 7% on their own. Another question was related to friends that commit deviant behaviour. As Table 4-9 shows, adolescents that spend most of their time with peers and those who have friends having committed one deviant behaviour, are the ones more at risk.

Table 4-9 Relationship between importance of peers and leisure time, and bullying

		%	p	Phi/Cramer's V
Leisure time (df=1)	Alone, with family	2.2	**	0.051
	With friends	4.2		
Delinquent friends (df=1)	No	1.8	***	0.144
	Yes	7.6		

* p≤0.05, ** p≤0.01, *** p≤0.001

Neighbourhood context

Shaw and McKay (1942) claim that certain characteristics of neighbourhood, such as poverty, unemployment, low housing quality, broken families, etc., may lead to social disorganization and thus to a lower level of social control and to higher juvenile delinquency. According to Sampson and Laub (1997), *neighbourhood attachment* influences behaviour of people living in a particular area. If a *community is disintegrated*, the links among its members are weak resulting in diminished informal control in the neighbourhood, which in turn leads to an increase in crime rates. Table 4-10 presents the associations between neighbourhood-bonding and bullying. The results show neighbourhood attachment to be less important than neighbourhood disorganization, as far as bullying is concerned.

Table 4-10 Relationship between neighbourhood bonding and bullying

		%	p	Phi/Cramer's V
Neighbourhood disorganization (df=1)	No	2.8	***	0.216
	Yes	23.4		
Attachment to neighbourhood (df=1)	Yes	3.2	*	0.035
	No	4.7		

* p≤0.05, ** p≤0.01, *** p≤0.001

Victimization

Juvenile delinquency and victimization is generally linked. In Switzerland, about 85% of adolescents said they had never been discriminated against and 25% have been victim at least once of robbery, theft or assault.

Table 4-11 presents the prevalence of bullying among the group of those who have been *discriminated* against and been *victimized*. Among pupils having suffered discrimination, about 6% admit having bullied someone; whereas among pupils having never been discriminated against, only about 3% admit it. In the bullies subsample, 26.2% recognise having been discriminated against, compared to 14.5% in the group of non-bullies.

Among victims of robbery, theft or assault, about 5% have committed bullying and about 3% among the non-victims. When looking among the perpetrators of bullying, 34.9% state having been a victim against 23.8% in the group of non-bullies.

Table 4-11 Relationship between victimization, discrimination and bullying

		%	p	Phi/Cramer's V
Discrimination (df=1)	No	3.1	***	0.062
	Yes	6.4		
Victimization (df=1)	No	3.2	**	0.049
	Yes	5.3		

* p≤0.05, ** p≤0.01, *** p≤0.001

4.6.4. Multivariate analyses

Table 4-12 synthesizes the p-value and the strength of the association coefficient for each independent variable and the variables are classified by the coefficient Phi/Cramer's V. As we can see, there is no significant difference between bullies and non-bullies regarding the following variables: *family affluence*, *place of birth, grade* and *mother occupational status*. Small differences are found for *attachment to neighbourhood, school failure, father occupational status* and *attachment to parents* (at $p \leq 0.05$). Variables such as *parental supervision, gender, live events, school attachment, migrant background, discrimination, leisure time, victimization, perspective of future*, and *household composition* show significant differences between bullies and non-bullies but their coefficient of association is null. For all the other variables (from *crime at school* up in the table below), there is a significant

difference between the two groups, and the association coefficients are stronger – although still weak

Table 4-12 Significance and strength of the coefficient of association for each independent variable with bullying

	p	Phi/Cramer's V
Crime in neighbourhood (df=1)	***	0.216
Attitude towards violence (df=1)	***	0.202
Self-control (df=1)	***	0.177
Truancy (df=1)	***	0.151
Delinquent friends (df=1)	***	0.144
Crime at school (df=1)	***	0.116
Parental supervision (df=1)	***	0.092
Gender (df=1)	***	0.077
Life events (df=1)	***	0.068
School attachment (df=1)	***	0.064
Migrant background (df=2)	***	0.062
Discrimination (df=1)	***	0.062
Leisure time (df=1)	**	0.051
Victimization (df=1)	**	0.049
Perspective of future (df=2)	**	0.047
Household composition (df=1)	**	0.045
Family affluence (df=1)	ns	0.041
School failure (df=1)	*	0.040
Father occupational status (df=1)	*	0.039
Attachment to neighbourhood (df=1)	*	0.037
Attachment to parents (df=1)	*	0.037
Place of birth (df=1)	ns	0.029
Grade (df=2)	ns	0.016
Mother occupational status (df=1)	ns	0.004

* $p \leq 0.05$, ** $p \leq 0.01$, *** $p \leq 0.001$

In the multivariate analyses, all the variables having significance at $p \leq 0.05$ will be used. As it has been done in the Vaud sample, multicollinearity is checked. The highest correlation (Spearman's rho) among these variables is between life events and household composition (0.468), which is not surprising as one of the items asked in the scale of traumatic events is about divorce/separation of the parents. The next highest correlation concerns the variable self-control and attitude towards violence (0.450).

Which of the independent variables predict best whether a pupil will bully others?

All independent variables whose relationship with bullying shows a p-value smaller than 0.05 in the bivariate analyses are included in the logistic regression. Apart from the variable "migrant background" which has been transformed into a dummy variable, all the variables are dichotomous. As mentioned in section 2, a logistic regression of 1,000 bootstrap samples (backward LR) was carried out and only variables selected in more than 60% of 1,000 bootstrap samples are kept. Table 4-13 lists the percentage rate of each variable that remains in the models.

Table 4-13 Percentage rate of variables remaining in the models

Violent attitude *(approve vs disapprove)*	99
Delinquent friends *(yes vs no)*	98
Neighbourhood disorganization *(yes vs no)*	98
Crime at school *(yes vs no)*	77
Truancy *(at least once vs never)*	76
Self-control *(low vs high)*	69
Household composition *(broken vs traditional)*	53
Perspective of future (*working/other vs get a formation))*	49
Attachment to school *(weak vs strong)*	44
Gender *(boys vs girls)*	42
Discrimination *(yes vs no)*	34
Life events *(>2 vs 0-1)*	25
2nd generation migrant *(vs swiss)*	19
1st generation migrant *(vs swiss)*	18
Parental supervision *(weak vs strong)*	13
Leisure time *(with friends vs alone/family)*	12
Victimization *(yes vs no)*	10

All of the variables selected using bootstrapping were included in a logistic regression in SPSS using the "Enter" method. The results are presented in Table 4-14 and ordered by their odds ratios. As our variables are dichotomous, one category is compared to the other of the same variable, defined as the category of reference. An odds ratio above 1 indicates that a category has a higher bullying rate than the reference category. As an example, the odds ratio of violent attitude is 3.0, indicating a triple bullying rate for the pupils agreeing with the use of violent attitude in certain situations, compared to the category of pupils disagreeing with such attitude.

The odds of "bullying others" are increasingly great when the pupil approves the use violence, lives in a neighbourhood with problems, is truant, has delinquent friends, has low self-control and state that there is crime in its school (between 3.0 and 1.7 times). This final model explains 22.7% of the variance (Nagelkerted R Square).

Table 4-14 Logistic regression predicting bullying

	B	S.E.	Odds ratios	p-value
Violent attitude *(approve vs disapprove)*	1.115	0.249	3.0	0.000
Neighbourhood disorganization *(yes vs no)*	1.085	0.285	3.0	0.000
Delinquent friends *(yes vs no)*	0.892	0.236	2.4	0.000
Truancy *(at least once vs never)*	0.638	0.230	1.9	0.006
Self-control *(low to high)*	0.567	0.251	1.8	0.024
Crime at school *(yes vs no)*	0.547	0.225	1.7	0.015
Constant	-4.917	0.218	0.0	0.000

It is noteworthy that apart from the self-control variable, the other five variables are related to a criminogenic context. This leads to the question: if the variables related to delinquent behaviour are not taken into account, what would the influence of the other variables be? Table 4-15 shows the logistic regression results of 1,000 bootstrap samples (backward LR) without the five criminogenic variables. Four variables are selected with more than 60%: self-control is at the head of the list, followed by gender, life events and attachment to school.

Table 4-15 Percentage rate of variables remaining in the model (without the "criminogenic" variables)

Self-control *(low to high)*	100
Gender *(boys vs girls)*	88
Life events *(>2 vs 0-1)*	77
Attachment to school *(weak vs strong)*	73
2nd generation migrant *(vs swiss)*	58
Discrimination *(yes vs no)*	56
Perspective of future *(get a formation vs working/other)*	56
Parental supervision *(weak vs strong)*	42
Household composition *(broken vs traditional)*	42
Leisure time *(with friends vs alone/family)*	38
Victimization *(yes vs no)*	26
1st generation migrant *(vs swiss)*	23

Keeping the variables selected at over 60%, the final model explains 12.8% of the variance (Nagelkerted R Square), which is at least half of the variance explained in the precedent

model (Table 4-16). Still, the odds ratios are high (between 1.7 and 4.9), while self-control is at twice that observed in Table 4-14. A youth has five times the risk of committing bullying behaviour when he has low self-control, and twice the risk when he has experienced difficult events in his life. Moreover, being a boy and being weakly attached to school almost double the chances of committing such behaviour.

Table 4-16 Logistic regression predicting bullying (without the "criminogenic" variables)

	B	S.E.	Odds ratios	p-value
Self-control *(low to high)*	1.593	0.207	4.9	0.000
Life events *(>2 vs 0-1)*	0.793	0.212	2.2	0.000
Gender *(boys vs girls)*	0.624	0.216	1.9	0.004
Attachment to school *(weak vs strong)*	0.501	0.208	1.7	0.016
Constant	-4.699	0.228	0.0	0.000

4.6.5. Summary

As observed in the Vaud sample, boys are more frequent offenders and for all the various behaviour types they score higher than girls, although in the national sample no significant difference is found between gender for the *threatened/blackmailed/extorted* and *ignore/exclude* behaviour. Regarding the difference between gender for the victims of bullying, although the trend is similar to the observation made in the Vaud sample, girls are more victims of sexual harassment (and not of being made fun of or of being upset as in the Vaud sample) and boys are more victims of being hit or kicked (and not of having belongings damaged as in the Vaud sample). When looking at the categories of involvement in bullying nationally, boys are more often only offenders and no other difference, whereas in the Vaud sample boys were also more often bully-victims and girls were more represented in the only victim category. All three groups are more involved in delinquency and have a higher rate of problem behaviour than the youth not involved at all in bullying.

The national sample highlights a difference between the linguistic regions, the French-speaking region having the highest rates of bullies and of victims of bullying. The same pattern is observed when investigating the rates of minor and serious offending.

The bivariate analyses exclude a relationship between bullying and family affluence, place of birth, grade or mother's occupational status. Other variables have also been excluded because of their small significance and their null association (attachment to neighbourhood, school

failure, father's occupational status and attachment to parents). All the other variables have been introduced in the logistic regression (parental supervision, gender, live events, school attachment, migrant background, discrimination, leisure time, victimization, perspective of future, household composition, neighbourhood disorganization, attitude toward violence, self-control, truancy, delinquent friends and crime at school). The bootstrap technique permits the exclusion of variables that could be selected just "by chance". Six variables were selected in more than 60% of the 1,000 bootstrap samples. In the final model, six variables were retained: attitude toward violence, delinquent friends, neighbourhood disorganization, self-control, truancy and crime at school. Out of these six variables, five are related to delinquent behaviour – for which reason it was decided to look at a new model without criminogenic variables. In this new model, four variables were selected: self-control, life events, sex and attachment to school.

4.7. TESTING HYPOTHESIS 5: SCHOOL EFFECT (ISRD-2 SAMPLE)

Hierarchical models (HLM) are used to account for the clustered nature of the sample, with adolescents nested within schools (Bryk & Raudenbush, 1992).

4.7.1. Individual-level variables (Level 1)

The variables kept at Level-1 are those selected in the logistic regression (bootstrap analysis): violent attitude, neighbourhood disorganization, having delinquent friends, truancy, self-control and crime at school.

4.7.2. School-level variables (Level 2)[29]

School-level variables are aggregated from the nested level of data. For example, we have data on family affluence for each pupil. This information is aggregated by school by averaging the data for all of the students nested in each school. Individual-level family affluence is aggregated to make a school-level mean family affluence.

Variation in bullying between schools is captured at Level 2 with the following school-related variables: *proportion of male*, *proportion of migrants*, *proportion of low family affluence*, *proportion of crime at school*, *proportion of weak school attachment*, and *being in a school located in a town.*

4.7.3. Results of multilevel analysis

The data set includes 3,084 pupils whose data are nested within 70 schools. The same procedure as adopted in the Vaud sample is used (see section 3.8.3).

The unconditional model revealed that there is no significant variability between schools in bullying, suggesting that it is not meaningful to examine a conditional model. Although the variance due to schools is not significant, the empty model shows that 4.0% of the total variance (Laplace estimation) is attributable to Level 2 (school). Moreover, the mean of pupils interviewed per school being 44, the design effect (Deff) is 2.7. Muthen and Satorra (1995) have suggested that design effects smaller than 2 do not need to be taken into account

[29] The weighting has been used on Level 2

(a value of 1 meaning the total absence of a design effect). As the variance is 4% and the Deff is higher than 2, we decided to create a model (Table 4-17).

In the first Level 1 model, the intercept was specified as random and the slope was fixed. Variables were then added individually to the model. First of all, the variable *crime at school* is not significant, although the deviance is significantly better with 8 parameters than 7. This led to a Level 1 model with only 5 variables: *violent attitude, neighbourhood problem, delinquent peers, self-control* and *truancy*. No significant random effects in the slopes were found, meaning that no there is no difference in the influence of those variables in the different schools. Then, Level 2 variables were added to the intercept and only one variable is significant: the *location of the school*. Surprisingly, the value of B is negative, meaning that pupils in a school located in a rural region are at double the risk of committing bullying.

Table 4-17 Final multilevel model

	B	S.E.	Odds ratios	p-value
Fixed effects – Individual level				
Violent attitude (γ_{10})	1.187	0.233	3.3	0.000
Neighbourhood problem (γ_{20})	1.284	0.237	3.6	0.000
Delinquent peers (γ_{30})	0.965	0.239	2.6	0.000
Self-control (γ_{40})	0.614	0.248	1.8	0.014
Truancy (γ_{50})	0.743	0.256	2.1	0.004
Intercept (γ_{00})	-4.561	0.284	0.0	0.000
Fixed effects – School level				
Predictor for intercept (γ_{00})				
Location (γ_{01})	-0.624	0.204	0.5	0.004
Proportion of gender (γ_{02})				n.s
Proportion of 1st generation migrant (γ_{03})				n.s
Proportion of 2nd generation migrant (γ_{04})				n.s
Proportion of school crime (γ_{05})				n.s
Proportion of school attachment (γ_{06})				n.s
Proportion of family affluence (γ_{07})				n.s
Proportion of work father (γ_{08})				n.s
Proportion of work mother (γ_{09})				n.s

	Variance component	Chi-square	p-value
Random effect – School level	0.00032	71.81099	0.353
Intercept (u_0)			

The results obtained in the unconditional model are very surprising, knowing the results obtained in the Vaud sample. The fact that there is no significant difference in the rates of bullying between schools in the national sample is probably due to the small number of interviewed pupils and, more particularly, the small number of bullies per school. Indeed, in the national sample, about 51 pupils were interviewed per school with an average of 2 bullies, whereas in the Vaud sample the mean of pupils interviewed per school was 189 with an average of 13 bullies.

4.7.4. Summary

The empty model revealed that there is no significant variability between schools and therefore the use of multilevel analysis would not make sense. Because of the percentage of total variance explained and of the value of the design effect, it was decided to try to build a model. Out of the six variables tested at Level 1, one is not significant (*crime at school*) and the variable *location* s significant on Level 2 as a predictor of the intercept.

CHAPTER FIVE: DISCUSSION

5.1. MAJOR FINDINGS AND THEORETICAL IMPLICATIONS

5.1.1. Overview

To start with, we should come back to the definition used in the framework of this dissertation. In our surveys, bullying has been operationalized by taking six items (hitting, threatening, upsetting, damaging belongings, harassing sexually, exclusion). These six items asked about over the period of the previous twelve months allowed the construct of the "bullying others" variable. For a child to be considered as a bully, at least two out of the six items need to have been answered by "at least once a week" or one item answered "at least once a week" and more than three items answered at least "once or twice".

The definition of bullying (the items used in the questionnaire to operationalize the concept), the period taken into consideration (during the last month, two months, last semester, last year), the cut-off point chosen (at least once a week, two or three times a month) differ in the various studies carried out in this field. Solberg and Olweus (2003) suggested the cut-off point of "2 or 3 times a month" (or the roughly corresponding terms "now and then" or "sometimes" in earlier version of Olweus questionnaire) or more often in at least one of the items. They also proposed a clear time frame and advised a reference period of a couple of months, as it calls on a not too long memory. In our dissertation, we choose to study teenagers with very clear bully characteristics. Using Olweus's definition, the rates would be much higher; we would have got 26.8 % of bullies and 32.8% of victims in the Vaud sample and respectively 17.6% and 21.7% in the national one. Olweus argues his choice by saying

that when using the "once a week" lower-bound cut-off, there would be too many "false negatives," that is, students who would be designated as "non-victims"/"non-bullies" but who actually have marked victim/bully characteristics. Moreover, he argues that with a severe cut-off, bullying would look like something that happens rarely leading to an excessive focus on individual students rather than on contextual factors and the school as a social environment that can facilitate or counteract bullying. However, in this dissertation, we preferred to avoid the "false positives," that is, pupils who would be classified as victims or bullies but who did not have very marked victim or bully characteristics. In our view, the consequence of categorizing a child as a bully/victim when he is not one, can be worse than giving him the chance to adapt his behaviour to his peers. Furthermore, clear rules at school can modify incorrect behaviour and teach children to behave according to these rules.

In the Vaud sample, the proportion of bullies is 7.1% and that of victims is 5.9% whereas in the national sample, the rates yield only 3.7% of bullies and 4.4% of victims of bullying. A possible explanation for this difference in bully rate between the two studies is the variation of the mean age of the interviewed populations (the 7th grade being included in the national sample). This was checked and did not explain the difference. Another possible explanation could be the selection of the sample. In the national survey, the schools were randomly selected whereas in the Vaud sample, all schools from the districts participating in "Police-2000" were selected as well as those from the city of Lausanne and the district of Yverdon. The structures of these samples are then different. The Vaud sample gathers the schools of an entire geographical area while the national sample is composed of a few schools in each canton. However, it is interesting to note that the rate obtained in the Vaud sample and in the canton of Vaud-ISRD2 (only 8th and 9th grade), are not significantly different (5.8% of bullies and 6.4% of victims for Vaud-ISRD2 and 7.1% of bullies and 5.9% of victims for the Vaud sample). This means that the rates found in the Vaud sample are not unlikely with respect to a different sample from the same canton[30]. It appears that this canton has a major problem related to bullying behaviour.

In both samples, the two most common forms the bullies adopt are to "make fun of/ upset" and "ignore/exclude" a pupil and the victims of bullying are most frequently "make fun of/ upset." Boys engage more in bullying others than girls and this with respect to all types of

[30] The schools randomly selected in the canton of Vaud in the ISRD-2 are different from those that have participated in the first survey.

behaviour used in bullying (threatening, damaging belongings, harassing sexually, hitting, upsetting and ignoring). This is not a surprising finding as males, most of the time, display more aggression than females. Biological predispositions are related to conduct problems, which can explain part of this difference (Dodge & Pettit, 2003).

Earlier findings (Bjorkqvist & Flemington, 1999; Whitney & Smith, 1993) showed that indirect behaviour such as ignore/exclude someone would be more used by girls than boys. The trend observed in the present study goes in the opposite direction than that expected from these previous findings. Boulton *et al* (2002) found no gender difference in indirect bullying behaviour. When observing gender differences of the victims of bullying, boys are more often victims of being hit/kicked and girls are more often victims of sexual harassment and being upset. When looking at the composite of bullying (variable based on the six items), boys bully more than girls do and both sexes are equally victimized. Separate analysis of four different categories of involvement and non-involvement in bullying (neither offender nor victim, only bullies, only victims and being both offender and victim) in both samples showed that the group of victims presents a majority of girls and that the groups of bullies and of children that are both bullies and victims contain more boys.

Results relating to age differences obtained in the present study show more or less the same tendencies though not as sharply as in the literature where bullying appears to be related to age, the older children bullying more often and being less often bullied (Smith *et al.*, 1999).

Indeed, the trends between bullying others and gender and between bullying others and age are as clear as we were expecting. This may be due to the type of sample, the mean age or to the definition of bullying used. Boulton *et al*. (2002) suggest that while general trends do exist, a substantial proportion of pupils may not follow them.

Bullying clearly relates to delinquency and to consumption of cigarettes, alcohol, cannabis and hard drugs. However, it is not possible to establish through this research method which behaviour influences the other. Possibly, there is a reciprocal effect and one could surmise that the whole problem of bullying, delinquency and consumption of substances is due to a general context in which cumulative problems are present. What is clearly established is that the three groups of victim, bully-victim and bully are more at risk of developing behavioural problems and of committing delinquency than the group of children not involved in bullying. The groups at highest risk are the bully-victim and the bully. If schools are aware of bullying

problems, the detection of bullied children and bullies is possible. Bullying behaviour is more visible than substance abuse and delinquency committed outside the school. Therefore, bullying behaviour should be seen as a warning sign of delinquency. Schools cannot do much about broken homes and negative life events, but they can take up the bullying problem and thereby get a handle on incipient delinquency and crime.

5.1.2. A novel approach to interview methods

Nowadays, self-reported surveys remain a reliable and valid means of estimating the prevalence of criminal behaviour as well as its correlates, especially in child and adolescent populations (Aebi, 2006; Junger-Tas & Marshall, 1999). Face-to-face interviews and self-administered interviews in the classroom (where students fill in a paper questionnaires) are the predominant method used in the context of research on delinquency. Computer technology, Internet and an increasing availability of computer equipment and Internet access in schools in Switzerland gave the author of this dissertation the idea to use Computer-Assisted Web Interviews (CAWI).

The 2003 survey uses the "traditional" self-administered questionnaire using "paper-and-pencil." The experience highlighted two major problems: the fastidiousness of data entry and its cost. In order to decrease the burden of this task (as well as possible errors associated with transcription) the author focussed on a solution that provides direct storage of the responses to the questionnaires. We tested different programmes such as File Maker®, Authorware®, an interactive computer-assisted self-interviewing questionnaire built in Wales, and PHP Surveyor, and finally selected the latter. This solution provides an online questionnaire hosted on a server (in our case at the University of Lausanne). After a preliminary test conducted on a small sample (181 students of grade 8), a controlled experiment was carried out in 2004 for assessing the CAWI method over against the paper-and-pencil ("P&P"). The prevalence by interview method of self-reported delinquency, consumption of drugs and victimization was compared. The experiment showed that the CAWI method for interviewing adolescents gives similar results to the P&P (Lucia *et al.*, 2007).

The **first hypothesis** postulates that the two methods will give the same rates of bullying (offenders and victims). Three types of analyses were carried out to test this hypothesis. The first analysis compares the rates of bullying and of missing values of the two methods. Then we include the possible interaction effects. The final step controls confounding influences due

to socio-demographic factors: pupils from the lowest tracks and of different cultural background do not react in a different way to the survey on the computer or on the paper questionnaire. However, girls and boys do react differently depending on the method and on the type of behaviour we observe. The rates of girl authors of bullying are higher with the CAWI method than with P&P. The use of drugs follows the same pattern. On the contrary, boys admitted more victimization and less delinquent behaviour with the CAWI method (Lucia *et al.*, 2007). Third, a hierarchical logistic regression of bullying (offenders and victims) on the "interview method" variable tests if the addition of the latter variable improves the model composed of three variables: gender, place of birth and tracks. Similarly, for the perpetrators and the victims of bullying, there is no improvement of the models when adding the method. Indeed, our results permit to validate hypothesis one: there is no differential effect of the method on the self-reporting of bullying (offenders and victims), meaning CAWI could be used in the following surveys (in Yverdon and in the ISRD-2 study).

The advantages of the use of the PHP Surveyor programme are numerous. No heavy piles of paper questionnaires have to be shipped to the different schools, no data from hand-written questionnaires needs to be entered into the computer (thus errors in this step are avoided) – due to the automatic download of the data into an SPSS file – nor is it possible to give more than one answer when only one is allowed. Self-completion was efficient in terms of researcher time and effort. Of course, experience showed that problems such as server failure or bugs encountered when sending the questionnaire via Internet are not excludable. To cope with this type of problem – at least in part – paper-and-pencil questionnaires should be given to the interviewer. One can expect that the stability of such methods increases with time as the computer material becomes more reliable. Another point to mention is that the CAWI method was possible in Switzerland because all schools have a computer room and all computers have an Internet connection. However, not all European countries have 10 or 20 computers per school. In the next few years, the number of countries where CAWI can be used will probably increase with the rapid development of the penetration of informational technology.

In general, it seems that self-administered questionnaires may remind students of a written examination, whereas responding through the computer is considerably more "fun" and less discouraging. Indeed, pupils completing the computer questionnaire perceived the response format as less onerous than filling in "boring" paper questionnaires. Our conclusion is similar to the one obtained in Wales by the authors of a research among young people applying

interactive computer-assisted self interviewing (Haines *et al.*, 2004). In their pilot study, they asked the pupils to give their feedback about this method. More than 85% of those who answered preferred the computer method to the paper-and-pencil one.

5.1.3. Independent variables related to bullying at the individual level

The analyses performed to test the second and fourth hypothesis consider all the variables at the same level and do not take into account the structure of our sample, which consists of pupils nested into schools. The second hypothesis concerns the Vaud sample whereas the fourth one relates to the national sample.

According to the **second hypothesis** (Vaud sample), we were expecting bullying to be related to different risk factors found in the literature. These risk factors are part of five global groups: the demographic context, the personality, the family, the school and the peers. To start with, bivariate analysis (chi-square association) and multiple correspondence analysis (MCA) allowed a description of the links between different factors. The chi-square test led to the pre-selection of the variables to use in the logistic regression and linear discriminant analysis (LDA). The MCA was used, on the one hand, to observe the relationship between all the predictors and, on the other hand, to transform categorical variables into continuous variables (using the scores of the MCA analysis) for LDA analysis. The pre-selected variables were checked for multicollinearity before their use in the logistic regression and linear discriminant models.

Two types of analysis allowed the selection of the variables influencing bullying behaviour: a logistic regression and an LDA. Out of the 23 independent variables tested, 18 have been introduced (5 having been discarded by the results of bivariate analysis) into the logistic regression and LDA models. The major advantage of logistic regression concerns the use of the odds ratios leading to a more straightforward interpretation of the results. However, in our case, we used LDA with equal groups selection in order to test the classification of the bullies and non-bullies. ROC curves also show that both analyses discriminate efficiently the bullies from the non-bullies. Moreover, the results of the two statistical treatments select the same major variables to predict bullying.

As we used the backward logistic regression method for the selection of the independent variables for predicting bullying and knowing that this method could generate non-

reproducible models, we processed a bootstrap method (see section 0) for validating our results. The remaining independent variables are: *self-control*, *gender*, *school climate*, *violence legitimising norms of masculinity*, *reaction of the teacher*, *activities with peers*, *activities with family/at home*, *parental supervision* and *truancy*. Out of those, self-control, violence legitimising norms of masculinity, and school climate are the ones that have also been selected in the LDA. The discussion and contextualization of these variables are the subject of the following paragraphs.

Self-control theory (Gottfredson & Hirschi, 1990) mentions that someone with a low self-control tends to be more implicated in crime, which is consistent with our findings. A pupil with low self-control increases his risk of committing bullying by more than three times. According to the general strain theory, it was expected that schools with unpleasant working conditions for the pupils create strain which in turn increases the risk of delinquency (Agnew, 1985). This proposition receives support in the present study. Pupils who described their school as having a negative climate increase their chances of bullying by 2.2. Dumas also mentions that a school characterized by a positive atmosphere and educational practice can have positive effect on pupils behaviour even though the school is situated in a disadvantaged area (2000). The attitude towards violence depends on the education the child received and on the cultural background the youth has grown up in (Nisbett & Cohen, 1996). A child who has been the victim of violence or has witnessed it is more likely to approve of the use of violence. This is also the case in cultures where honour is a central value and where the role of the man as the head of the family is important. Our results are consistent with those found by other research (Bentley & Li, 1995; Bosworth *et al.*, 1999), where bullies were more likely to hold beliefs supportive of aggression than were non-bullies (the odds ratio being of 1.9). Broken windows theory (Wilson & Kelling, 1982) suggests that areas with crime incite other crimes to be committed if there is no intervention from someone susceptible to react. Therefore, we expect that the absence of reaction from the teachers would increase the risk of the youth carrying out bullying (because the impression given is that misconduct is authorized). Our study confirms these findings. It is interesting to note that there is no difference between a constructive intervention of the teacher and a punitive one.

Hirschi's social control theory (2002) also receives some support. How the teenagers spend their free time can influence bullying. We expected that adolescents involved in sports and those doing activities with the family or at home do not have the opportunity to participate in

delinquent acts compared to those that spend time with friends. Our study confirms that youths spending more time with friends and less time with the family or at home admit to bullying their peers more often. However, the relationship between doing sports activities and bullying has not been retained. Moreover, weak supervision by the parents increases the risk of a child bullying others.

We have to be careful with the interpretation of some of our results. For example, we cannot affirm that a pupil's truancy is the cause his bullying others. As our survey is cross-sectional research, it is important to interpret this variable as a symptom expressing an underlying problem rather than as a deviant behaviour causing the behaviour examined here. A pupil can have different reasons to skip school. Wagner (2004) used the strain theory as a framework to interpret truancy as an individual type of adaptation. Because the child does not have the means to follow the lessons, he tries to find other means than regular school attendance to achieve the goals accepted by society. Another reason could be that because of frustrating experiences or bad experiences, students refuse to go to school, as it no longer makes sense to them. Finally, playing truant can express the fact that the child refuses to go to school because they want to protest against the goals and norms of the school. As in the literature truancy is a risk factor for present and further delinquency acts, this variable has been used as an independent variable in the analyses (Loeber & LeBlanc, 1990). Indeed, we have observed an important correlation between bullying and other deviant problems (delinquency and consumption of psychoactive substances). This is consistent with the vision that adolescent problem behaviour is part of a general problematic (Bosworth *et al.*, 1999).

Household composition and school failure link to delinquency in Anglo-Saxons countries, which is not the case in Europe. These variables have then been considered to understand bullying behaviour but, as for delinquency in Europe, they are not significant once other variables are considered. Moreover, in accordance to social control theory we expected that a child caring about authority figure expectation and having a strong attachment to school and to parents would be less likely to engage bullying. However, none of these variables are significant. These findings are opposed to Hirschi's theory, showing that the attachment to other individuals is not related to behaviour like bullying and justify the search for other variables, as has been done by considering context.

In the **fourth hypothesis**, we were expecting bullying to be related to different risk factors. In the national sample (ISRD-2), we selected 24 risk factors divided into seven global groups (the demographic context, the personality, the family, the school, the peers/leisure, the neighbourhood and victimization). For recall, not all the independent variables are similar in the ISRD-2 and Vaud questionnaires.

Out of the 24 independent variables tested, 16 have been introduced (7 having been discarded by the results of bivariate analyses) into the logistic regression. Using the method proposed by Austin and Tu (2004a, 2004b), six independent variables remain after a logistic regression of 1,000 bootstrap samples (backward LR). Approving the *use of a violent attitude* (e.g., because it is fun or is needed to be respected), living in a *neighbourhood* or being in a *school* where problems of delinquency are highly present, having *delinquent friends*, having *skipped school* and having a low *self-control* are the variables related to bullying. Those children showing these characteristics or living in such contexts were more likely to report bullying their peers.

Approving the use of a violent attitude, self-control and truancy, have already been discussed above and will not be contextualized again. Their odds ratios are high: respectively of 3.0, 1.8 and 1.9.

Concerning the other variables, the differential association and the social learning theory (Akers *et al.*, 1979; Burgess & Akers, 1966; Sutherland, 1947; Sutherland *et al.*, 1992) postulate that engaging in delinquency is learned from the person one spends time with. Therefore, having delinquent friends, living in a disorganized neighbourhood and being in a school where delinquency occurs are different contexts in which pupils can learn to engage in delinquency. Moreover, being in a school or neighbourhood where deviant acts occur can also give the impression that crime is in a certain way permitted, as suggested by the broken windows theory (Wilson & Kelling, 1982). Furthermore, a school where crimes occur means that either there are no guardians, or they do not intervene and, as suggested by the routine activity theory (Cohen & Felson, 1979), a crime is more likely to occur when a motivated offender is in the same place, at the same moment, as an attractive target in the absence of a capable guardian. Whether the teenager has met friends that have committed deviant acts before starting to bully others (thus meaning that he has learned from them) or whether the friends have been chosen by the youth because they correspond to the ones he is looking for cannot be shown by the present (cross-sectional) survey. Moreover, analyses such as logistic

regression do not allow observing reciprocal effect of variables. Thornberry (1987) suggests that the variable "having delinquent friends" should not be presumed as an unidirectional cause of delinquency. Indeed, peer associations may cause delinquent behaviour but such behaviour can affect the choice of friends. As mentioned by Thornberry, the Gluecks (1950) already suggested that youths who are delinquent seek out others who share those tendencies.

Demographic variables such as age, nationality and socio-economic status were not significant. Following the social control theory (Hirschi, 2002), a relation between a weak attachment to parents, little parental supervision, living in a broken home, doing badly at school (school failure and having no perspective for the future) and committing bullying was expected. Moreover, the general strain theory (Merton, 1938) states that the presence of negative stimuli increases strain and in turn raises the likelihood of delinquency. Thus, victimized or discriminated adolescents should perpetrate more bullying than others do. The results of the analyses carried out in the present study do not confirm these statements. Lastly, spending time with friends rather than with family or alone should be related to bullying according to social control theory and routine activity theory, but is not the case. However, it is important to bear in mind that these theories consider delinquency in general and may not be applicable to the specific bullying problematic. Concerning the variables parental supervision and activities during free time, let us underline that it is significant in the Vaud sample whereas it is not the case in the ISRD-2 sample. This can be due either to the fact that the questions asked in both surveys are not the same and that the other independent variables included in the analysis vary, or it is a specificity of the sample.

As out of these six variables remaining after logistic regression, five relate to a criminogenic context (attitude towards violence, neighbourhood disorganization, crime at school, having delinquent peers, and truancy), we decided to re-run the analyses without those in order to know which should be selected. Self-control and the other 10 independent variables were introduced into the logistic regression (1,000 bootstrap samples, backward LR). Four variables remained: self-control at the top of the list, followed by *gender*, *life events* and *attachment to school*. Without the five variables, gender is significant and therefore the results are consistent with many previous studies where boys bully more their peers than girls. Also, although negative life events have not been addressed specifically in the literature related to bullying, an impact of such stressful life events in the family on child behaviour was expected. As suggested by the revised strain theory, adolescents who experienced more than

one negative event in their life tend to display more problem behaviour and to bully their peers more often than other juveniles (Agnew, 1985). The last variable relates to Hirschi's social control theory (Hirschi, 2002) which proposes that individuals who maintain close bonds to conventional institutions such as school are less likely to commit delinquent acts because they will care about the expectations of the teachers and will respect and adopt their norms and values. The respect a child has for the teacher can be due to the education received by the parents or/and to the bond the teacher has created with the child. As mentioned by the societal vulnerability theory (Walgrave, 1992), a pupil who feels accepted by a teacher will tend to become more attached to that teacher and, in order to preserve this relationship, the pupil will apply himself to school work and respect his teacher's behavioural expectations of him.

These two analyses show that the context overrides variables such as gender, life events and attachment to school. This is good news when thinking about prevention, as it is easier to intervene on the context than on individual variables. Dumas (2000) cites a comparative study between German, British and French schools conducted by Jacques Pain. It shows that when young people are regularly confronted with verbal and physical violence and when the institution ignores or is not able to control it, they prefer to become an offender rather than remaining a victim or being the next one. The advantage of intervening on the context is the possible impact on many youths. Moreover, knowing that behaviour patterns are established at a very young age and are difficult to change (Dumas, Neese, Prinz & Blechman, 1996), a good prevention programme would be a benefit and reduce the need for individual therapy.

To summarise, we observed that self-control, attitude towards violence and truancy relate powerfully to bullying in both surveys. In the Vaud sample parental supervision, the time spent with family or at home and with peers are also strong predictors of bullying. Moreover, boys are more at risk then girls to bully their peers. Finally, the school climate and the reaction of the teacher when a child is attacked are also related to bullying. In the national sample, criminogenic variables relate to bullying: neighbourhood disorganization, crime at school and having delinquent peers. It is interesting to note that depending on the variables introduced in logistic regression, the variable sex is not as important as presented in the literature. Globally boys are more involve in bullying but once we consider other variables, gender influence disappears. The independent variables related to bullying are presented in the next table.

Table 5-1 Independent variables related to bullying in each sample

	Vaud sample	ISRD-2 sample
Demographic context	gender	
Individual	self-control	self-control
Family	parental supervision	
	violence legitimising norms of masculinity	violent attitude
	activities with family/at home	
School	truancy	truancy
	school climate	school problems
	reaction of the teacher	
Peers	activities with peers	delinquent friends
Neighbourhood		neighbourhood problems

Fortunately, the presence of risk factors does not lead all adolescents to bullying others. About 12% of youths in the Vaud sample and 8% in the national sample have more than half of the risk factors (variables selected in the logistic regression), but are not categorized as bullies. Those teenagers are "resilient". A resilient youth is someone who even though he had been exposed to a large number of risk factors fails to present behavioural problems (Born, Chevalier & Humblet, 1997). The reasons can be various. Resilient adolescents have a stable relationship with a reference person coming from outside the nuclear family or of the extended family or they have personal resources such as coping with problems in an active manner (rather than being fatalistic, passive and resigned), have faith in their own efficacy, have a high self-esteem or are perseverant (Lösel & Bliesener, 1990). Moreover, the same circumstances do not necessarily have the same consequences. This means that even though some pupils have more than half of the risk factors, they have not all become bullies (Dumas, 2000). In future, some of these aspects could be included in the questionnaire in order to determine protective factors.

5.1.4. Influence of the school context on bullying

The testing of hypotheses 3 and 5 utilized the clustered nature of the samples with adolescents nested within schools. The variables kept at Level 1 (individual) are those selected in the logistic regression. At Level 2 (school), we introduced aggregates of variables originally measured at the individual level in the analyses.

The third hypothesis (Vaud sample) proposes that schools have an effect on the rate of bullying and that a certain number of variables explain the variability between schools in bullying prevalence (i.e. why the rates of bullying per school differ). The findings were that the mean bullying rates of pupils in all schools are not equal. Furthermore, each of the Level 1 variables introduced in the model has a significant effect on bullying, and their odds ratios are similar to those found in the logistic regression; these variables are self-control, gender, school climate, attitude towards violence, reaction of the teacher, activities with family/at home, activities with peers, parental supervision and truancy. Multilevel analysis brought out two important aspects. First, the influence of the reaction of the teacher on bullying (intervention of the teacher versus no intervention of the teacher when a child is victimized, measured at the individual level) is not the same in all the schools but none of our Level 2 variables explain why this is the case. Second, a variable that has a significant effect at Level 2 has been found: the standard deviation of the school climate. This variable is significant in relation to the intercept and therefore is directly linked to the prevalence of bullying behaviour at a given school, without interaction with any individual variable. This shows that in schools where pupils' perceptions of school climate vary widely, the risk of bullying behaviour is greater. None of the other Level 2 variables helped explain the variability between schools in bullying.

The fact that the opinion of the students varies considerably in certain schools is an important observation that we should attempt to understand. School climate relates to the teaching climate of the school, the social climate of the school and to affiliation with teachers. That a pupil finds his school climate negative can be due to various reasons; for example, the teenager has been or is victimized and thus his perception of the climate is negative, or following Sherman's theory, punishment is perceived as unfair and can lead to defiant reactions that increase future offending (Sherman, 1993; Ttofi & Farrington, 2008). Gottfredson and colleagues (Gottfredson *et al.*, 2005) also found that schools in which students perceived greater fairness and clarity of rules had less delinquent behaviour and less student victimization. In our data, no effect of the mean perception of school climate measured has been found; therefore, it is not the school climate as such that had an effect on bullying, but an effect of the variation of this perception. This links up to theory in the sense that such diverging perceptions could be due to a certain lack of fairness or to the perception of it.

As hypothesis 5, the **last hypothesis** (ISRD-2 sample) states that school has an effect on the rate of bullying and that the variability between schools in the prevalence of bullying can be explained by a certain number of variables. Unexpectedly, there is no significant variability between schools and therefore the use of multilevel analysis in the national sample is not justified. As explained in section 3.4, the fact that there is no significant difference in the rates of bullying between schools in the national sample is probably due to the small number of interviewed pupils and, more particularly, the small number of bullies per school.

5.2. POLICY IMPLICATIONS

Regarding the various anti-bullying programmes, the majority target the school community. A review of the programmes specifically intended to prevent or reduce school bullying has been done for the Campbell Collaboration and for the Swedish National Council for Crime prevention (Farrington *et al.*, 2008; Ttofi *et al.*, 2008). The authors suggest as a main policy implication of their review that new anti-bullying programmes should be designed and tested based on their results. Farrington *et al.* (2008) showed that school-based anti-bullying programmes are often effective. Some programmes, especially those based on the work of Dan Olweus, are more promising than others. They suggest targeting children age 11 or older rather than younger children, due to their cognitive ability to integrate the prevention programme. The most important programme components associated with a decrease in bullying are parent-training, improvement of playground supervision, disciplinary methods, school conferences, videos, information for parents, classroom rules and classroom management. In a few anti-bullying programmes, the overall community is considered, the objective being to raise awareness of the problem of bullying and to involve community members in the anti-bullying initiative.

In the present study, individual characteristics, school context and the family context are also important. Furthermore, our research brings to light that the neighbourhood context is of utmost importance in understanding bullying. To the knowledge of the author, this neighbourhood characteristic has not been considered in the prevention of bullying. This aspect could be a future direction to investigate. As Dumas (2000) suggests, solutions are inevitably shared between the contexts in which the young person lives. Therefore, prevention should not be considered in one context only but should integrate all established risk factors due to their mutual interaction. This reflection is closely akin to the approach used in systemic therapy, which seeks to address people not at an individual level but as people in relationships

– dealing with the interactions of groups – and encourages going beyond individual symptoms in order to understand problems as part of the wider social system.

Bullying policy is a good way to inform parents, schools and authorities about the issue. No cost-benefit analysis of anti-bullying programmes has been carried out yet, though money spent on the implementation of intervention programmes can be considered as a good investment if a prevention programme delivers positive results. Moreover, let us remember that Olweus (1994) found that bullying intervention also has an influence on other antisocial activities (vandalism, fighting, theft and truancy).

5.3. LIMITATIONS OF THE STUDY

The main strength of this dissertation is that the two samples are complementary. The first one includes all the 8th and 9th grades of certain districts of Canton Vaud meaning that in this region, the 14–16 year old teenagers are well represented. As this survey is geographically restricted, the external validity has certain limitations, whereas the second survey is a representative national sample of 7th, 8th and 9th grades, allowing the generalisation of our results to Swiss adolescents of this age.

Limitations persist, however. The first one to highlight is the fact that the different studies used in this dissertation are cross-sectional and thus we cannot assess causality. This type of study allows observing many correlations (in our case, between bullying and different independent variables) but we cannot claim that these variables are the "causes" of a later child delinquency. It would be necessary to carry out a longitudinal study in order to better observe causal relations.

Another limitation is the use in the multilevel models of aggregated data coming mainly from the pupils' questionnaires, leading to potential same-source bias (Duncan & Raudenbush, 1999). The use of self-reported data for measuring the dependent variable and the school characteristic can generate a spurious association between them. This comes either from the correlation of the measurement error in both reports or because the dependent variable affects the perception or the report of the school attribute. For example, pupils who are victims of bullying might perceive school climate more negatively; therefore, in future, obtaining information from sources other than pupils should be planned.

5.4. DIRECTION FOR FUTURE RESEARCH

In order to give the school context more consideration, future research should better prepare the collection of school-related variables of Level 2. As mentioned above, a collation of information obtained from other sources than from pupils is necessary. Questionnaires given to the teacher and to school management could provide more information about a school's organisation (e.g., rules, type of collaboration with the parents) as well as another vision of the school (e.g., school climate, feeling of security). Structural indicators of the town/district in which the school is located could also be collected (e.g., unemployment rate of the town/district, rate of taxes paid in the town/district). Indeed, in Switzerland, quite a lot of mixture between pupils coming from different neighbourhoods occurs in schools; this could be of interest in order to be able to separate neighbourhood from school effects. Finally, it would be interesting to establish variables on the class level in order to take into account the three level structure: students nested within classes nested within schools. In the Vaud sample, the identification of school classes were not made available in Lausanne and Yverdon, making it impossible to test whether classes had an effect on bullying. Concerning the national sample, the number of bullies per school being small, the number per class becomes insignificant. However, with a less strict definition of bullying, it would be worth testing the class influence on bullying in a future study.

In this dissertation, bullying was dichotomized as it is done most of the time in the literature. However, by dichotomizing the outcome, important information on the intensity of bullying is lost. Bosworth *et al*. (1999) have already mentioned that the measurement of bullying could also be approached as a continuous coding. Thus, his studies used the variable of bullying as continuous and applied a multiple regression analysis. As the bullying scale is a skewed frequency scale, it would appear that negative binomial regression would constitute a better solution. Thus, it would be interesting to repeat the analysis with the same independent variables but with a more continuous dependant variable.

Since 2003, a new form of problem behaviour has emerged following the generalisation of the use of computer technology by young people: cyber crime. The rapid development of technology increases dependency on computer systems. Thus, the computer offender uses this dependency as a significant opportunity to engage in delinquent behaviour (Choi, 2008). Communication via Web-based chat rooms, Microsoft Network messenger (MSN), e-mail or Short Message Service (SMS) are used daily more and more by youth. In a study effectuated

in Switzerland in 2002 among youths between 16 and 20 years old, more than 80% had surfed on the Internet during the last month (Narring *et al.*, 2004).

Nowadays, youths confront not only bullying but "cyberbullying", a new form of harassment. Cyberbullying consists in tormenting, threatening, harassing, humiliating, embarrassing or otherwise targeting a child by another child using the Internet, forum, chat, blog and mobile phones. There are two kinds of cyberbullying: direct attacks (messages sent directly to the victim) and cyberbullying by proxy (using others to help cyberbully the victim, either with or without the accomplice's knowledge). This behaviour is thus similar to bullying at school but some differences exist. First, it happens not only within the school. Then, to commit cyberbullying, some knowledge about technology is needed, meaning that it is a weapon usable by those who physically or socially are unable to practise bullying. Moreover, the victim usually does not know the identity of the author of the misdeeds. This new phenomenon could be a hot topic for future research.

In the framework of this dissertation, we focussed on the offenders of bullying and on bullying perpetrated between pupils. The victims of bullying would merit a similar analysis. Furthermore, it would also be interesting to broaden the field of investigation to bullying between teacher and pupil. Some research has already explored students being bullied by teachers (Olweus, 1999a). Olweus mentions that a teacher who bullies students is unlikely to be able to solve or prevent bullying among students. Moreover, the teacher will probably contribute to the development of such behaviour, giving the message to the other students that bullying is permitted. Nowadays, the media mention the possibility that teachers can also be bullied. In the US and UK, teachers have complained about being bullied by pupils. For example, pupils use mobile phones to film them losing their temper and then send the videos to their friends for amusement, or the teacher is humiliated through offensive video clips posted online.

CHAPTER SIX: CONCLUSION

This dissertation sheds further light on bullying issues in Switzerland, among youths aged 13–16 years. As no national data were previously available, this work has filled a gap. Furthermore, the innovation of the dissertation has been to study the effect of the school context on bullying. Our results have shown that bullying relates not only to individual variables but also to contextual variables. Thereby, appropriate statistical methods have been applied to bring to light the variables on which society can potentially intervene. From a methodological perspective, we demonstrate that the Computer-Assisted Web Interview (CAWI) method significantly reduces the cost of self-reported surveys in the classroom without decreasing the quality of the data (hypothesis 1). This should therefore affect the design of future research projects.

The present study analyzes the "profile" of the authors of bullying (hypotheses 2 and 4). The importance of certain variables related to bullying have been highlighted, the most significant being self-control, attitudes towards violence, and truancy. Self-control and the attitude to violence play an important role in explaining bullying. As these characteristics are acquired during childhood, through socialising and the practices of the family, intervention could be working groups at school, classroom training in social and problem-solving skills, individual psychological treatment or family counselling. Several studies have shown the importance of parental intervention to reduce behaviour problems (Serketich & Dumas, 1996). Adults should take absenteeism seriously, as we interpret it as a good indicator of an underlying problem – rather than a variable explaining bullying. Other variables such as having a low

parental supervision, spending little with the family and more with peers, are also related to bullying. This gives him more opportunities to meet other unsupervised youths and thus to bond with deviant peers. The neighbourhood in which the child grows up has an impact on his behaviour. Although neighbourhood problems in Switzerland are not as critical as in other countries, it is important that the authorities have an attentive eye on this problem and intervene in ailing neighbourhoods. As the families living in these neighbourhoods are most of the time in critical situation (such as alcohol consumption of the parents, violence between parents, father with an unstable work), assistance to them could be foreseen. Furthermore, a lot of violence at school, a negative school climate and a non-intervention of the teacher when a child is victimized are also crucial variables related to bullying. Fortunately, a school can intervene on those variables. School policies should, for example, include bullying as an integral part. Bullying could be integrated in the "code of conduct" elaborated by most schools that establish rules not to be transgressed or of unacceptable behaviour. Of course, the school principal and the staff should become aware of the problematic and of the importance of intervening when they are confronted with such situation. Moreover, analysis permitted to show the existence of effects of the school on bullying (hypothesis 3). In particular, the rate of bullying in a given school increases when there is a wide variation among students of the same school in their perception of their school climate. Another important aspect concerns teachers' reactions when pupils fight: this variable does not influence the bullying rate to the same extent, depending on the school. Unfortunately, hypothesis 5, which also tested the effects of the school on the rate of bullying, has not been validated because of the limited number of pupils interviewed per school. We should bear in mind that the different studies used in this dissertation are cross-sectional and thus do not allow assessing causality. Moreover, the pupil lives in a dynamic environment. This implies, for example, that when the pupil has a difficult character, teachers and/or parents can be tempted to give up, leading to a reinforcement of a problematic dynamic.

As is often the case when studying delinquency and aggressive behaviour, we are faced with low prevalence. Moreover, when the context is taken into account and thus a level of analysis added, the number of cases decreases per unit (in our case, school). This work has highlighted the importance of having a sample allowing the application of multilevel analysis. This means that in the case of the ISRD-2 sample, the number of pupil interviewed per school should have been higher, which would pose no difficulty with the CAWI method. In future, the sampling strategy should take into consideration the type of analysis planned. Another point

to underline concerns the gathering of independent information on the school context. Questioning teacher and school management should be planned into future research.

The results also demonstrate that children bullying others also develop delinquent behaviour and abuse more substances. Therefore, bullying should be seen as a step towards delinquency rather than as a step in the "normal" development of teenagers, and receive serious attention. Moreover, literature advocates that aggressiveness is a stable disorder. Dumas and his colleagues show that 75% of the children aggressive at the beginning of the school year are still aggressive at the end of it (2000). So, by detecting the offenders of bullying – and with adequate intervention –, it is possible to target delinquency in general. By addressing the problems raised at school, the school itself can reduce the extent of violence not only in its own walls but also on a broader scale by what can be called "a diffusion of the benefit" (Killias, 2001, n°749).

We should bear in mind that implementing a programme means to examine the effectiveness of such programmes. In Switzerland, four scientific projects devoted to violence or delinquency have evaluated the introduction of prevention programmes. One concerns the efficacy of a prevention programme against bullying in kindergarten and elementary school. The second one tests two programmes in the city of Zurich (z-proso project). The aim is to reinforce the social competence of children and the targets are the parents and the children. Another project addresses schoolchildren from the first to the fifth year, as well as their parents and teachers, in various Germanic cantons (ESSKI). Finally, the Supra-f study evaluates a drug addiction prevention programme. Twelve centres are located in the French- and German-speaking parts of Switzerland (Eisner, Ribeaud & Bittel, 2006). Now that an assessment of bullying has been made in Canton Vaud, it would be important to design and implement a violence prevention programme and subsequently evaluate it.

Meanwhile the problem is taking on a new dimension with the emergence of "cyberbullying," a new form of bullying. Until now, research has not focused on the profile of young people cyberbullying others. Further research is necessary concerning this expanding form of behaviour, to assess its impact on the overall patterns of bullying, on its perpetrators and its victims. It will undoubtedly raise many challenging questions on a hot topic that the Press has frequently alluded and has already been raised in Parliament.

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APPENDICES

Appendix A	Questions used in the Vaud questionnaire
Appendix B	Lucia, S., Herrmann, L. & Killias, M. (2007). How important are interview methods and questionnaire designs in research on self-reported juvenile delinquency? An experimental comparison of *Internet vs. paper-and-pencil* questionnaires and different definitions of the *reference period. Journal of Experimental Criminology* (3), 39-64.
Appendix C	Questionnaire of the national survey (French version)

APPENDIX A

Questions used in the Vaud questionnaire, DFJ-Police 2000 project[31]

[31] "Questionnaire DFJ-Police 2000. Lausanne: Institute of Criminology and Penal Law."

Questionnaire pour élèves

Chers élèves,

Nous nous intéressons aux préoccupations et aux opinions des jeunes. Avec ce questionnaire nous aimerions en savoir plus sur les problèmes importants que tu vis au quotidien et sur tes expériences avec la violence.

Il va de soi que ce questionnaire est anonyme. Par conséquent, ni tes parents, ni les enseignants de l'école ou d'autres personnes dans l'école ne verront tes réponses. Après avoir rempli le questionnaire, glisse-le dans l'enveloppe ci-jointe et veille à bien la fermer. Les enveloppes seront ramassées à la fin de la période et ramenées à l'Université de Lausanne où leur contenu sera analysé. Puis les questionnaires seront détruits. Tu es bien entendu libre de ne pas répondre à certaines questions ou à l'ensemble du questionnaire.
Les questions concernent tes expériences personnelles et tes opinions ; il est donc important que tu y répondes seul. Si une question ne te paraît pas claire, n'hésite pas à nous le dire et nous t'aiderons. Si aucune des possibilités proposées ne s'applique précisément à toi, choisis ce qui correspond le mieux à tes expériences ou à tes opinions. Ne réfléchis pas longtemps aux questions, réponds spontanément ! Il n'y a pas de réponses justes ou fausses.

Afin de simplifier l'écriture, toutes les formes masculines figurant dans ce texte concernent aussi les personnes de sexe féminin.

D'avance nous te remercions de ton aide.

♦ ♦ ♦

Informations personnelles

5. Ton sexe: ❍ garçon ❍ fille

7. Est-ce que tu vis avec tes parents?

❍ Je vis avec mes deux parents ⇒ *continue avec la question 8*

❍ Je ne vis pas avec mes deux parents (séparé, divorcé, décédé) mais je vis ⇩ *(une seule réponse)*

- ❍ avec ma mère
- ❍ avec mon père
- ❍ dans une famille d'accueil
- ❍ en partie avec ma mère et en partie avec mon père (garde alternée)
- ❍ autres:_____

9. Quelle(s) nationalité(s) as-tu actuellement?

- ❍ Suisse
- ❍ Italie
- ❍ Espagne
- ❍ Portugal
- ❍ Croatie
- ❍ Autre, laquelle: _____
- ❍ Macédoine
- ❍ Allemagne
- ❍ Slovénie
- ❍ Turquie
- ❍ France
- ❍ Bosnie-Herzégovine
- ❍ République Fédérale de Yougoslavie
  - ❑ Monténégro
  - ❑ Serbie (sans Kosovo)
  - ❑ Kosovo

Comment tu te vois

14. Voici quelques caractéristiques avec lesquelles on peut décrire des personnes. S'il te plaît indique honnêtement pour chaque caractéristique à quel point cela s'applique à toi.

C'est une longue liste. Essaye quand même de répondre à chaque question.

	jamais	rarement	parfois	souvent	toujours
J'agis spontanément sans trop réfléchir.	❍	❍	❍	❍	❍
J'évite les tâches difficiles.	❍	❍	❍	❍	❍
J'aime tester mes limites en faisant des choses risquées.	❍	❍	❍	❍	❍
Si j'ai le choix, je préfère travailler avec les mains qu'avec la tête.	❍	❍	❍	❍	❍
Je pense d'abord à moi, même si cela cause des problèmes aux autres.	❍	❍	❍	❍	❍
Je perds assez vite la maîtrise de moi-même.	❍	❍	❍	❍	❍
Je ne suis pas trop préoccupé de préparer mon avenir.	❍	❍	❍	❍	❍
Si quelque chose est compliqué, j'abandonne vite.	❍	❍	❍	❍	❍
J'aime prendre des risques juste pour le plaisir.	❍	❍	❍	❍	❍
Je préfère bouger plutôt que de rester assis et de réfléchir.	❍	❍	❍	❍	❍
Quand je suis en colère contre quelqu'un, j'ai plutôt envie de le frapper que de discuter avec lui.	❍	❍	❍	❍	❍
Quand quelqu'un d'autre a des problèmes, cela me laisse indifférent.	❍	❍	❍	❍	❍
Quand je suis vraiment fâché, il vaut mieux que les autres m'évitent.	❍	❍	❍	❍	❍
J'essaie d'obtenir ce que je veux, même si je sais que ça crée des problèmes aux autres.	❍	❍	❍	❍	❍
Je me préoccupe plus de ce qui m'arrive aujourd'hui que de mon avenir à long terme.	❍	❍	❍	❍	❍
Parfois j'aime faire des choses qui pourraient me causer des problèmes.	❍	❍	❍	❍	❍
Dans la vie, les tâches faciles sont celles qui m'apportent le plus de plaisir.	❍	❍	❍	❍	❍
Je préfère sortir et faire quelque chose que de lire ou réfléchir.	❍	❍	❍	❍	❍
Si les gens se fâchent à cause de mon comportement, c'est leur problème et non le mien.	❍	❍	❍	❍	❍
Quand j'ai un sérieux différend avec quelqu'un, j'ai de la peine à en parler calmement sans m'énerver.	❍	❍	❍	❍	❍
Je n'aime pas les tâches difficiles qui m'amènent aux limites de mes capacités.	❍	❍	❍	❍	❍
Pour moi, l'excitation et l'aventure sont plus importantes que la sécurité.	❍	❍	❍	❍	❍
Je fais ce dont j'ai le plus envie, même si cela met en danger un projet à plus long terme.	❍	❍	❍	❍	❍
J'ai plus d'énergie et plus besoin de bouger que les autres jeunes de mon âge.	❍	❍	❍	❍	❍

Ce que les autres pensent de ton comportement

Maintenant **imagine** que tu te disputes à la pause avec quelqu'un d'une autre classe. Tu te mets en colère et tu lui donnes un coup de poing au visage. Il/elle tombe; son jeans se déchire et son nez saigne fortement. Toi tu n'es pas blessé.

16. Si tu faisais quelque chose de ce genre, quelle importance accorderais-tu à l'avis des personnes suivantes? (*une réponse par ligne)*

L'avis de ..... sera (ont).....	pas important	plutôt pas important	moyennement important	plutôt important	très important	Je ne sais pas
ma mère	❍	❍	❍	❍	❍	❍
mon père	❍	❍	❍	❍	❍	❍
mon enseignant(e)	❍	❍	❍	❍	❍	❍
mon (ma) meilleur(e) ami(e)	❍	❍	❍	❍	❍	❍
les jeunes de mon groupe d'amis	❍	❍	❍	❍	❍	❍
des autres de ma classe	❍	❍	❍	❍	❍	❍

La menace de différents types de violence

18. Nous pouvons être confrontés à la violence dans différentes situations. Combien de fois te sens-tu menacé aux endroits suivants, lorsque tu n'es pas accompagné? (*une réponse par ligne)*

Je me sens menacé…	jamais	rarement	parfois	souvent	très souvent	je ne me sens pas concerné
sur le trajet entre mon domicile et l'école	❍	❍	❍	❍	❍	❍
à la gare ou aux autres arrêts de transports publics pendant la journée	❍	❍	❍	❍	❍	❍
lorsque je suis dehors le soir dans mon quartier/mon village	❍	❍	❍	❍	❍	❍
dans le bus/tram, pendant la journée	❍	❍	❍	❍	❍	❍
dans les toilettes de l'école	❍	❍	❍	❍	❍	❍
dans le train, pendant la journée	❍	❍	❍	❍	❍	❍
quand je suis seul à la maison	❍	❍	❍	❍	❍	❍
après la tombée de la nuit dans le bus/tram	❍	❍	❍	❍	❍	❍
pendant les cours dans la classe de l'école	❍	❍	❍	❍	❍	❍
après la tombée de la nuit dans le train	❍	❍	❍	❍	❍	❍
lorsque je suis dehors dans mon quartier pendant la journée	❍	❍	❍	❍	❍	❍
à la pause dans la cour de récréation	❍	❍	❍	❍	❍	❍
à la gare ou aux autres arrêts de transports publics la nuit	❍	❍	❍	❍	❍	❍
tard le soir dans les forêts, parcs	❍	❍	❍	❍	❍	❍
dans la rue le soir	❍	❍	❍	❍	❍	❍

Tes loisirs

23. Voici quelques questions sur tes loisirs. Fais-tu les choses suivantes? *(une réponse par ligne)*

A la maison

	jamais	rarement	parfois	souvent	très souvent
Lire un livre.	❍	❍	❍	❍	❍
Regarder la télévision ou une vidéo.	❍	❍	❍	❍	❍
Jouer d'un instrument de musique.	❍	❍	❍	❍	❍
Jouer sur l'ordinateur ou une console de jeux.	❍	❍	❍	❍	❍
Peindre, bricoler, faire de la photographie, etc.	❍	❍	❍	❍	❍
Téléphoner à des amis.	❍	❍	❍	❍	❍
Ecrire quelque chose (journal intime, lettre, etc.).	❍	❍	❍	❍	❍
Aider ma mère ou mon père à la maison.	❍	❍	❍	❍	❍
Ne rien faire, flemmarder.	❍	❍	❍	❍	❍
Entreprendre quelque chose avec mes parents à la maison (faire des jeux, discuter, etc.).	❍	❍	❍	❍	❍

A l'extérieur

	jamais	rarement	parfois	souvent	très souvent
Se retrouver avec des amis dans la rue.	❍	❍	❍	❍	❍
Aller dans des centres de loisirs.	❍	❍	❍	❍	❍
Faire du sport dans un club.	❍	❍	❍	❍	❍
Faire du sport tel que du ski, snowboard, foot, streetball etc.	❍	❍	❍	❍	❍
Aller en boîte ou à des fêtes.	❍	❍	❍	❍	❍
Entreprendre quelque chose avec les parents à l'extérieur.	❍	❍	❍	❍	❍
Retrouver des amis dans des cafés/ bars/ restaurants.	❍	❍	❍	❍	❍
Aller à des concerts de musique rock, pop etc.	❍	❍	❍	❍	❍
Aller voir des manifestations sportives.	❍	❍	❍	❍	❍
Participer à des groupes de jeunes (Scout, groupe biblique, etc.).	❍	❍	❍	❍	❍

24. D'ordinaire quand tu sors, est-ce que tu dis à tes parents où tu vas ? *(une seule réponse)*

- ❍ Non, jamais ou très exceptionnellement
- ❍ Parfois, rarement
- ❍ Souvent
- ❍ Très souvent, toujours

25. D'ordinaire quand tu sors, est-ce que tu dis à tes parents (ou beaux-parents) avec qui tu es ? *(une seule réponse)*

- ❍ Non, jamais ou très exceptionnellement
- ❍ Rarement, parfois
- ❍ Souvent
- ❍ Très souvent, toujours

26. D'ordinaire quand tu sors le soir, est-ce que tu as une heure de rentrée fixée par tes parents (ou beaux-parents), si le lendemain tu as congé ? *(une seule réponse)*

- ❍ Non, jamais ou très exceptionnellement
- ❍ Rarement, parfois
- ❍ Souvent
- ❍ Très souvent, toujours
- ❍ Je ne sors jamais le soir

Quand les élèves se font embêter

Lorsqu'on rit et se moque d'une personne, mais aussi lorsqu'une personne est frappée ou menacée, celle-ci peut se sentir profondément troublée. Ce genre de choses arrive aussi entre écoliers et écolières.

Les questions suivantes ne concernent pas les situations dans lesquelles tu t'es volontairement mesuré avec quelqu'un pour t'amuser.

29. Combien de fois les actes décrit ci-dessous **te sont-ils personnellement arrivés** *dans ton école* ou *sur le chemin de ton école* **depuis les vacances d'automne de l'année passée** (octobre 2003)?

	Jamais	Une ou deux fois	Parfois (plus de deux fois)	Une fois par semaine	Plusieurs fois par semaine
J'ai été frappé ou ai reçu des coups de pieds.	❍	❍	❍	❍	❍
J'ai été menacé, extorqué, racketté.	❍	❍	❍	❍	❍
J'ai été ridiculisé, vexé (par exemple par des paroles blessantes).	❍	❍	❍	❍	❍
Mes affaires ont volontairement été cassées.	❍	❍	❍	❍	❍
J'ai été harcelé sexuellement (peloter, siffler, avances répétitives verbales ou non verbales, etc.).	❍	❍	❍	❍	❍
J'ai été ignoré et exclu (par exemple personne ne veut s'asseoir à côté de toi).	❍	❍	❍	❍	❍

31. Combien de fois as-tu **toi-même fait** *dans ton école* ou *sur le chemin de ton école* les actes décrit ci-dessous **depuis les vacances d'automne de l'année passée** (octobre 2003)?

	Jamais	Une ou deux fois	Parfois (plus de deux fois)	Une fois par semaine	Plusieurs fois par semaine
J'ai frappé ou donné des coups de pieds à un élève	❍	❍	❍	❍	❍
J'ai menacé, extorqué, racketté un élève.	❍	❍	❍	❍	❍
J'ai ridiculisé, vexé un élève (par exemple par des paroles blessantes).	❍	❍	❍	❍	❍
J'ai volontairement cassé des affaires d'un élève.	❍	❍	❍	❍	❍
J'ai harcelé sexuellement un élève (peloter, siffler, avances répétitives verbales ou non verbales, etc.).	❍	❍	❍	❍	❍
J'ai ignoré et exclu un élève (par exemple tu ne veux pas t'asseoir à côté de lui ou d'elle).	❍	❍	❍	❍	❍

32. Quand un élève de ton école se fait embêter ou agresser par d'autres élèves, quelle est, en général, la réaction des adultes? *(plusieurs réponses possibles pour chaque ligne)*

	Ils ne voient rien	Ils ignorent la bagarre	Ils interviennent et calment la situation	Ils dénoncent à la direction	Ils punissent les élèves impliqués	Ils discutent avec les élèves des raisons du conflit	Je ne sais pas
Direction de l'école	❍	❍	❍	❍	❍	❍	❍
Enseignants	❍	❍	❍	❍	❍	❍	❍
Concierge de l'école	❍	❍	❍	❍	❍	❍	❍
Conducteur de bus	❍	❍	❍	❍	❍	❍	❍
Parents	❍	❍	❍	❍	❍	❍	❍
Voisins	❍	❍	❍	❍	❍	❍	❍

A propos de l'école

34. Dans quelle mesure les affirmations suivantes correspondent à tes sentiments? (*une réponse par ligne)*

	faux	plutôt faux	plutôt vrai	vrai
L'école				
Je me plais bien dans mon école.	❍	❍	❍	❍
Le plus souvent à l'école j'attends que le temps passe.	❍	❍	❍	❍
Dans mon école nous apprenons beaucoup de choses importantes pour notre futur.	❍	❍	❍	❍
L'école est inutile et j'essaie d'y avoir à faire le moins possible.	❍	❍	❍	❍
Dans mon école il y a souvent des disputes entre élèves.	❍	❍	❍	❍
Ce que nous apprenons à l'école n'a souvent rien à voir avec la réalité.	❍	❍	❍	❍
Ta classe				
Dans notre classe il y a différents groupes qui ne veulent rien avoir à faire ensemble.	❍	❍	❍	❍
En classe nous nous entendons bien.	❍	❍	❍	❍
Pendant les cours il y a souvent du bruit et de l'agitation dans notre classe.	❍	❍	❍	❍
Dans ma classe je me sens souvent à l'écart.	❍	❍	❍	❍
L'enseignant(e)				
En général, dans mon école les profs se donnent beaucoup de peine à donner les cours de manières variées.	❍	❍	❍	❍
La plupart du temps mes profs me traitent équitablement.	❍	❍	❍	❍
Dans mon école il y a un(e) prof qui me prend comme je suis et qui m'aide quand j'en ai vraiment besoin.	❍	❍	❍	❍
Dans mon école il y a un(e) prof en qui j'ai très confiance.	❍	❍	❍	❍
Il y a au moins un(e) prof qui est pour moi un vrai exemple.	❍	❍	❍	❍

35. As-tu redoublé une année à l'école (à l'exclusion du redoublement volontaire pour passer, en 7ième, de VSO en VSG ou de VSG en VSB) ?

- ❍ Non, jamais
- ❍ Oui, une fois
- ❍ Oui, plusieurs fois
- ❍ Je ne souhaite pas répondre

} ❍ 1ère ❍ 2ème ❍ 3ème ❍ 4ème ❍ 5ème ❍ 6ème ❍ 7ème ❍ 8ème ❍ 9èrme

36. En te rappelant tous les bons et mauvais souvenirs d'école, est-ce qu'en général tu aimes ou non l'école ? *(une seule réponse)*

- ❍ J'aime beaucoup
- ❍ J'aime assez
- ❍ Je n'aime pas tellement
- ❍ Je n'aime pas du tout
- ❍ Je ne souhaite pas répondre

38. Qu'envisages-tu de faire après ta scolarité obligatoire ? *(une seule réponse)*

- ❍ Commencer à travailler
- ❍ Faire un apprentissage, une école professionnelle
- ❍ Continuer mes études (bac, maturité, université.)
- ❍ Autre, à savoir : _____
- ❍ Je ne sais pas encore

Ta famille

39. Dans quel type de logement vis-tu actuellement?

J'habite …

- ❑ Dans une maison individuelle ou mitoyenne
- ❑ Dans un immeuble avec 3 à 5 appartements
- ❑ Dans un immeuble avec 6 à10 appartements
- ❑ Dans un immeuble avec 11 à 20 appartements
- ❑ Dans un immeuble avec plus de 20 appartements

40. As-tu ta propre chambre dans ce logement?

- ❑ Je partage ma chambre avec ____ frère(s)/sœur(s) ou demi-frère(s)/sœur(s) et_____ autres personnes
- ❑ J'ai une chambre uniquement pour moi.

Formation et profession de tes parents

Si les réponses concernant tes parents ne correspondent pas tout à fait, choisis la plus proche de la réalité

41. Quelle *formation professionnelle* ton père et ta mère ont achevée?

Mon père	Ma mère
❍ Pas de formation professionnelle	❍ Pas de formation professionnelle
❍ Apprentissage, école professionnelle	❍ Apprentissage, école professionnelle
❍ Ecole de commerce, d'infirmier, de police, haute école pédagogique (école pour devenir instituteur)	❍ Ecole de commerce, d'infirmière, de police, haute école pédagogique (école pour devenir instituteur)
❍ Etudes (université, EPF, technicum)	❍ Etudes (université, EPF, technicum)
❍ Autre, à savoir :_____	❍ Autre, à savoir :_____
❍ Je ne sais pas	❍ Je ne sais pas
❍ Je ne souhaite pas répondre	❍ Je ne souhaite pas répondre

La famille pour toi

42. Que penses-tu des affirmations suivantes?

	Pas d'accord du tout	Plutôt pas d'accord	Plutôt d'accord	Tout à fait d'accord
Un homme doit être fort et protéger sa famille.	❍	❍	❍	❍
Un homme qui n'est pas prêt à se défendre par la force s'il se fait insulter est un lâche.	❍	❍	❍	❍
En tant que père, l'homme est chef de famille et il a le droit de s'imposer par la force s'il le faut.	❍	❍	❍	❍
Si une femme trompe son mari, il a le droit de la frapper.	❍	❍	❍	❍
Un homme doit être prêt à défendre sa femme et ses enfants par la force.	❍	❍	❍	❍
La femme et les enfants doivent obéir au père de famille.	❍	❍	❍	❍
Un homme doit être prêt à s'imposer par la force physique face à quelqu'un qui dit du mal de sa famille.	❍	❍	❍	❍
Les hommes devraient avoir le droit de posséder une arme à feu afin de défendre leur famille ou leurs biens.	❍	❍	❍	❍

Les choses interdites que font les jeunes

49. Beaucoup de jeunes ont fait au moins une fois des choses interdites, par exemple voler ou endommager le bien d'autrui. Quelques-uns ont déjà frappé ou blessé quelqu'un intentionnellement (par cela nous ne pensons pas à des situations dans lesquelles des jeunes se bagarrent pour le plaisir). Qu'en est-il pour toi?

As-tu déjà ...		Quel *âge* avais-tu quand tu as fait cela pour la *première* fois?	Combien de fois durant les 12 derniers mois (Pâques 2002)*?*	Combien de fois est-ce que la police a eu connaissance d'un de ces incidents depuis Pâques 2002*?*
manqué l'école pendant au moins une journée complète sans une excuse valable (courber)?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
fuit du domicile des tes parents (ou du domicile des personnes chez qui tu vis) pour une nuit ou plus, sans leur permission (fuguer)?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
conduit une voiture, une moto, un vélomoteur, sans être titulaire d'un permis de conduire?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé dans un magasin ou dans un kiosque pour plus de 50 francs?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé dans un magasin ou dans un kiosque pour moins de 50 francs?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé un vélo, un vélomoteur ou un autre véhicule?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé des objets sur un vélo, un vélomoteur ou une moto (ou avoir participé) ?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
cassé la porte d'une auto pour voler quelque chose (ou avoir participé) ?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
blessé quelqu'un en le tabassant?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
menacé quelqu'un avec une arme ou un objet dangereux?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
endommagé volontairement des fenêtres, des cabines téléphoniques, des lampadaires, des bancs, des panneaux de signalisation ou d'autres choses?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé quelque chose à quelqu'un (seul ou en groupe)?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
menacé quelqu'un de le frapper s'il ne paie pas (seul ou en groupe)?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
importuné quelqu'un dans la rue de sorte qu'il/elle veuille appeler la police?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
pris quelque chose à quelqu'un par la violence (seul ou en groupe)?	❍ Non ❍ Oui	___ ans	___ fois	___ fois

As-tu déjà ...		Quel *âge* avais-tu quand tu as fait cela pour la *première* fois?	Combien de fois durant les 12 derniers mois (Pâques 2002)*?*	Combien de fois est-ce que la police a eu connaissance d'un de ces incidents depuis Pâques 2002*?*
volé quelque chose à l'école?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
volé quelque chose à la maison?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
utilisé les transports publics sans payer (alors qu'il faudrait payer) ?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
vendu du haschisch, de la marijuana ou du cannabis ?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
vendu certaines drogues dures telles que l'héroïne, cocaïne, LSD, ecstasy, amphétamines ?	❍ Non ❍ Oui	___ ans	___ fois	___ fois
mis intentionnellement le feu à quelque chose qui ne t'appartenait pas? Par exemple, à une grange, voiture, forêts, cave, appartement etc.	❍ Non ❍ Oui	___ ans	___ fois	___ fois
tagué ou sprayé des graffiti, par exemple sur des murs, sur des bus, sur des sièges de bus,etc	❍ Non ❍ Oui	___ ans	___ fois	___ fois

50. Voici quelques drogues et moyens d'intoxication. As-tu toi-même déjà pris de telles produits/substances et si oui, combien de fois depuis Pâques 2002?

	Je n'ai jamais entendu parler de cette drogue	As-tu déjà pris cette drogue?	Quel âge avais-tu quand tu l'as pris pour la première fois?	Combien de fois *as-tu pris cette drogue* durant les 12 derniers mois (Pâques 2002) ?						Combien de fois est-ce que la police a eu connaissance d'un de ces incidents depuis Pâques 2002?
	↓	↓	↓	jamais	une fois	2-5 fois	1 fois/ mois	1 fois/ semaine	tous les jours	↓
Haschisch, Marijuana	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Alcool fort, Whisky, etc.	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Héroïne	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Turd	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Bière, vin, alcopops	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Speed, amphétamine	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Cigarette, tabac	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Ecstasy	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
TDM	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
Cocaïne	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois
LSD, champignons hallucinogènes	❍	❍ Non ❍ Oui	__ ans	❍	❍	❍	❍	❍	❍	___ fois

Merci de ta collaboration.

APPENDIX B

Lucia, S., Herrmann, L. & Killias, M. (2007). How important are interview methods and questionnaire designs in research on self-reported juvenile delinquency? An experimental comparison of *Internet vs. paper-and-pencil* questionnaires and different definitions of the *reference period. Journal of Experimental Criminology* (3), 39-64.

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How important are interview methods and questionnaire designs in research on self-reported juvenile delinquency? An experimental comparison of Internet vs paper-and-pencil questionnaires and different definitions of the reference period

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Abstract There has been relatively little change over recent decades in the methods used in research on self-reported delinquency. Face-to-face interviews and self-administered interviews in the classroom are still the predominant alternatives envisaged. New methods have been brought into the picture by recent computer technology, the Internet, and an increasing availability of computer equipment and Internet access in schools. In the autumn of 2004, a controlled experiment was conducted with 1,203 students in Lausanne (Switzerland), where "paper-and-pencil" questionnaires were compared with computer-assisted interviews through the Internet. The experiment included a test of two different definitions of the (same) reference period. After the introductory question ("Did you ever..."), students were asked how many times they had done it (or experienced it), if ever, "over the last 12 months" or "since the October 2003 vacation". Few significant differences were found between the results obtained by the two methods and for the two definitions of the reference period, in the answers concerning victimisation, self-reported delinquency, drug use, failure to respond (missing data). Students were found to be more motivated to respond through the Internet, take less time for filling out the questionnaire, and were apparently more confident of privacy, while the school principals were less reluctant to allow classes to be interviewed through the Internet. The Internet method also involves considerable cost reductions, which is a critical advantage if self-reported delinquency surveys are to become a routinely applied method of evaluation, particularly so in countries with limited resources. On balance, the Internet may be instrumental in making research on self-reported delinquency far more feasible in situations where limited resources so far have prevented its implementation.

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Key words internet survey · research method · self-reported juvenile delinquency · time reference period

Introduction

In this paper we first give an overview of the methods used in research on self-reported delinquency of juveniles. After a summary of the state of knowledge, we present a randomised experiment conducted with more than 1,200 students in a medium-sized Swiss city (Lausanne, Lake Geneva region) having a population of approximately 150,000, or about 500,000 if the suburbs are included. It will be shown that interviewing students on self-reported delinquency and victimisation through Internet questionnaires is feasible. This method was shown to have little effect on the response behaviour, including answers and missing data. In view of the many advantages of Internet interviews in terms of administration, and in view of the positive attitude of students and schools toward this method, this new approach would be instrumental in making interviews with students on such subjects even more popular, particularly so in countries where research budgets are limited, and would allow a considerable increase in the size of international, national and local samples.

Background: current methods of interviewing on self-reported delinquency

Compared with victimisation surveys, interviewing on self-reported delinquency has remained relatively traditional. During the methodological debate preceding the first International Self-reported Delinquency (ISRD) Survey of 1992 (ISRD-1, Junger-Tas, Terlouw & Klein, 1994), the question of computer-assisted telephone surveys had been briefly discussed but rapidly dismissed, because of a lack of relevant pretests of self-reported delinquency (Klein, 1989). A consensus was rapidly reached that face-to-face interviewing was the most reliable method. Interviewing in the classroom was dismissed at that time, because the samples were supposed to include age brackets (up to age 20 years) beyond compulsory school age in many countries.

It is not clear whether findings based on interviews in the home setting produce results comparable to written interviews in the classroom. Some types of behaviour that may be sensitive to reveal in the household may not be sensitive for reporting in a classroom setting, and *vice versa* (Gfroerer, 1996). Some researchers found no difference in adolescent reports of sensitive information given in home and school settings (O'Malley, Bachman & Johnston, 1983; Zanes & Matsoukas, 1979); other researchers did find such differences. Needle, McCubbin, Lorence and Hochhauser (1983) found that adolescents interviewed at home reported a lower mean lifetime use of cigarette and beer than did adolescents interviewed at school, indicating that the presence of parents influenced their responses. Turner, Lesser, George, Hubbard and Witt (1992) found that the presence of a parent during a household interview inhibited the reporting of drug use, particularly by respondents 12 to 17 years of age. Johnston and O'Malley (1985) indicated that one of the major advantages of conducting a survey of adolescents in a school setting is that anonymity can be

assured; home surveys are less anonymous. Furthermore, adolescents can answer sensitive questions as to illicit behaviour without their parents or other family members being present. Information coming from controlled experiments shows that, at home, adolescents are more willing to provide sensitive information to the computer than to an interviewer or on self-administered questionnaires (Turner, Ku, Sonenstein & Pelck, 1996; Wright, Aquilino, & Supple, 1998). In a quasi-experimental test with two parallel samples conducted in two west German cities (Freiburg and Cologne), Oberwittler and Naplava (2002) compared interviews of young people of 15 years in the classroom (on a self-administered, written questionnaire) and through the classical face-to-face method (with a self-administered self-report part). This test showed that interviews in the classroom are feasible, cost less, and would produce a better representation of students from lower classes and immigrant background. The results did not differ dramatically, inasmuch as interviews in the classroom provided slightly higher rates of self-reported offences and lower victimisation rates. Response differences could be noted across modes. Concerning self-reported delinquency, the analysis revealed large differences, both in the prevalence of delinquency and its correlations with independent variables such as minority status or low socio-economic status (SES). The authors explained the different rates by a selection effect, whereas the correlations they observed might also have supported a mode effect related to the interview situation.

Nowadays, paper-and-pencil (P&Ps) surveys in classrooms are a common practice in empirical adolescence research. Beyond the test by Oberwittler and Naplava (2002), this technique has been successful in other international studies, such as the multi-site survey on school violence conducted by the Kriminologisches Institut Niedersachsen (KFN) in Hanover (Wetzels, Enzmann, Mecklenburg, & Pfeiffer, 2000), and was applied in several other cities, including Zurich (Eisner, Manzoni, & Ribeaud, 2000). In some countries, improvements were noticed when the students were seated in rooms that were larger than the usual classroom, leaving a generous space between them, and were asked to drop the completed self-administrated questionnaire into a ballot box (Killias, 2002, p. 266). These improvements touch mainly upon the anonymity of personal data and, thus, may increase responses on sensitive items. Already during ISRD-1, Switzerland (Killias, Villettaz & Rabasa, 1994) and other countries using face-to-face interviews have applied the *sealed envelope technique* (Becker & Günther, 2004).

Interviewing through the Internet in the classroom

In recent years schools have made considerable progress in the use of computers. Many secondary schools throughout Europe may by now have a computer room where students are being taught how to use computer technology. This should make it possible, at least theoretically, to replace classical self-administered questionnaires (using paper and pencil) by computer-assisted interviews (CAIs) in the school's computer room. A major school-based survey using computer-assisted Internet interviews has been conducted in the Netherlands (Weerman et al., 2003). Haines, Case, Isled and Hancock (2004) applied interactive computer-assisted self interviewing over a 5-years period to 5,000 young people in Wales and internationally. They showed that this instrument provides reliable and valid results

(Haines et al., 2001; Haines & Case, 2003; Case & Haines, 2004, cited by Haines et al., 2004).

Several studies have suggested that the level of privacy in the various modes of interviewing may dramatically affect the survey measurements of sensitive behaviours (Jones & Forrest, 1992; Turner, Danella & Rogers, 1995). Traditionally, surveys have attempted to encourage more accurate reporting of sensitive behaviour by combining face-to-face interviews with a self-administered P&P questionnaire to be handed over to the interviewer in a sealed envelope (Killias et al., 1994; Becker & Günter, 2004). Some respondents may still remain suspicious as to the privacy of their responses, especially if an identification number is recorded on the questionnaire. Another criticism of P&P questionnaires is the difficulties arising in the extensive use of contingent questioning (that is, branching or skip patterns). Even well-educated respondents may have trouble following the instructions for navigating through a complex self-administered form (Jenkins 1997, cited by Turner et al., 1998). New and innovative methods are required to improve the validity of the data (Gfroerer, 1996), because, increasingly, respondents are being asked sensitive questions (Tourangeau & Smith, 1996) on topics such as sexual behaviour, drug use, and illegal activities. More recently, Fendrich et al. (2004) compared self-reported data from computer-assisted interviews with biological drug testing among adults (18 to 40 years). Here, the interviews suggested a higher prevalence of marijuana use and lower rates of cocaine and heroin use than found in the drug tests. Under-reporting of recent drug use was apparent in interviews for all three substances. Subjects were more likely to under-report cocaine use than marijuana use and, more generally, the more recent use of any of these substances, which is consistent with the idea that disclosure is affected by the sensitivity of behaviour.

Many studies that collect such information have used computer-assisted interviewing, including computer-assisted self-interviewing (CASI) and audio computer-assisted self-interviewing (Audio-CASI). Beebe, Harrison, McRae, Anderson and Fulkerson (1998) evaluated the impact of a computerised self-administered questionnaire on the collection of sensitive information in a school survey of adolescents. They compared the reports of sensitive information obtained by computers with those obtained by the more traditional P&P method in the case of students that were randomly assigned to the two survey conditions. In the computer room some contextual information, such as the number of students in the room, the distance between students, and whether the computer was networked before the student was logged out and the responses saved onto a floppy disk, was taken into account. It was found, as a tendency, that a higher percentage of students reported an individual item in the P&P version rather than in the computerised version. These results are quite different from those obtained in similar studies conducted in household settings (Turner et al., 1996; Wright, Aquilino, & Supple, 1998) and in research on the effects of computer surveys on the disclosure of sensitive information in general (Weisband & Kiesler, 1996, cited by Beebe et al., 1998). In fact, perceived privacy among respondents increases with the distance between computers in the same room. Weisband and Kiesler (1996, cited by Beebe et al., 1998) found no apparent differences between P&P and computer questionnaires so long as the computers were at least five feet apart. These results suggest that the relatively small distance between many of the students who used computers accounts

for the different finding reported by Beebe et al. (1998). They concluded that the effects of student proximity may have been exacerbated by the interface utilised in their study. In fact, the programme left the answers on the screen while the student moved the cursor to a "continue" button, thus potentially exposing his answers to others. In contrast, some CAI programmes refresh the screen as soon as the respondent hits a key for the answer. Weisband and Kiesler (1996, cited by Beebe et al., 1998) suggested that such differences in the computer interfaces may affect disclosure. In their study, Turner et al. (1998) randomly assigned 1,690 subjects to either an audio-computer-assisted self-interviewing (audio-CASI) or to a more traditional self-administered questionnaire (P&P), in order to measure highly sensitive behaviour. Young men aged 15 to 19 years were much more likely to report risky behaviour when interviewed with audio-CASI measurement technology. The technology appears to have a more pronounced effect on the reporting of behaviour that is particularly sensitive, stigmatised, or subject to serious legal sanctions, than on less sensitive areas of conduct. In conclusion, the greater privacy offered by audio-CASI technology may reduce under-reporting.

Several studies have specifically evaluated the comparability of computer-based (CB) and P&P questionnaires used for adults (Mead & Drasgow, 1993; Hetter, Segall & Bloxom, 1997). Thus, Choi and Tinkler (2002) mentioned that, despite the straightforward nature of the process of "computerising" P&P items, one cannot simply assume that CB or a Web-based (WB) system is equivalent to P&P items. Findings from previous studies should not be generalised to other, similar situations. In their study, Choi and Tinkler (2002) evaluated the score comparability, in mathematics and reading tests, of CB and P&P items administered to 800 third- and tenth-grade students. They found that Web-based online assessments have a great potential in large-scale student assessments. In fact, online assessments provide immediate feedback on students and reduce the massive printing and mailing costs of distributing P&P test materials for a large-scale assessment programme. The challenge is to produce CB scores that are comparable to their traditional P&P counterparts when the administration mode of the test changes. Not only the types of items should be taken into account, but also the effects of format or design on the levels of unit and item response or on data quality. It has been shown that there are systematic effects of design on the behaviour of respondents in Web surveys. Already in the 1970s, Wright and Barnard (1975, 1978, cited by Jenkins & Dillman, 1997) had written that the problems of completing self-administered questionnaires fell into two categories: problems with the language used, and problems arising from the way information is arranged in space. Self-administered surveys, whether on paper or through the Web, rely on both verbal (question wording) and visual information to communicate with respondents (Jenkins & Dillman, 1997; Redline & Dillman, 1999). Different authors (Sanchez, 1992/Smith, 1995, both cited by Couper et al., 2001) reported several examples where unintentional layout changes produced differences in both self-administered and interviewer-administered surveys, while Dillman, Redline and Carley-Baxter (1999) showed how routing or skip errors are affected by the design of a paper questionnaire. Different experiments on design approaches have been assessed in Web surveys. For example, Couper et al. (2001) assessed the effect of having or not having a progress indicator. They also compared the differences between presenting related items on one screen and

presenting one question per screen. Finally, they tested the influence between clicked radio buttons and entering a numeric response in a long-text or short-text box.

Rather than arguing for one approach over another for all applications, these results suggest that Web survey design should reflect the particular task at stake. Together with question wording, the presentation of the items in a Web survey can and does provide guidance to respondents on what kinds of answers are being sought, as they often do in other interviewing contexts. Design also affects the efficiency with which respondents complete a Web survey, which may be an important consideration in reducing burden and minimising incompleteness and non-response.

Definition of the reference period

In general, scholars are highly concerned about the impact of different interview methods. For example, the advent of computer-assisted telephone interviews (CATIs) in victimisation studies provoked considerable debate, particularly in continental Europe (Killias, 2002, pp. 69–73). Of course, concern about the effects of any change in methodology requires comment. However, researchers used to be far less concerned about the influence produced in respondents by different wordings in a questionnaire. In an experimental test of two different versions of an otherwise identical questionnaire in the Netherlands, Scherpenzeel (1992) had shown, however, that respondents reported between two to three times higher rates of robbery and burglary victimisation once they were asked whether or not they had been victims of any such offence "over the last 12 months", than they did in the other version used in the International Crime Victimisation Surveys (van Dijk, Mayhew & Killias, 1990), where respondents were first asked whether they experienced any such incident "over the last 5 years", and, if so, "when, more precisely, it had taken place" (namely during the last year or earlier). The experiment by Scherpenzeel (1992), as well as several randomised experiments in Germany (Schwind, Fetchenhauer, Alhborn, & Weiss, 2001; Kury, 1994) and in Switzerland (Scherpenzeel, 2001), showed at the same time that victimisation rates differed only slightly between CATIs, written questionnaires, and personal interviews. Thus, the way the definition of the reference period is phrased turned out to be far more crucial than the interview method. In the present context, we therefore varied the way the reference period was defined, and tested two versions experimentally within the P&P sample (see below, "The two reference periods").

Our questionnaire

Methods have been tested so far in many studies, but this has been done in different contexts, such as self-administered written questionnaires in a classroom vs face-to-face interviews in household settings. It is a difficulty in many studies that, whenever differences are found, it is hard to tell whether they reflect the method or the context. Therefore, we decided to conduct a controlled experiment comparing computer-assisted interviews through the Internet with P&P questionnaires. In our test the same self-administered questionnaire was tested in schools with students aged 14 to 16 years, once on paper and once on the computer.

We started with a small controlled experiment involving 181 students aged approximately 14 years from ten classes of grade 8. Having compared the two methods in this experiment, we have then been able to improve the method, and a second trial was performed with 1,203 students of grades 8 and 9 (aged 14 to 16 years) who were interviewed in 56 classes.

Some important points mentioned in the literature have been taken in account. First, we tried to motivate respondents by making the questionnaire quite "user-friendly", by using colours but, at the same time, avoiding too many visual features so as not to distract the respondent from the task of answering the questions seriously. In brief, we tried to develop a design that was as friendly as it was sober. We decided not to use a progress indicator, in order to prevent students from noticing too quickly that answering "yes" increased the length of the questionnaire.

In Switzerland most schools have the same type of computer (Macintosh) and use the same browsers (Safari), which means that the questionnaire always appears on the screen in the same way. Our questionnaire includes around 50 general questions and more than 700 follow-up questions. Thus, we grouped questions when this made sense, in much the same way as in the P&P version where questions concerning one topic (for example: school, grade, gender, age) are displayed on one page in order to avoid scrolling as much as possible. Before going to the next page, respondents had to mark a box "go to following page", thus leaving them the time needed to check, and eventually correct, any answers given to any questions on the screen. Thus, corrections could be made with comparable ease in the paper-and-pencil version and in the Internet version. Moreover, when the items were part of a scale (implying a strong correlation among the items), we presented them as far as possible on one screen. Different studies have shown that fewer data are missing when radio buttons are used, as in our questionnaire. A short box is used whenever the respondents had to answer with a number (for example, "How many times did you do...?"). A short box is also used to add a category that is not on the list presented. In fact, short boxes allow the respondents to answer without being forced into pre-fixed categories. We used the long-box entry only a few times in order to allow the respondents to add comments but without expecting any information from this.

Distance between students (Beebe et al., 1998) has not been formally controlled, but students were seated with sufficient space between them. Since one-half of the students in each class were interviewed in the computer room, sufficient space was available to leave one seat empty between any two students filling out a written questionnaire. In the computer room each student was seated in front of "his/her" computer presenting the programme before starting the questionnaire. The computer teacher was present in order to assist in the case of unforeseen technical problems.[1] Each answer given was recorded online in a database that is hosted on a Web-server of the University of Lausanne. Once a student responds to any item, the questionnaire will automatically jump to the next relevant question, leaving out all those that are no longer of interest, given the answer to the preceding one. Corrections are also possible. All these features are consistent with many of the

[1] In the present test the first author was present at all sessions in Cossonay. During the second test, supervision was less systematic, because the presence of computer teachers turned out to be more decisive. Once duly instructed, they could easily replace researchers as supervisors.

advantages of computer-assisted telephone interviews or computer-assisted personnel interviews (CATIs/CAPIs). Beyond these advantages, students do need less time, since, being immediately led to the next relevant question, they do not have to read questions that do not apply. They also have more fun in doing this job, whereas filling out a self-administered questionnaire may remind students more of a written examination. Finally, teaching students how to fill out a questionnaire over the computer is also more consistent with the school's educational mission.

As found when comparing computer-assisted with classical personal interview techniques, the major advantages of the new method are:

- fast availability of the results, all responses being quickly accessible,
- the low financial burden, since, for a questionnaire of the length implied here, data entry takes at least 25 minutes for a well-trained student and costs at least €10 each when controls are included, or about €20,000 for a sample of 2,000 students.

Beyond these and other potential advantages, the important issue to be addressed is that of finding out whether computer-assisted interviews through the Internet will produce results similar to those of traditional "paper-and-pencil" questionnaires. The results of our controlled experiments offer new insights into this question.

Simultaneously, and in order to learn more about the effects of different ways of defining the reference period, we tested two versions of the paper-and-pencil questionnaire. Details are given in the section "The two reference periods". So far, scholars had been very much concerned about respondents "forgetting" to report certain incidents, but they were far less worried about telescoping effects, although the latter can distort results to at least the same extent (Killias, 2002, pp. 74–78).

The controlled experiment

As a first step, a small controlled experiment was conducted in two local schools near Lausanne, involving 181 students of grade 8, which compared interviews with classical paper-and-pencil questionnaires and through the Internet. This pre-test showed that the two methods gave similar results and that Internet interviews are feasible for a study on self-reported delinquency in a student population aged about 15 years.

The programme used in the present experiment was PHP Surveyor, i.e. a set of PHP scripts that interact with MySQL to develop surveys, publish surveys, and collect responses to surveys. Once a survey has been created, it can be published as an online survey (displayed as single questions, groups of questions, or all questions on one page), or a data entry system can be used for administration of paper-based versions of the survey.

Because of the dichotomous or dual nature of all data used in this paper, all rates in the following tables have been tested for significance using chi-squared. We present a number of comparisons in each table and recognise that the use of a large number of significance tests at the 0.05 alpha level is likely to result in a number of statistically significant results just by chance. Since we want to be particularly sensitive to possible differences between the different approaches, we decided not to

correct for multiple test bias, which would have resulted in more stringent significance thresholds. Nonetheless, when a large number of tests were run, we were cautious not to make too much of the results gained. In all tables *N* refers to the total sample under each experimental condition (including missing values).

Random assignment to Internet or P&P

During October 2004, a far larger experiment, involving 1,203 students, was conducted in the schools of the city of Lausanne (Lake Geneva, Switzerland). The procedure of randomisation was as follows: the student seated next to the door was assigned number 1; after him/her, all other students were numbered in increasing order, i.e. number 2, 3, 4, etc. The teacher had to look up, on a table handed over to him, the column corresponding to the number of each student in his or her class. For each column, the teacher had a list of random numbers created by our computer program for each student. According to the number of computers available in the computer room, the teacher then called the first 12 to 15 students numbered under that column to proceed to the computer room. For example, in a class of 20 students with 12 computers available, the teacher had to send students with the random numbers 19, 9, 12, 2, 13, 4, 14, 3, 20, 15, 11, and 18 to the computer room; the remaining eight students (random numbers 6, 7, 10, 16, 17, 8, 5, and 1) stayed in the classroom, where they received a P&P questionnaire. The purpose was to use all computers available. Therefore, the sample interviewed through the Internet was 615 vs 588 interviewed by P&P.

The students assigned to P&P randomly received one of the two versions of the written questionnaire (see "The two reference periods"). The numbers were entirely equal (308 vs 280), the "12-month" version being systematically used as the first option.

This procedure produced samples of very similar demographic composition. We also found no significant differences in the reporting of non-sensitive information, such as family structure, belonging to a group of friends, or attachment to school.

The student population studied included the full scale of programmes available at that level (i.e. a track leading later to the "baccalauréat" or high school diploma, a medium-level track usually leading to more qualified apprenticeships, and a lower-level track leading to less qualified jobs).

MA students of the Ecole des sciences criminelles at Lausanne University supervised interviews in the classroom using "paper-and-pencil" questionnaires. In the computer room, in most cases, the computer teacher was the supervisor; after some time, it was felt that an MA student did not have to be present, since students hardly raised questions while filling out the questionnaire on the computer. Compared with paper, the computer offers more privacy, at least so long as the teacher (or any other person) is not standing directly behind the respondent; even in such a case, a person standing behind could at best see the answers given on a particular page, while answers given on a paper-and-pencil questionnaire remain visible on all pages. Computer teachers usually are not acting as class teachers and, therefore, are not considered so much as "authority figures" by the students. The presence of such a person was judged necessary to assure the smooth functioning of computer equipment and Internet connections. Contrary to filling out a paper-and-

pencil questionnaire, students at a computer are kept busy, which makes it much easier than in the classroom to maintain discipline.

The two reference periods

In the present questionnaire, students were asked, with respect to victimisation, drug use, as well as delinquency items, whether they had *ever* experienced them, and, if so, how many times it had happened over the last year. The paper and Internet questionnaires did not differ in lifetime prevalences[2], but the paper-and-pencil questionnaire was presented in two versions, each given to one-half of that sample.

In order to test the effect of different definitions of the "last-year" reference period, students assigned to P&P were randomly assigned to the two versions. In the "P&P" version (filled out by 588 students), the time limit (for the reference period) was phrased in one of the following two ways:

(A) "How often did you do this....over the last 12 months?"
(B) "How often did you do this....since the school vacation of October 2003?"

Two hundred and eighty students randomly received a questionnaire asking "Since October 2003", and 308 received one asking "During the last 12 months". The interviews took place between mid-October and early November 2004. Thus, the period "since the October 2003 vacation" was slightly longer (on average, about 12.5 months). Since only version A was available over the Internet, the comparison for all last-year rates included only those students of the "P&P" condition who were assigned to questionnaire version A. Lifetime rates were compared using the full samples (615 on the Internet and 588 on "P&P"), since versions A and B did not differ on how lifetime prevalence questions were phrased.

In the following section, *lifetime* prevalence rates are compared across the interview methods, using the full sample of 1,203 students and the chi-squared tests. In the section "Effect of different definitions of the reference period", the results concerning the effect of the two definitions of reference period ("*over the last 12 months*" versus "*since the October 2003 vacation*") are presented. In "Last-year prevalence rates by interview method", the comparison of the two methods on *last-year* prevalence rates (923 students) are presented.

Results

Lifetime prevalence rates by interview method

Victimisation by interview method (lifetime)

Table 1 shows the prevalence of the several types of victimisation over the entire lifetime, as well as an overall measure of victimisation.

[2] This test was limited to the paper–pencil questionnaire, the reason being that this questionnaire could be far more easily presented in two versions.

Table 1 Lifetime prevalence of victimisation in the two groups by interview method, in percentages

Percentage Victimised	P&P (N=588)	Internet (N=615)
Robbery	9.7	8.8
Racket (extortion)	5.2	5.1
Sexual assault	4.8	5.1
Assault	10.7	12.9
All victimisations	23.0	24.0

The results shown in Table 1 indicate that reports on victimisation does not differ between the two interview methods.

Self-reported use of substances by interview method (lifetime)

Rates of self-reported use of several substances over the entire lifetime are presented in Table 2.

Table 2 shows that rates of self-reported drug use do not significantly differ across interview conditions.

Delinquency scores by interview method (lifetime)

In Table 3 we observe two strong differences out of 22 comparisons ($P<0.01$), the rate for vandalism being higher, the rate for driving without licence being lower, under the "P&P" condition. In two cases there is a marginally significant trend towards differences: theft at home and selling of soft drugs ($P<0.05$). Overall, rates are significantly higher under the P&P and under the Internet condition in two cases each.

Effect of different definitions of the reference period

Although the school vacation of 2 weeks during October is far from being a landmark in a child's subjective calendar, it may be helpful in testing the effect of limiting more precisely the beginning of the reference period, compared with the usual "over the last 12 months" phrase where the limit may be far less compelling for the respondent. Results of this test are presented in this section.

Table 2 Lifetime prevalence of self-reported drug use by interview method, in percentages

Users (%)	P&P (N=588)	Internet (N=615)
Beer, wine, alcopops	62.5	62.2
Strong alcohol	44.0	41.7
Cigarettes, tobacco	44.1	48.3
Marijuana, hashish	22.7	18.9
Heroin	1.1	1.3
Cocaine	1.6	0.5
Ecstasy	2.2	1.0
LSD/hallucinogens	2.7	1.3
Speed/amphetamines	1.1	1.2

Table 3 Lifetime prevalence of self-reported delinquency by interview method, in percentages

Deviant Behaviour (% Admitting)	P&P (N=588)	Internet (N=615)	
Truancy	26.0	24.8	
Running away	7.1	6.3	
Driving without licence	**36.8**	**44.4**	$P \leq 0.01$
Shoplifting (more than €35)	12.8	13.4	
Shoplifting (less than €35)	38.4	39.7	
Breaking into a car	1.9	2.6	
Harassing somebody in the street	11.1	12.0	
Theft at school	20.9	21.8	
Theft at home	**12.6**	**17.1**	$P \leq 0.05$
Fare dodging	66.0	63.6	
Vehicle theft	6.0	5.8	
Theft of an object from a vehicle	4.7	5.9	
Assault	15.3	13.3	
Threats with gun/knife	4.1	3.6	
Racket	1.4	1.3	
Robbery	3.8	3.8	
Arson	5.2	4.4	
Selling soft drugs	**7.8**	**4.8**	$P \leq 0.05$
Selling hard drugs	1.4	1.2	
Graffiti	21.8	20.4	
Vandalism	**17.3**	**10.9**	$P \leq 0.01$
Theft from the person	17.9	14.6	

Victimisation by reference period

Table 4 shows that victimisation rates tend to be consistently (although not significantly) higher under the "during the last 12 months" condition. These results match earlier findings of Dutch experimental research (Scherpenzeel, 1992). Whenever the limit is more "subtle", victims may be willing to report incidents as "recent" although, strictly speaking, they had occurred prior to the last 12 months. Contrary to the Scherpenzeel (1992) experiment, this tendency is visible in our data, even though victims in a first step were invited to indicate any such experiences *over their entire lifetime*. Despite this opportunity to report all incidences, a more clearly defined temporal limit seems to be taken more seriously and keeps respondents from "cheating" by including all experiences as "recent".

Table 4 Victimisation rates by definition of the reference period ("12 months" vs "October 2003")

Percentage Victimised	"Since School Vacation of October 2003" (N=280)	"During the Last 12 Months" (N=308)
Robbery	3.2	4.9
Racket (extortion)	1.1	2.6
Sexual assault	1.1	2.6
Assault	4.6	7.1
All victimisations	8.6	13.0

Self-reported use of substances by reference period

Table 5 shows quite similar rates of self-reported drug use for both time limits, with a few (insignificant) exceptions regarding illegal drugs where rates are generally low. In interpreting these results, one should also take into account the low absolute frequencies. In order to avoid the problem of low frequencies, we collected drugs into just two categories in Table 6. No significant difference emerges.

Delinquency scores by reference period

Table 7 shows that the two time limits produced similar rates of self-reported delinquency, just as found for the use of substances. No significant difference is found.

The results presented in Tables 4, 5, 6 and 7 suggest that respondents may be influenced by the definition of the reference period, more in connection with victimisation and drug use than in relation to delinquency. For self-reported delinquency (SRD) items, the way the temporal limit is framed apparently does not matter. However, for victimisation items, although there is no significant difference, the "12-month" version seems to cause higher rates than the "last October" version. Formulae like "over the last 12 months" may easily be understood by some respondents as meaning "what fairly recent experience comes to your mind?", whereas clear-cut time limits may be taken more seriously. A feasible explanation may be that victims (and particularly those who experienced serious crimes) may appreciate having an opportunity to report whatever they may have lived, whereas reporting delinquent acts or drug use may not be as "rewarding" for the respondent. Therefore, respondents may be more inclined to respect the time limit (however phrased) when it comes to delinquency or otherwise less desirable acts, whereas victims will try to include whatever they can as long as the reference period does not make it absolutely clear that certain incidences are no longer relevant. Although, in the present case, the questionnaire allowed victims in the first

Table 5 Substance use by definition of the reference period ("12 months" vs "October 2003")

Users (%)	"Since School Vacation of October 2003" (*N*=280)	"During the Last 12 Months" (*N*=308)
Beer, wine, alcopops	57.8	60.3
Strong alcohol	42.4	41.1
Cigarettes, tobacco	41.8	36.2
Marijuana, hashish	19.9	21.8
Heroin	0.4	1.7
Cocaine	1.1	1.7
Ecstasy	1.5	2.7
LSD, hallucinogens	2.3	3.1
Speed, amphetamines	0.4	1.4

Table 6 Use of "soft" vs "hard" drugs by definition of the reference period ("12 months" vs "October 2003")

Users (%)	"Since School Vacation of October 2003" (*N*=280)	"During the Last 12 Months" (*N*=308)
Soft drugs (alcohol, cigarette/ tobacco, cannabis/marijuana)	68.5	71.1
Hard drugs (heroin, coke, XTC, speed, LSD)	3.5	5.3

place to report any offences experienced over the entire lifetime, the telescoping of older incidents into the last-year period could not be entirely prevented.

Last-year prevalence rates by interview method

In this section last-year prevalence rates of victimisation, drug use and offending, measured by Internet vs Paper-and-pencil, will be compared. As mentioned in the sections "The two reference periods" and "Effect of different definitions of the reference period", the paper-and-pencil version included an experimental test of two different definitions of the (same) reference period. Therefore, only students who, under the paper-and-pencil condition, had the same questionnaire as in the Internet

Table 7 Delinquency rates by definition of the reference period ("12 months" vs "October 2003")

Deviant Behaviour (% Admitting)	"Since School Vacation of October 2003" (*N*=280)	"During the Last 12 Months" (*N*=308)
Truancy	20.8	18.8
Running away	6.2	3.6
Driving without licence	26.3	33.6
Shoplifting (more than €35)	8.3	10.4
Shoplifting (less than €35)	29.1	24.4
Breaking into a car	1.4	1.3
Harassing somebody in the street	8.7	9.3
Theft at school	12.4	13.1
Theft at home	8.0	7.6
Fare dodging	50.4	51.8
Vehicle theft	4.7	4.0
Theft of an object from a vehicle	4.0	4.3
Assault	9.5	10.9
Threats with gun/knife	2.5	3.3
Racket	1.1	1.0
Robbery	3.6	2.0
Arson	4.3	3.0
Selling soft drugs	4.4	7.6
Selling hard drugs	0.4	1.7
Graffiti	17.8	16.3
Vandalism	10.9	11.2
Theft from the person	12.6	11.1

Table 8 Last-year prevalence (in percentages) of victimisation by interview method

Percentage Victimised	P&P (N=308)	Internet (N=615)
Robbery	4.9	4.8
Racket (extortion)	2.6	2.2
Sexual assault	2.6	1.5
Assault	7.1	4.2
All victimisations	13.0	10.9

version (with a reference period of 12 months) have been considered in the following comparisons of the two interview methods. Thus, the number of person interviewed under the "P&P" condition is reduced from 588 to 308, while the Internet sample remains unchanged (615).

Victimisation by interview method (12 months)

Table 8 gives the rates of victimisation over the last 12 months.

In Table 8, higher rates are found in the "P&P" version in all five comparisons, whereas rates were more equal when lifetime prevalence rates were considered (as in Table 1). However, just was as found for the lifetime prevalence rates, no significant difference is found regarding last-year rates.

Self-reported use of substances by interview method (12 months)

Table 9 shows that the results do not significantly differ across interview conditions, with the exception of the use of LSD/hallucinogens, which is significantly more often admitted in the "P&P" method. Compared with lifetime prevalence rates (Table 2), where the picture is more balanced, the results in Table 9 are similar to those observed for victimisation (Table 8), in so far as drug use, apart from smoking cigarettes and tobacco, is more often admitted under the "P&P" condition. We shall return to this surprising difference between lifetime and last-year comparisons in the discussion section. However, use of hard drugs being too rare in our sample to allow

Table 9 Last-year prevalence of self-reported drug use by interview method, in percentages

Users (%)	P&P (N=308)	Internet (N=615)	
Beer, wine, alcopops	60.3	57.0	
Strong alcohol	41.1	38.2	
Cigarettes, tobacco	36.2	36.6	
Marijuana, hashish	21.8	16.8	
Heroin	1.7	1.2	
Cocaine	1.7	0.5	
Ecstasy	2.7	0.5	Marginal cell frequencies < 5[a]
LSD, hallucinogens	3.1	1.2	$P \leq 0.05$
Speed, amphetamines	1.4	0.7	

[a] No significance test possible

valid significance tests, all soft and hard drugs have been collected into two categories. No significant difference emerges (Table 10).

Delinquency scores by interview method (12 months)

Table 11 gives 12-month rates for all SRD items for the two randomised groups.

In Table 11 we observe only three significant differences out of 22 comparisons: the rate for selling soft drugs, vandalism, and theft from the person, all of them being higher under the "P&P" condition. Once more, however, last-year prevalence rates under the "P&P" condition tend to exceed those under the Internet condition more often than in Table 3, where lifetime rates have been compared.

Summary of comparisons between paper-and-pencil and Internet

Given the somewhat contradictory outcomes, all comparisons between P&P and Internet interviews on victimisation, drug use, and delinquency are presented in Table 12, both for lifetime (Table 12a) and for last-year prevalence rates (Table 12b). In addition to prevalence rates, Table 12c extends the comparison to missing values, i.e. situations where respondents did not answer certain items ("jumping", i.e. leaving the appropriate box blank). The possibilities of non-response (or giving answers such as "I do not know") or "jumping" certain items were strictly identical on both the Internet and the P&P questionnaire. Therefore, it is not without interest to see whether one method produces higher rates of "missing values" (i.e. boxes left blank) than another method[3].

Table 12a shows a reasonably balanced picture. Lifetime prevalence rates are significantly different between the two versions in only four of 36 comparisons, two each favouring one of the two methods. The distribution of insignificant differences is again relatively even, with 13 comparisons yielding higher rates for the Internet, and 19 yielding higher rates for the "P&P" versions.

So far as missing values are concerned (Table 12c)[4], the picture is relatively balanced for the insignificant comparisons (16 vs 11). However, non-response (i.e. "jumping") to questions related to drug use is significantly more frequent—in eight of nine comparisons—under the "P&P" condition. Given the low frequencies of missing values, we have restricted the comparison to lifetime items[5].

So far as last-year prevalence rates are concerned (Table 12b), differences between the two methods are higher, under the "P&P" condition, in 29 out of 36 comparisons from which four rates are significant. Thus, there seems to be some differences between methods where short-term rates are at stake, but not for lifetime prevalence rates. We shall discuss the reasons under the Discussion section.

[3] We thank an anonymous reviewer for the suggestion to look specifically at missing values.

[4] In order not to overcharge the paper, we have not reproduced here the tables with detailed missing values. These results can be obtained on request from the first author.

[5] The results are almost identical for last-year prevalence rates.

Table 10 Last-year prevalence (in percentages) of use of soft/hard drugs by interview method

Users (%)	P&P (N=308)	Internet (N=615)
Soft drugs (alcohol, cigarettes/ tobacco, cannabis)	71.1	66.8
Hard drugs (heroin, coke, XTC, speed, LSD)	5.3	3.1

As mentioned in 'The controlled experiment", we decided not to correct for multiple test bias, since we wanted to be especially caution about possible differences between the two different methods. However, we looked at the differences also using more stringent thresholds of significance (P<0.01). For lifetime prevalence rates, we found two significant differences instead of four and 34 (instead of 32) non-significant comparisons, of which 14 were "in favour" of the Internet and 20 were "in favour" of "P&P". When looking at last-year prevalences, we found no significant differences, and the distribution of insignificant differences was seven "in favour" of the Internet and 29 "in favour" of "P&P". As could be expected, we observed fewer significant differences than with the 0.05 threshold, but the trend did not change.

We also looked at the missing values (lifetime), using P<0.01, and found the same value as in Table 12c. When looking at the prevalence of missing values during the last year, we found only four significant differences, all concerning hard drugs.

Table 11 Last-year prevalence (in percentages) of self-reported delinquency by interview method

Deviant Behaviour (% Admitting)	P&P (N=308)	Internet (N=615)	
Truancy	18.8	18.3	
Running away	3.6	4.5	
Driving without licence	33.6	35.4	
Shoplifting (more than €35)	10.4	8.4	
Shoplifting (less than €35)	24.4	21.6	
Breaking into a car	1.3	1.8	
Harassing somebody in the streets	9.3	9.1	
Theft at school	13.1	12.5	
Theft at home	7.6	8.8	
Fare dodging	51.8	47.0	
Vehicle theft	4.0	4.0	
Theft of an object from a vehicle	4.3	3.6	
Assault	10.9	8.4	
Threats with gun/knife	3.3	2.2	
Racket	1.0	0.8	
Robbery	2.0	2.7	
Arson	3.0	2.5	
Selling soft drugs	7.6	3.8	$P\leq$ 0.05
Selling hard drugs	1.7	0.3	Marginal cell frequencies < 5[a]
Graffiti	16.3	13.8	
Vandalism	11.2	6.4	$P\leq$ 0.05
Theft from the person	11.1	8.4	$P\leq$ 0.05

[a] No significance test possible

Table 12 Summary of all comparisons between "paper-and-pencil" and Internet interviews

Parameter	P&P Significantly Less Than Internet ($P \leq 0.05$)	P&P Less or Equal to Internet, But not Significantly	P&P Higher to Internet, But not Significantly	P&P Significantly Higher than Internet ($P \leq 0.05$)	Total Number of Comparisons
(a) Lifetime prevalence rates					
Victimisation	0	3	2	0	5
Drug use	0	3	6	0	9
Delinquency	2	7	11	2	22
(b) Last-year prevalence rates					
Victimisation	0	0	5	0	5
Drug use	0	1	7	1	9
Delinquency	0	6	13	3	22
(c) Missing values (lifetime)					
Victimisation	0	0	4	0	4
Drug use	0	0	1	8	9
Delinquency	0	16	6	0	22

Interaction effects

Interaction effects between the two methods and several possibly intervening variables, such as gender, nationality, and level of education[6] were considered.

No relevant interaction effects were found with nationality and educational level. Pupils from different national backgrounds and educational levels answered consistently the same way through one or the other version. However, gender seemed to interact with method in the case of some items of offending and victimisation. In general, boys admitted more victimisation over the "Internet", and more delinquent acts on "P&P", while the responses among girls were more balanced, except for drug use, which girls admitted more easily on the Internet. On balance, interaction effects do not seem to produce much change in the picture as it emerges from the preceding sections.

Qualitative observations

During the pre-test (The controlled experiment), a number of qualitative observations were made (Kissling, 2004). In general, it seems that self-administered questionnaires may remind students of a written examination, whereas responding

[6] The Swiss school system offers three different levels of education for the ages at stake, namely (1) the "voie baccalauréat" or high school diploma, which, at age 18 years will qualify students to attend a university or any other form of higher education, (2) a medium track, which prepares students for more qualified apprenticeships (such as banking and clerical careers), and (3) a lower track, which usually leads to apprenticeships in manual jobs.

Table 13 Summary of advantages and disadvantages of "paper-and-pencil" and Internet interviews (based on Kissling, 2004)

From the Point of View of...	P&P	Internet
...The students	− More like an exam., therefore less motivating	+ More fun, entertaining
	− Students need more time (many read also irrelevant questions)	+ Shorter to administer (skipped questions are invisible)
	− A thick document can be discouraging	+ Less discouraging at first look
	− Pressure upon "slow" students to finish	+ "Slow" students are less visible
	− Difficult to keep students seated until the "slowest" one has finished	− Surfing after the interview keeps students busy during waiting time
	− No incentive to speed up	− Rushing through the questionnaire allows surfing on the net after the interview
	− Privacy is hard to guarantee: pages can be recognised by neighbours; the hand-writing may identify the "author"	+ No paper (hand-writing) needed, respondent is visibly hard to identify; pages turn on screen after each reply
	+ Hand-written comments possible	− No comments possible in the present format but are technically feasible
...The interviewers	− Heavy piles of paper have to be shipped to local schools	− Computer equipment must work without disturbance
	+ Seriousness of questionnaire administration is easy to control by supervisors	− Seriousness of questionnaire administration is hard to control by supervisors
	− Supervision of students is crucial, if possible not by teachers	+ Supervision of students by teachers is feasible (more privacy on the computer)
	+ Questions can be asked	+ Students ask fewer questions
...The researchers	− Data entry is a major cost factor	+ Data immediately stored in a database (MySQL), no manual data entry needed
	− Risks of errors during data entry and during interviews are possible and not rare	+ No errors during data entry; fewer errors by respondents (illegitimate replies are technically impossible)
	− Questionnaire must be very simple (few filters)	+ More complex questionnaires (with many filters) are feasible
	− Data quality will depend on quality of supervision in schools	+ Standardisation of interview situations is tight (better comparability)
	− School principals do not like students to fill out questionnaires during school hours	+ Learning how to use Internet and how to fill out questionnaires over the computer is part of the school programme

through the Internet is considerably more "fun" and less discouraging. Many students expressed their preference for the Internet version. Responding through Internet requires less time, and differences in the time needed by students are less "visible", because students who have finished early with the questionnaire may continue surfing the Net. Under the P&P condition, it was difficult at times to keep students seated and to prevent them from disturbing "slower" fellow students. On the other hand, P&P allows important details to be added in the margins of the page or answers to be qualified by hand-written comments. Such comments and notes are not always easy to read, however, and marks and figures are sometimes hard to

interpret during data entry. Although our computer-assisted questionnaire did not allow for comments, such devices are feasible using different programmes. Even this advantage of P&P may thus become available on the Internet in the future.

On a different level, school principals may be more inclined to allow the interviewing of students over the Internet. Filling out electronic questionnaires can easily be built into ordinary computer lessons and is generally considered an essential part of the knowledge that students are expected to acquire at that age. Therefore, interviews over the Internet do not necessarily imply the alienation of students from their primary task. Our recent experience with an ongoing national survey on self-reported delinquency, victimisation, drug use, and school violence has largely confirmed this. Of 72 secondary schools (grades 7 to 9) randomly sampled, only two refused, despite a generally strong resistance among school principals against any form of survey research on their student population. In the negotiations with school principals, the training effect in computer skills turned out to be a particularly striking argument. Although no statistics have been established on this, we guess that without it, roughly one-third of the schools might have refused to participate in our national study on self-reported delinquency among Swiss students aged 13 to 15 years.

The advantages and drawbacks of the two methods have been summarised in Table 13.

Beyond advantages from the viewpoint of schools, teachers and students (who prefer, by far, the Internet condition), this method makes interviewing considerably cheaper and easier. No heavy piles of questionnaires on paper have to be shipped to the different schools, no data from hand-written questionnaires need to be entered into the computer, nor is it possible to give more than one answer wherever one only is allowed, and anonymity may be more credibly guaranteed through the Internet. It is also questionable whether the presence of a researcher is really necessary when students answer a questionnaire over the computer. In our experiment we have no longer insisted on the presence of a researcher in the computer room in some classes, since experience has shown that the computer teacher is the really critical figure (given possible problems with Internet connection and other technical hassles), and that students ask far fewer questions than under the "P&P" condition. (Obviously, electronic questionnaires are better designed and more self-explanatory.) If computer teachers can replace a researcher, further cost savings may be possible, particularly in large countries and when a national sample of schools or students is to be interviewed. Particularly, the reduction in costs will be an important factor in making follow-up interviews for longitudinal studies more feasible. Similarly, research on juvenile delinquency based on self-report studies will become far more practicable in countries with limited resources—once computer equipment is available. We shall develop this point in the conclusions.

Discussion

As indicated in Table 12a and b, we compared 72 prevalence rates in all, to which the two rates indicated in Table 6 could be added. Out of the 72 comparisons, we found eight that were significant, at least at $P<0.05$. Given that, by chance, we

might expect to find about three or four significant differences in 72 comparisons, a reasonable conclusion would be to say that the choice between Internet and paper-and-pencil questionnaires has a modest impact on outcomes.

Interestingly, our experimental test produced a far more balanced result for lifetime prevalence rates (Table 12a) than for the last-year rates, which tended to be higher under the "P&P" condition (Table 12b). This might be related to an interaction effect with the limit of the reference period (12-months). As shown in the section "Effect of different definitions of the reference period", the "12-month" time limit produced slightly (but rather consistently) higher victimisation and drug use rates than a reference period with a fixed point in time ("fall vacation"), a result that is consistent with earlier research on telescoping effects. Owing to lack of resources[7], the experimental component with the two definitions of the "last-year" period was limited to the "P&P" condition, and we do not know whether the slight trend toward reporting more incidences in the "12-month" version would have been found under the Internet condition as well. Keeping this uncertainty in mind, we may speculate that students might answer with higher precision on the computer than on a more "flexible" paper form, particularly with respect to the reference period. If this were the case, the usual "12-month" limit would not only be less problematic under the Internet than under the "P&P" condition but would also explain the surprising fact that the choice of the method seems to be more important for short-term (1-year) reference periods than when the entire lifetime is at stake.

The fact that non-response ("missing values") in the form of "jumping" questions is more frequent in the "P&P" condition lends some support to the assumption that students may reply over the computer with greater "seriousness" and precision. Out of 35 comparisons between the two methods, missing values turned out to be 19-times more frequent under the "P&P" condition and 16-times under the Internet condition. In particular, eight among the 19 comparisons showing higher missing values rates in "P&P" were significant, and all were related to drug use. We do not think this should be interpreted as a social desirability effect, but rather as an illustration of the fact that students answer electronic questionnaires with more concentration and more precision. There is no other obvious explanation why the choice of the method should have an impact in the short run but not in the long run. There is no indication, more particularly, that social desirability effects might affect response behaviour. Some of the significant differences actually relate to delinquency items that are not particularly hard to admit, such as vandalism, theft from the person (both are higher under the P&P condition), driving without a licence and theft at home (both are higher under the "Internet" condition). If methods had an effect on response behaviours, we rather would have expected it for items such as assault, robbery/racket or other more serious offences. The fact that vandalism is significantly more often admitted in P&P questionnaires, while no such trend is found for graffiti, is puzzling and suggests that some differences may be related to random factors or to other factors not considered so far, such as the visual presentation that inevitably is never exactly the same under the two conditions.

In the present case we opted for a presentation of all results concerning all items. This is likely to produce a "multiple test bias". On the other hand, the question here

[7] Preparing two different questionnaires would have unduly complicated this (first) experimental test of Internet vs paper-and-pencil questionnaires.

was not that of establishing the (in)effectiveness of a programme but of seeing whether an attractive new method (interviewing over the Internet) could be adapted to research on self-reported juvenile delinquency without losing unduly in validity of results. Looked at from this angle, the testing of as many comparisons as possible is a conservative way of establishing that such risks, even in the worst case, will be limited. The purpose, obviously, was not that of showing that there is definitively no method effect at all (Weisburd, Lum & Yang, 2003) but of seeing how much distortion one will have to face when switching from one method to another and weighing any disadvantage of this kind against possible advantages such as lower refusal rates among schools. We would also like to warn against the widespread idea that "more" necessarily means "better". Earlier European victimisation surveys had produced rates of victimisation exaggerated by up to a factor of 3, owing to massive telescoping effects under the umbrella of the "12-month" time limit set in most questionnaires. In this sense, the sometimes (though not consistently) lower rates under the Internet condition may also reflect more seriousness and precision among students who respond in a classroom, particularly in respect of the reference period.

Future research should look more closely into the visual presentation of items, possibilities to correct inaccurate answers (discovered by the respondent during the interview), the impact of the presence of a (computer) teacher and/or a researcher, and possible interaction effects, particularly with gender and ways to define the reference period. Although, according to the present findings, some interaction with gender needs to be kept in mind, the good news is that students from less demanding school tracks or of different cultural backgrounds do not react differently to Internet or classical paper-and-pencil questionnaires. In the light of these findings and of the qualitative observations (in "Qualitative observations"), the interviewing of juveniles on self-reported experiences with victimisation, drug use, and delinquency may be done through the Internet without any risk of major distortions in the results, but with many obvious advantages.

Conclusions

The experiment showed that interviewing adolescents (aged 14 to 16 years) through the Internet is feasible, that this method significantly ($P<0.05$) affects no more than 10% of all relevant prevalence rates, and that significant differences are not consistently in "favour" of one method. Other observations have shown that Internet interviewing is far more popular among students, that non-response to specific items is more frequent on paper-and-pencil surveys, and that school principals are more inclined to allow interviewing in class over the computer. These advantages are reinforced by important cost savings relative to P&P questionnaires, in the first place because data do not need to be entered. It may even be possible to let students respond to an Internet interview without a researcher present, although additional testing on this issue may be necessary.

Comparing the two methods, it is concluded that interviewing through the Internet will greatly facilitate major surveys among students and, therefore, is likely to become the standard method in the foreseeable future. Given the substantial reduction of field costs, surveys on self-reported delinquency may be greatly facilitated through

this method. This may be a critical advantage in countries with limited research budgets, particularly at a time when computers have become generally available in schools of such countries as well (a trend that is well visible currently in Eastern Europe). If interviews can validly be realised without the presence of a researcher (i.e. under the sole responsibility of the computer teacher), national probability samples, based on one or two classes in perhaps dozens or hundreds of schools, could easily be surveyed at minimal costs. So far, self-report studies have often been limited to one city or one school[8], obviously because budgets could not be stretched to send researchers to schools located hundreds of miles away. In the same vein, samples may become far larger than we have been used to seeing so far and, thus, would allow the studying of more severe (and rare) forms of behaviour.

These factors may critically favour future international (comparative) research, such as the International Self-reported Delinquency (ISRD) Survey (Junger-Tas, Terlouw & Klein, 1994) that is currently being repeated in about 30 countries[9]. It may also favour longitudinal studies that so far have often been beyond budgetary limits, even in relatively wealthy countries.

Thus, the new method could lead to a breakthrough in delinquency research similar to how the advent of CATI 20 years ago has helped to multiply victimisation surveys. The advent of CATI, first in Swiss and then in the International Crime Victimisation Surveys (Killias, 1990; van Dijk et al., 1990), had encountered stiff resistance among many researchers who, especially in Europe, considered this (cheap) method to be insufficiently "serious". Despite the widespread reservations against CATI, victimisation studies have developed to unprecedented popularity at the international level as well as at national levels, thanks to the enormous cost savings made possible by it. With traditional face-to-face or mail surveys, such studies would certainly have continued to be conducted on city samples of modest sizes (see, as examples, Kury, 1994, and Schwind et al., 2001). This recent criminological experience illustrates how methodological innovations often stimulate growth of knowledge. It is not impossible that the Internet may have effects on research on juvenile delinquency similar to those that CATI had some 20 years ago on crime victimisation surveys.

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[8] This fact increased, obviously, reluctance among principals who, not without justification, feared criticism in case of "negative" results for their schools, a risk they would not face if only one class per school was being interviewed. On the same line, having one or two classes interviewed is a minor disturbance of school routine, compared with a survey covering the entire student population.

[9] ISRD-2 is a follow up of ISRD-1, which was launched by the Research and Documentation Centre of the Dutch Ministry of Justice in 1992. All countries collected the data during 2006, and a joint publication of national chapters will be published in a book at the end of 2007.

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APPENDIX C

Questionnaire of the national survey, ISRD-2 project[32]

(French version, translated from English)

[32] "ISRD Working Group (Ed.) (2005). Questionnaire ISRD-2: Standard Student Questionnaire. Utrecht: Verwey-Jonker Institute."

Les jeunes en Europe 2006

Bonjour,

Ce questionnaire te concerne ainsi que tes copains. Nous aimerions mieux connaître comment vous vivez, ce que vous faites pendant votre temps libre et quels sont les problèmes que vous rencontrez. Les questions concernent ton expérience personnelle et tes opinions mais tu es libre de ne pas y répondre.
Bien sûr, le questionnaire est totalement anonyme et confidentiel: ton nom n'est pas dessus, tes parents ou les enseignants ne verront pas tes réponses. De plus, les réponses aux questions seront analysées à l'Université de Lausanne.

S'il y a des questions que tu ne comprends pas, demande à l'un des chercheurs qui se trouve dans la salle.
Essaie de répondre le plus vite possible, sans trop réfléchir.

Nous te remercions de ton aide.

I – QUESTIONS SUR TON MODE DE VIE

1. Es-tu un garçon ou une fille?

(1) ❍ Garçon
(2) ❍ Fille

2. Quel âge as-tu?

(1) ❍ 12
(2) ❍ 13
(3) ❍ 14
(4) ❍ 15
(5) ❍ 16
(6) ❍ 17

3. Es-tu né en Suisse?

3.1 (1) ❍ Oui
(2) ❍ Non, je suis né en _____ → Si non:
(précise le nom du pays)

3.2 Quel âge avais-tu à ton arrivée en Suisse ? _____ ans

4. Dans quel pays **ta mère** est-elle née?

(1) ❍ Elle est née en Suisse
(2) ❍ Elle est née dans un autre pays, à savoir _____
(3) ❍ Elle est née dans un autre pays, mais je ne sais pas où
(4) ❍ Je ne sais pas

5. Dans quel pays **ton père** est-il né?

(1) ❍ Il est né en Suisse
(2) ❍ Il est né dans un autre pays, à savoir _____
(3) ❍ Il est né dans un autre pays, mais je ne sais pas où
(4) ❍ Je ne sais pas

6. Est-ce que tu vis avec ton père et ta mère?

(1) ❍ Oui, je vis avec mon père et ma mère
(2) ❍ Je vis en partie avec mon père et en partie avec ma mère
(3) ❍ Je vis seulement avec ma mère
(4) ❍ Je vis seulement avec mon père
(5) ❍ Je vis avec ma mère et son partenaire/ mon beau-père
(6) ❍ Je vis avec mon père et sa partenaire/ ma belle-mère
(7) ❍ Je vis avec d'autres personnes de ma famille (grands-parents, tante….)
(8) ❍ Je vis dans une famille d'accueil
(9) ❍ Je vis avec d'autres personnes, à savoir _____

7. Quelle langue parles-tu le plus souvent avec les personnes avec lesquelles tu vis?

(1) ❍ La langue de la région où je vis maintenant
(2) ❍ La langue de mon pays d'origine, différente de celle de la région où j'habite
(3) ❍ Une autre langue: _____

8. Est-ce que tu as déjà eu des problèmes en raison de ta religion, de ta langue ou bien de la couleur de ta peau?

(1) ❍ Non, jamais
(2) ❍ Oui, une fois
(3) ❍ Oui, parfois
(4) ❍ Oui, souvent

9. Est-ce que ton père (ou l'homme avec lequel tu vis) a un emploi?

(1) ❍ Il a un emploi régulier (il est salarié)
(2) ❍ Il travaille comme indépendant (il a son propre commerce, bureau, entreprise)
(3) ❍ Il travaille de manière irrégulière
(4) ❍ Il aimerait travailler mais il ne trouve pas d'emploi (chômage)
(5) ❍ Il est malade / handicapé depuis longtemps
(6) ❍ Il est à la retraite
(7) ❍ Non, il n'a pas d'emploi, précise la raison _____
(8) ❍ Aucun homme ne vit à la maison

10. Est-ce que ta mère (ou la femme avec laquelle tu vis) a un emploi?

(1) ❍ Elle a un emploi régulier (elle est salariée)
(2) ❍ Elle travaille comme indépendante (elle a son propre commerce, bureau, entreprise)
(3) ❍ Elle travaille de manière irrégulière
(4) ❍ Elle aimerait travailler mais elle ne trouve pas d'emploi (chômage)
(5) ❍ Elle est malade / handicapée depuis longtemps
(6) ❍ C'est une femme au foyer
(7) ❍ Non, elle n'a pas d'emploi, précise la raison _____
(8) ❍ Aucune femme ne vit à la maison

11. Est-ce que tu as une chambre rien que pour toi?

(1) ❍ Oui
(2) ❍ Non, je partage ma chambre avec d'autres membres de ma famille

12. Est-ce que tu as un ordinateur à la maison que tu peux utiliser?

(1) ❍ Oui
(2) ❍ Non

13. Est-ce que tu as un téléphone portable (natel)?

(1) ❍ Oui
(2) ❍ Non

14. Est-ce que ta famille a une voiture?

(2) ❍ Non
(1) ❍ Oui → Si oui:

14.1 Combien de voitures a-t-elle ? _____

14.2 La dernière voiture achetée est-elle nouvelle ou d'occasion ❍ elle est neuve ❍ elle est d'occasion

DES PROBLEMES QUE TU POURRAIS AVOIR RENCONTRES

15. Durant les 12 derniers mois, est-ce que l'une de ces choses t'est arrivée ; si oui, est-ce que toi ou quelqu'un d'autre avez dénoncé à la police un des incidents décrits ci-dessous ?

		Cela ne m'est jamais arrivé durant les 12 derniers mois (0)	Cela m'est arrivé durant les 12 derniers mois (sois le plus précis possible)	Combien de fois l'incident a été rapporté à la police ? (sois le plus précis possible)
15.1	Quelqu'un t'a forcé à lui donner de l'argent ou autre chose (montre, voiture, téléphone portable) sous la menace?	❍	…… fois	…… fois
15.2	Quelqu'un t'a frappé ou blessé si violemment que tu as dû aller chez le médecin ?	❍	…… fois	…… fois
15.3	On t'a volé quelque chose (livre, argent, téléphone portable, affaires de sport, vélo…)?	❍	…… fois	…… fois
15.4	Est-ce que l'on t'a déjà maltraité à l'école (d'autres élèves t'ont humilié, se sont moqués de toi, t'ont frappé ou donné des coups de pied ou t'ont exclu de leur groupe)?	❍	…… fois	…… fois

TA FAMILLE

16. En général, comment t'entends-tu avec l'homme avec lequel tu vis (père, beau-père…)?

(1) ❍ Je m'entends très bien
(2) ❍ Je m'entends plutôt bien
(3) ❍ Je m'entends plutôt mal
(4) ❍ Je m'entends très mal
(5) ❍ Il n'y a pas d'homme dans la maison

17. En général, comment t'entends-tu avec la femme avec laquelle tu vis (mère, belle-mère…)?

(1) ❍ Je m'entends très bien
(2) ❍ Je m'entends plutôt bien
(3) ❍ Je m'entends plutôt mal
(4) ❍ Je m'entends très mal
(5) ❍ Il n'y a pas de femme dans la maison

18. Combien de fois fais-tu quelque chose avec tes parents (ou les adultes avec lesquels tu vis), comme aller au cinéma, se promener, rendre visite à des amis, assister à une manifestation sportive ou ce genre d'activités?

(1) ❍ Plus d'une fois par semaine
(2) ❍ Environ une fois par semaine
(3) ❍ Environ une fois par mois
(4) ❍ Quelques fois par année
(5) ❍ Environ une fois par année
(6) ❍ Presque jamais

19. Combien de fois par semaine prends-tu le repas du soir avec un de tes parents ou les adultes avec lesquels tu vis?

(1) ❍ Jamais
(2) ❍ Une fois
(3) ❍ Deux fois
(4) ❍ Trois fois
(5) ❍ Quatre fois
(6) ❍ Cinq fois
(7) ❍ Six fois
(8) ❍ Tous les jours

20. Est-ce qu'en général tes parents (ou les adultes avec lesquels tu vis) savent avec qui tu es lorsque tu sors?

(1) ❍ Toujours, souvent
(2) ❍ Parfois
(3) ❍ Rarement, jamais
(4) ❍ Je ne sors pas

21. Quand tu sors le soir, est-ce que tes parents (ou la famille avec laquelle tu vis) te disent à quelle heure tu dois rentrer ?

(1) ❍ Je ne sors pas
(2) ❍ Non
(3) ❍ Oui → Si oui:

21.1 Fais-tu ce qu'on te dit ?

(1) ❍ Toujours, souvent
(2) ❍ Parfois
(3) ❍ Rarement, jamais

22. Est-ce que l'une ou plusieurs des choses ci-dessous t'est déjà arrivée?

		Non (1)	Oui (2)
22.1	Décès d'un frère ou d'une sœur	❍	❍
22.2	Décès de ton père ou de ta mère *	❍	❍
22.3	Décès de quelqu'un que tu aimais	❍	❍
22.4	Tu as été longuement malade	❍	❍
22.5	Une longue ou grave maladie de l'un de tes parents ou de quelqu'un de très proche*	❍	❍
22.6	Problème de drogue ou d'alcool pour l'un de tes parents*	❍	❍
22.7	Des disputes répétées ou des bagarres entre tes parents *	❍	❍
22.8	Séparation/divorce de tes parents*	❍	❍

* par parent nous voulons aussi dire beau-père/belle-mère ou parent adoptif

LOISIRS

23. Combien de fois par semaine est-ce que tu sors le soir en boîte, à une fête, chez quelqu'un ou tu traînes dans la rue?

(1) ❍ Jamais, je ne sors pas le soir
(2) ❍ Une fois
(3) ❍ Deux fois
(4) ❍ Trois fois
(5) ❍ Quatre fois
(6) ❍ Cinq fois
(7) ❍ Six fois
(8) ❍ Tous les jours

24. En dehors de l'école, en moyenne, combien de temps par jour passes-tu à faire l'une de ces activités? *S'il te plait réponds à toutes les questions 24.1-24.7*

	Aucune (1)	½ heure (2)	1 heure (3)	2 heures (4)	3 heures (5)	4 h. ou + (6)
24.1 Faire les devoirs	❍	❍	❍	❍	❍	❍
24.2 Lire des livres	❍	❍	❍	❍	❍	❍
24.3 Regarder la télé ou jouer ou chatter sur l'ordinateur	❍	❍	❍	❍	❍	❍
24.4 Lire des magazines ou des BD	❍	❍	❍	❍	❍	❍
24.5 Traîner avec des copains	❍	❍	❍	❍	❍	❍
24.6 Faire du sport	❍	❍	❍	❍	❍	❍
24.7 Jouer de la musique	❍	❍	❍	❍	❍	❍

25. Quand tu sors le week-end, <u>en général</u>, comment fais-tu pour te rendre où tu veux aller? (*Plusieurs réponses possibles).*

(1) ❍ Je ne sors pas le week-end
(2) ❍ Je marche
(3) ❍ Mon père/ma mère me conduit
(4) ❍ En vélo
(5) ❍ En vélomoteur ou en scooter
(6) ❍ Je prends un transport public (bus, train, tramway, métro…)
(7) ❍ Autres : _____

26. Avec qui passes-tu la plupart de ton temps libre? *Une seule réponse possible*

(1) ❍ Tout seul
(2) ❍ Avec ma famille
(3) ❍ Avec un, deux ou trois copains
(4) ❍ Avec un plus grand groupe de copains (4 ou plus)

27. Certaines personnes ont un groupe de copains particulier avec qui ils passent du temps, avec qui ils font des activités ou traînent. Est-ce que tu as un tel groupe de copains?

(1) ❍ Non => *Passe les questions **28-34** et va directement à la question **35***
(2) ❍ Oui

28. Quelle est la tranche d'âge qui correspond le mieux à ton groupe de copains ?

(1) ❍ Moins de 12 ans
(2) ❍ 12 à 15 ans
(3) ❍ 16 à 18 ans
(4) ❍ 19 à 25 ans
(5) ❍ Plus de 25 ans

29. Est-ce que ce groupe passe beaucoup de temps dans des lieux publics comme un parc, la rue, des centres commerciaux, le quartier?

(1) ❍ Non
(2) ❍ Oui

30. Depuis combien de temps est-ce que ce groupe existe?

(1) ❍ Moins de trois mois
(2) ❍ De trois mois à moins d'un an
(3) ❍ 1 à 4 ans
(4) ❍ 5 à 10 ans
(5) ❍ 11 à 20 ans
(6) ❍ Plus de 20 ans

31. Est-ce que faire des choses interdites (illégales) est accepté ou toléré dans ton groupe?

(1) ❍ Non
(2) ❍ Oui

32. Est-ce que dans ton groupe, il y a des personnes qui font des choses interdites (illégales) ensemble?

(1) ❍ Non
(2) ❍ Oui

33. Est-ce que tu penses que ton groupe de copains est une bande*?*

(1) ❍ Non
(2) ❍ Oui

34. Est-ce qu'il s'agit d'un groupe de filles, de garçons ou d'un groupe mixte ?

(1) ❍ Nous sommes tous des garçons
(2) ❍ Nous sommes toutes des filles
(3) ❍ C'est un groupe mixte

35. Combien de tes amis ont des parents d'origine étrangère ?

(1) ❍ Personne
(2) ❍ Seulement quelques uns
(3) ❍ La plupart d'entre eux
(4) ❍ Tous

36. Les gens sont souvent différents de par leur origine, leur religion. Est-ce que tes parents approuvent le fait que tu aies des copains qui sont d'origine ou de religion différente?

(1) ❍ Oui
(2) ❍ Non
(3) ❍ Je ne sais pas

37. Quand tu es avec tes copains, d'habitude que faites vous ? *(s'il te plait réponds à toutes les questions 37.1-37.9)*

	D'habitude nous....	Jamais (1)	Parfois (2)	Souvent (3)	Toujours (4)
37.1	allons en boîte ou en concert	❍	❍	❍	❍
37.2	jouons dans un groupe de musique	❍	❍	❍	❍
37.3	buvons beaucoup de bière/alcool ou nous prenons de la drogue	❍	❍	❍	❍
37.4	abîmons ou vandalisons des choses juste pour s'amuser	❍	❍	❍	❍
37.5	volons à l'étalage pour nous amuser	❍	❍	❍	❍
37.6	faisons du sport	❍	❍	❍	❍
37.7	jouons à des jeux sur l'ordinateur ou nous chattons	❍	❍	❍	❍
37.8	nous amusons à effrayer et embêter les gens	❍	❍	❍	❍
37.9	Autre chose: _____	❍	❍	❍	❍

38. Es-tu d'accord ou non avec les affirmations suivantes concernant des comportements violents commis par des jeunes? *(S'il te plait réponds à toutes les questions 38.1-38.5)*

		Tout à fait d'accord (1)	A peu près d'accord (2)	Pas vraiment d'accord (3)	Pas d'accord du tout (4)
38.1	Un peu de violence fait partie du jeu	❍	❍	❍	❍
38.2	Si on veut se faire respecter il faut utiliser la force	❍	❍	❍	❍
38.3	Si quelqu'un m'agresse, je réagis en le frappant	❍	❍	❍	❍
38.4	Sans violence, tout serait beaucoup plus ennuyeux	❍	❍	❍	❍
38.5	Il est tout à fait normal que l'on veuille montrer que l'on est un homme en se bagarrant avec les autres	❍	❍	❍	❍

39. Es-tu d'accord ou non avec les affirmations suivantes? *(S'il te plait réponds à toutes les questions 39.1-39-12)*

		Tout à fait d'accord (1)	A peu près d'accord (2)	Pas vraiment d'accord (3)	Pas d'accord du tout (4)
39.1	J'agis sur le coup, sans prendre le temps de réfléchir	❍	❍	❍	❍
39.2	Je fais tout ce qui me plaît sur le moment, quitte à renoncer à un objectif plus lointain.	❍	❍	❍	❍
39.3	Je suis plus inquiet par ce qu'il m'arrive à court terme plutôt qu'à long terme.	❍	❍	❍	❍
39.4	J'aime bien relever des défis de temps en temps en faisant des choses un peu risquées	❍	❍	❍	❍
39.5	Parfois je prends un risque juste pour m'amuser	❍	❍	❍	❍
39.6	L'amusement et l'aventure sont plus importants que la sécurité.	❍	❍	❍	❍
39.7	Je pense d'abord à moi, même si cela rend la vie difficile aux autres.	❍	❍	❍	❍
39.8	Si ce que je fais dérange les autres, c'est leur problème, pas le mien.	❍	❍	❍	❍
39.9	Je fais tout pour obtenir ce que je veux même si je sais que cela crée des problèmes aux autres.	❍	❍	❍	❍
39.10	Je me mets facilement en colère	❍	❍	❍	❍
39.11	Quand je suis vraiment énervé, il vaut mieux se tenir loin de moi.	❍	❍	❍	❍
39.12	Quand je suis vraiment en désaccord avec quelqu'un, j'ai du mal à en parler calmement, sans m'énerver.	❍	❍	❍	❍

40. Est-ce que tu as déjà eu un accident tellement grave que tu as dû aller voir un docteur, par exemple suite à un accident de sport ou un accident de la route (pas une simple blessure) ?

(1) ❍ Non
(2) ❍ Une fois
(3) ❍ _____ fois

LA SCOLARITÉ

41. Est-ce que tu aimes l'école?

(1) ❍ Beaucoup
(2) ❍ Assez
(3) ❍ Pas vraiment
(4) ❍ Pas du tout

42. Est-ce que tu as déjà redoublé?

(1) ❍ Non
(2) ❍ Oui, une fois
(3) ❍ Oui, plus d'une fois

43. Est-ce que tu as déjà été absent une journée entière sans excuse valable (courber) durant les 12 derniers mois?

(1) ❍ Jamais
(2) ❍ 1 ou 2 fois
(3) ❍ 3 fois ou plus

44. Quels sont tes résultats scolaires par rapport aux autres élèves de ta classe?

(1) ❍ Je suis meilleur que la plupart de mes camarades de classe
(2) ❍ Je suis dans la moyenne
(3) ❍ Je me débrouille moins bien que la plupart de mes camarades de classe

45. Que penses-tu de ton école? *(S'il te plait réponds à toutes les questions 45.1-45-12)*

		Tout à fait d'accord (1)	A peu près d'accord (2)	Pas vraiment d'accord (3)	Pas d'accord du tout (4)
45.1	Si je devais déménager, je regretterais mon école	❍	❍	❍	❍
45.2	Les professeurs remarquent quand je travaille bien et me le disent	❍	❍	❍	❍
45.3	J'aime mon école	❍	❍	❍	❍
45.4	Il y a d'autres activités en dehors des cours dans l'école (sport, musique, théâtre…)	❍	❍	❍	❍
45.5	Il y a beaucoup de vols dans mon école	❍	❍	❍	❍
45.6	Il y a beaucoup de bagarres dans mon école	❍	❍	❍	❍
45.7	Il y a du vandalisme et des choses sont abîmées dans mon école	❍	❍	❍	❍
45.8	Il y a beaucoup de drogue dans mon école	❍	❍	❍	❍

46. Que penses-tu faire après l'école obligatoire?

(1) ❍ Je vais chercher du travail
(2) ❍ Je vais commencer un apprentissage
(4) ❍ Je vais faire une école professionnelle
(5) ❍ Je vais continuer des études (gymnase, université)
(6) ❍ Autre: _____
(7) ❍ Je ne sais pas encore

TON QUARTIER

47. Es-tu d'accord ou non avec les affirmations suivantes concernant ton quartier? *(S'il te plait réponds à toutes les questions 47.1-47-12)*

		Tout à fait d'accord (1)	A peu près d'accord (2)	Pas vraiment d'accord (3)	Pas d'accord du tout (4)
47.1	Si je devais déménager, le quartier me manquerait	❍	❍	❍	❍
47.2	Mes voisins remarquent quand je fais des bêtises et me le disent	❍	❍	❍	❍
47.3	J'aime mon quartier	❍	❍	❍	❍
47.4	Il y a beaucoup d'espaces de jeux pour les enfants	❍	❍	❍	❍
47.5	Il y a beaucoup de délinquance dans mon quartier	❍	❍	❍	❍
47.6	On vend beaucoup de drogue dans mon quartier	❍	❍	❍	❍
47.7	Il y a souvent des bagarres dans mon quartier	❍	❍	❍	❍
47.8	Il y a beaucoup d'immeubles vides et abandonnés	❍	❍	❍	❍
47.9	Il y a beaucoup de graffitis dans mon quartier	❍	❍	❍	❍
47.10	Les gens du quartier sont disposés à aider leurs voisins	❍	❍	❍	❍
47.11	Les gens du quartier sont très liés	❍	❍	❍	❍
47.12	On peut faire confiance aux personnes de mon quartier	❍	❍	❍	❍
47.13	En général, les personnes de mon quartier ne s'entendent pas	❍	❍	❍	❍

II – QUESTIONS SUR CE QUE FONT PARFOIS LES JEUNES

48. Les jeunes s'engagent parfois dans des activités illégales. **Combien** d'amis as-tu qui ont fait une des choses suivantes?

	(mets une croix ou complète par un nombre)	Mets une croix	Sois le plus précis possible
48.1	J'ai des amis qui ont consommé des drogues douces ou dures comme de l'herbe, haschisch, ecstasy, speed, héroïne ou cocaïne.	❍ non	Oui, ___ amis
48.2	J'ai des amis qui ont volé quelque chose dans un magasin.	❍ non	Oui, ___ amis
48.3	J'ai des amis qui sont entrés dans un bâtiment dans le but de voler quelque chose.	❍ non	Oui, ___ amis
48.4	J'ai des amis qui ont menacé quelqu'un avec une arme ou qui l'ont frappé, juste pour obtenir de l'argent ou d'autres choses de lui.	❍ non	Oui, ___ amis
48.5	J'ai des amis qui ont frappé ou blessé quelqu'un avec quelque chose comme un bâton ou un couteau.	❍ non	Oui, ___ amis

49. As-tu déjà bu de la bière, des alcopops ou du vin?

(1) ❍ Non → *Va à question 50*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 49.1-49.7)

49.1	Quel âge avais-tu <u>la première fois</u> que tu as bu de la bière, des alcopops ou du vin?		_____ ans
49.2	As-tu déjà été ivre avec ces alcools?	(1) (2)	❍ Non ❍ Oui, ___fois
49.3	As-tu bu un de ces alcools durant <u>ces 4 dernières semaines</u> ?	(1) (2)	❍ Non ❍ Oui, ___fois
49.4	<u>La dernière fois,</u> combien de verres, (petites) bouteilles ou cannettes as-tu bu?		___ verres ___ (petites) bouteilles ___ cannettes
49.5	<u>La dernière fois</u>, as-tu bu seul ou avec d'autres ?	(1) (2) (3) (4)	❍ Seul ❍ Avec mes parents ❍ Avec d'autres adultes ❍ Avec d'autres jeunes
49.6	<u>La dernière fois,</u> est-ce qu'un adulte a remarqué que tu avais bu ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
49.7	<u>La dernière fois,</u> as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

50. As-tu déjà bu des alcools forts (gin, rhum, vodka, whisky) ***?***

(1) ❍ Non *Va à la question 51*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 50.1-50.7)

50.1	Quel âge avais-tu la première fois que tu as bu un de ces alcools?	_____ ans
50.2	As-tu déjà été ivre avec ces alcools?	(1) ❍ Non (2) ❍ Oui, ___fois
50.3	As-tu bu un de ces alcools durant ces 4 dernières semaines ?	(1) ❍ Non (2) ❍ Oui, ___fois
50.4	La dernière fois, combien de verres as-tu bu?	___ verres
50.5	La dernière fois, as-tu bu seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec d'autres adultes (3) ❍ Avec d'autres jeunes
50.6	La dernière fois, est-ce qu'un adulte a remarqué que tu avais bu ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
50.7	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

51. As-tu déjà fumé de l'herbe ou du haschich?

(1) ❍ Non *Va à la question 52*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 51.1-51.5)

51.1	Quel âge avais-tu la première fois que tu en as fumé?	_____ ans
51.2	En as-tu fumé durant ces 4 dernières semaines?	(1) ❍ Non (2) ❍ Oui, ___fois
51.3	La dernière fois en as-tu fumé seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
51.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
51.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

52. As-tu déjà pris des drogues comme de l'extasie ou du speed?

(1) ❍ Non *Va à la question 53*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 52.1-52.5)

52.1	Quel âge avais-tu la première fois que tu en as consommé?		_____ ans
52.2	En as-tu consommé ces 4 dernières semaines?	(1) (2)	❍ Non ❍ Oui, ___fois
52.3	La dernière fois, en as-tu consommé seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
52.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
52.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

53. As-tu déjà pris des drogues comme du LSD, de l'héroïne ou de la cocaïne?

(1) ❍ Non *Va à la question 54*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 53.1-53.5)

53.1	Quel âge avais-tu la première fois que tu en as consommé?		_____ ans
53.2	En as-tu consommé ces 4 dernières semaines?	(1) (2)	❍ Non ❍ Oui, ___fois
53.3	La dernière fois, en as-tu consommé seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
53.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
53.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

54. As-tu déjà endommagé quelque chose pour t'amuser, comme un abri de bus, une fenêtre, une voiture ou un siège dans le bus/ le train?

(1) ❍ Non *Va à la question 55*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 54.1-54.5)

54.1	Quel âge avais-tu quand tu l'as fait pour <u>la première fois</u>?	_____ ans
54.2	L'as-tu fait durant <u>les 12 derniers mois</u>?	(1) ❍ Non (2) ❍ Oui, ___fois
54.3	<u>La dernière fois</u> l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
54.4	<u>La dernière fois</u>, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
54.5	<u>La dernière fois,</u> as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

55. As-tu déjà volé quelque chose dans un magasin ou un centre commercial?

(1) ❍ Non *Va à la question 56*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 55.1-55.5)

55.1	Quel âge avais-tu quand tu l'as fait pour <u>la première fois</u>?	_____ ans
55.2	L'as-tu fait durant <u>les 12 derniers mois</u>?	(1) ❍ Non (2) ❍ Oui, ___fois
55.3	<u>La dernière fois</u> l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
55.4	<u>La dernière fois</u>, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
55.5	<u>La dernière fois,</u> as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

56. Es-tu déjà entré par effraction dans un lieu afin de voler quelque chose?

(1) ❍ Non *Va à la question 57*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 56.1-56.5)

56.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
56.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
56.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
56.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
56.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

57. As-tu déjà volé un vélo, un vélomoteur ou un scooter?

(1) ❍ Non *Va à la question 58*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 57.1-57.5)

57.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
57.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
57.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
57.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
57.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

58. As-tu déjà volé une moto ou une voiture?

(1) ❍ Non *Va à la question 59*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 58.1-58.5)

58.1	Quel âge avais-tu quand tu l'as fait pour la première fois?	_____ ans
58.2	L'as-tu fait durant les 12 derniers mois?	(1) ❍ Non (2) ❍ Oui, ___fois
58.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
58.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
58.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

59. Quand tu utilises un ordinateur, est-ce que tu as déjà téléchargé de la musique ou des films?

(1) ❍ Non *Va à la question 60*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 59.1-59.6)

59.1	Est-ce que tu pensais que c'était illégal ?	(1) ❍ Non (2) ❍ Oui
59.2	Quel âge avais-tu quand tu l'as fait pour la première fois?	_____ ans
59.3	L'as-tu fait durant les 12 derniers mois?	(1) ❍ Non (2) ❍ Oui, ___fois
59.4	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
59.5	La dernière fois, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
59.6	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

60. Est-ce que tu as déjà utilisé ton ordinateur pour faire du piratage (hacking)?

(1) ❍ Non *Va à la question 61*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 60.1-60.5)

60.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
60.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
60.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
60.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
60.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

61. As-tu déjà volé quelque chose dans une voiture?

(1) ❍ Non *Va à la question 62*

(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 61.1-61.5)

61.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
61.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
61.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
61.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
61.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

62. As-tu déjà volé à l'arrachée un sac, un porte-monnaie ou autre chose à quelqu'un?

(1) ❍ Non *Va à la question 63*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 62.1-62.5)

62.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
62.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
62.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) (2) (3)	❍ Seul ❍ Avec des adultes ❍ Avec d'autres jeunes
62.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
62.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

63. As-tu déjà porté sur toi une arme comme un bâton, un couteau, ou une chaîne (pas un couteau de poche)?

(1) ❍ Non *Va à la question 64*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 63.1-63.5)

63.1	Quel âge avais-tu quand tu l'as fait pour la première fois?		_____ ans
63.2	L'as-tu fait durant les 12 derniers mois?	(1) (2)	❍ Non ❍ Oui, ___fois
63.3	La dernière fois à quelle occasion as-tu porté une arme sur toi ?	(1) (2) (3)	❍ Je porte toujours une arme sur moi ❍ Quand je vais à l'école ❍ Quand je sors avec des amis
63.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) (2) (3) (4) (5)	❍ Non ❍ Mes parents ❍ La police ❍ Un enseignant ❍ Quelqu'un d'autre
63.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) (2)	❍ Non ❍ Oui

64. As-tu déjà menacé quelqu'un avec une arme ou menacé de frapper quelqu'un pour obtenir de l'argent ou autre chose?

(1) ❍ Non *Va à la question 65*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 62.1-62.2)

64.1	Quel âge avais-tu quand tu l'as fait pour la première fois?	_____ ans
64.2	L'as-tu fait durant les 12 derniers mois?	(1) ❍ Non (2) ❍ Oui, ___fois
64.3	La dernière fois l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec des adultes (3) ❍ Avec d'autres jeunes
64.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
64.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

65. As-tu déjà participé à une bagarre en groupe, par exemple dans la cour de récréation, au stade ou dans les rues?

(1) ❍ Non *Va à la question 66*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 65.1-65.2)

65.1	Quel âge avais-tu quand tu l'as fait pour la première fois?	_____ ans
65.2	L'as-tu fait durant les 12 derniers mois?	(1) ❍ Non (2) ❍ Oui, ___fois
65.2a	Durant les 12 derniers mois où les bagarres se sont-elles passées?	(1) ❍ Dans la cour de récréation (2) ❍ Au stade (3) ❍ Dans la rue (4) ❍ Ailleurs :_____
65.3	La dernière fois quel type de bagarre c'était ?	(1) ❍ Nous nous sommes bagarré avec d'autres jeunes (2) ❍ Il y avait aussi des adultes dans la bagarre
65.4	La dernière fois, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
65.5	La dernière fois, as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

66. As-tu déjà frappé quelqu'un ou fait mal à quelqu'un avec un bâton ou un couteau au point de l'obliger à aller chez le médecin?

(1) ❍ Non *Va à la question 67*
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 66.1-66.2)

66.1	Quel âge avais-tu quand tu l'as fait pour <u>la première fois</u>?	_____ ans
66.2	L'as-tu fait durant <u>les 12 derniers mois</u>?	(1) ❍ Non (2) ❍ Oui, ___fois
66.3	<u>La dernière fois</u> l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec d'autres jeunes (3) ❍ Avec des adultes
66.4	<u>La dernière fois</u>, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
66.5	<u>La dernière fois,</u> as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

67. As-tu déjà vendu de la drogue (dure ou douce) ?

(1) ❍ Non
(2) ❍ Oui → Si oui

(S'il te plait réponds à toutes les questions 67.1-67.2)

67.1	Quel âge avais-tu quand tu l'as fait pour <u>la première fois</u>?	_____ ans
67.2	L'as-tu fait durant <u>les 12 derniers mois</u>?	(1) ❍ Non (2) ❍ Oui, ___fois
67.2a	Durant les <u>12 derniers mois</u>, quelle(s) substance(s) as-tu vendu?	(1) ❍ Cannabis (2) ❍ Cocaïne (3) ❍ Héroïne (4) ❍ Ecstasy (5) ❍ Speed, amphétamine (6) ❍ LSD, champignons hallucinogènes
67.3	<u>La dernière fois</u> l'as-tu fait seul ou avec d'autres ?	(1) ❍ Seul (2) ❍ Avec d'autres jeunes (3) ❍ Avec des adultes
67.4	<u>La dernière fois</u>, as-tu été surpris par quelqu'un ?	(1) ❍ Non (2) ❍ Mes parents (3) ❍ La police (4) ❍ Un enseignant (5) ❍ Quelqu'un d'autre
67.5	<u>La dernière fois,</u> as-tu été puni par un des adultes qui t'a vu?	(1) ❍ Non (2) ❍ Oui

68a. Que penses-tu des gens maltraitant des animaux ? *(une seule réponse possible)*

(1) ❍ Cela me rend triste et me bouleverse
(2) ❍ Je ne sais pas
(3) ❍ Les animaux le méritent
(4) ❍ C'est marrant

69a. As-tu déjà blessé volontairement un animal ? *(une seule réponse possible)*

(1) ❍ Jamais *=> Passe les questions **70-73** et va directement à la question **74***
(2) ❍ Presque jamais
(3) ❍ Quelques fois
(4) ❍ Plusieurs fois
(5) ❍ Fréquemment

70a. Combien de fois as-tu maltraité un animal volontairement ? *(une seule réponse possible)*

(1) ❍ Jamais
(2) ❍ 1 ou 2 fois
(3) ❍ 3 à 6 fois
(4) ❍ Plus que 6 fois

71a. Avec lequel de ces animaux as-tu déjà été cruel ? *(Plusieurs réponses possibles)*

(1) ❍ Poisson/lézard/grenouille
(2) ❍ Oiseau
(3) ❍ Chat, chien ou autre animal domestique
(4) ❍ Autre animal : _____

72a. Es-tu cruel avec les animaux quand tu es seul ou quand tu es devant les autres? *(une seule réponse possible)*

(1) ❍ Seul
(2) ❍ Devant les autres

73a. Quel était ton intention lorsque tu as blessé l'animal ou les animaux ? *(une seule réponse possible)*

(1) ❍ Je n'avais pas l'intention de vraiment le blesser (par exemple en criant fort pour l'effrayer, le taquiner…) .
(2) ❍ J'avais envie de le punir mais j'ai peut-être exagéré (par exemple en le battant très fort, en lui tordant la patte, en lui jetant quelque chose dessus ou en lui serrant les mâchoires…).
(3) ❍ J'avais envie de le faire souffrir (par exemple en le blessant ou en le tuant).

74a. Supportes-tu une équipe sportive en assistant à ses matchs ? *(une seule réponse possible)*

(1) ❍ Jamais => *Passe les questions **75-77***
(2) ❍ Quelques fois par année
(3) ❍ Au moins une fois par mois

75a. Avec qui te rends-tu <u>généralement</u> aux matchs ? *(une seule réponse possible)*

(1) ❍ Avec mon père
(2) ❍ Avec ma mère
(3) ❍ Avec mon (mes) frère(s)/sœur(s)
(4) ❍ Avec des amis
(5) ❍ Avec une autre personne :_____

76a. Quel type de supporter es-tu? *(une seule réponse possible)*

(1) ❍ J'aime voir un beau match et que les règles soient respectées
(2) ❍ Je supporte une équipe en portant une tenue de supporter
(3) ❍ J'insulte les supporters de l'équipe adverse
(4) ❍ Je consomme de l'alcool ou des drogues avant ou pendant le match
(5) ❍ Quand j'assiste à un match, je prends avec moi un objet pour me défendre

77a. Parfois des bagarres se produisent pendant les matchs. <u>En général</u>, comment réagis-tu ? *(une seule réponse possible)*

(1) ❍ J'évite la bagarre et je pars
(2) ❍ J'aime regarder ceux qui se bagarrent
(3) ❍ Je participe à la bagarre
(4) ❍ Je n'ai jamais assisté à une bagarre

QUAND DES ELEVES SE FONT EMBETER

78a. Combien de fois les actes décrits ci-dessous **te sont-ils personnellement arrivés** *dans ton école* ou *sur le chemin de ton école* **durant les 12 derniers mois ?** *(S'il te plait réponds à toutes les questions 78.1 - 78.6)*

		Jamais (1)	Une ou deux fois (2)	Parfois (plus de deux fois) (3)	Une fois par semaine (4)	Plusieurs fois par semaine (5)
78.1a	J'ai été frappé ou ai reçu des coups de pieds.	❍	❍	❍	❍	❍
78.2a	J'ai été menacé, extorqué, racketté.	❍	❍	❍	❍	❍
78.3a	J'ai été ridiculisé, vexé (par exemple par des paroles blessantes).	❍	❍	❍	❍	❍
78.4a	Mes affaires ont volontairement été cassées.	❍	❍	❍	❍	❍
78.5a	J'ai été harcelé sexuellement (peloter, siffler, avances répétitives verbales ou non verbales,…).	❍	❍	❍	❍	❍
78.6a	J'ai été ignoré et exclu (par exemple personne ne veut s'asseoir à côté de toi).	❍	❍	❍	❍	❍

79a. Combien de fois as-tu **toi-même fait** les actes décrits ci-dessous *dans ton école* ou *sur le chemin de ton école* **durant les 12 derniers mois ?** *(S'il te plait réponds à toutes les questions 79.1 – 79.6)*

		Jamais (1)	Une ou deux fois (2)	Parfois (plus de deux fois) (3)	Une fois par semaine (4)	Plusieurs fois par semaine (5)
79.1a	J'ai frappé ou donné des coups de pieds à un élève	❍	❍	❍	❍	❍
79.2a	J'ai menacé, extorqué, racketté un élève.	❍	❍	❍	❍	❍
79.3a	J'ai ridiculisé, vexé un élève (par exemple par des paroles blessantes).	❍	❍	❍	❍	❍
79.4a	J'ai volontairement cassé des affaires d'un élève.	❍	❍	❍	❍	❍
79.5a	J'ai harcelé sexuellement un élève (peloter, siffler, avances répétitives verbales ou non verbales, ...).	❍	❍	❍	❍	❍
79.6a	J'ai ignoré et exclu un élève (par exemple tu ne veux pas t'asseoir à côté de lui ou d'elle).	❍	❍	❍	❍	❍

Merci de ton aide ! Appelle maintenant l'enquêteur afin qu'il puisse enregistrer tes réponses.

⌊_⌋ ⌊_⌋ ⌊_⌋