

Risk-taking behaviour of Cape Peninsula high-school students

Part IX. Evidence for a syndrome of adolescent risk behaviour

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Objectives. To ascertain whether the notion of a *syndrome* of adolescent risk behaviour (which includes problem drinking, marijuana use, having experienced sexual intercourse, 'general deviance' and cigarette smoking) is valid for this setting; and to investigate whether suicidal behaviour and behaviour that exposes the adolescent to injury should be included in this syndrome.

Design. Cross-sectional survey utilising a self-completed questionnaire; for both sexes, relationships between behaviours were documented as odds ratios.

Setting. High schools in the Cape Peninsula, South Africa.

Subjects. 7 340 students from 16 schools in the three major education departments.

Outcome measures. Participation in the following behaviours: alcohol bingeing, cannabis smoking, sexual intercourse, knife-carrying at school, cigarette smoking, attempting suicide, failure to use a seat belt, and walking home at night from beyond the neighbourhood.

Results. All the odds ratios were greater than 1. There were statistically significant odds ratios between all the pairs of risk behaviours included in the 'original' syndrome of risk behaviour except for cigarette smoking and having had sexual intercourse in the case of girls. There were statistically significant relationships between all these risk behaviours, suicidal behaviour, and behaviours that exposed the adolescent to risk of physical injury, except for failure to use a seat belt and: (i) suicidal behaviour for both sexes; and (ii) walking home alone at night and having had sexual intercourse in the case of girls.

Conclusion. The notion of a syndrome of adolescent risk behaviour is valid for this population, and both suicidal behaviour and behaviour that exposes the adolescent to injury should be included in this syndrome.

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In 1977, Jessor and Jessor¹ reported the relationships between various forms of risk behaviour in their sample of high-school students in the USA. Specifically, they found that there were statistically significant relationships between all possible pairs of the following behaviours: problem drinking, marijuana use, being a non-virgin and 'general deviance' (which included stealing, lying, property destruction, disruptive behaviour and aggression). The notion of a *syndrome* of adolescent risk behaviour was put forward to denote this covariation of risk behaviours.²

Subsequently, various studies have provided support for the validity of this notion by confirming some of the relationships noted by Jessor and Jessor¹ in various samples of adolescents in the USA³⁻⁶ as well as Australia,⁷ Canada,⁸ France,⁹ The Netherlands,¹⁰ and Scotland.¹¹ Factor analytical studies have lent support to the notion of a syndrome of problem behaviour since one factor can account for the correlations among different problem behaviours.¹²⁻¹⁴

In addition to the behaviours investigated by Jessor and Jessor,¹ there are substantial grounds for including cigarette smoking in the syndrome of adolescent risk behaviour.¹⁵⁻¹⁹ However, there is at present only limited evidence for broadening the syndrome to include other adolescent behaviours such as suicidal behaviour and behaviour that puts the adolescent at risk of injury. With regard to suicidal behaviour, a few authors have argued that suicidal behaviour should be included in the syndrome of adolescent risk behaviour on the basis of significant relationships among high-school students in the USA between suicidal behaviour and violent behaviour,²⁰⁻²³ substance use,^{20,22,24} and having had sexual intercourse.²¹⁻²⁴ Furthermore, Windle *et al.*²⁴ reported that behaviour that puts the adolescent at risk of physical injury was a significant predictor of suicidal ideation and suicide attempts in their sample of high-school students in the USA. Also, Bussing *et al.*²⁵ showed significant relationships between behavioural problems and accidental injury among high-school students in the USA. None of these studies of suicidal behaviour and behaviour that exposed the adolescent to the risk of injury documented significant relationships between these behaviours and all the components of the original syndrome of adolescent risk behaviour. Therefore although these studies suggest that suicidal behaviour and behaviour that exposes the adolescent to the risk of physical injury *may* comprise aspects of the syndrome of adolescent risk behaviour, they are not conclusive.

No published studies have examined the relationships between various risk behaviours of South African adolescents. One cannot assume that the findings quoted above will be applicable in the South African context. Stanton *et al.*²⁶ found that among their samples of inner city African-American adolescents, initiation of sexual activity was not conceptualised as being among, or necessarily associated with, other problem behaviours. This indicates that the components of the adolescent risk behaviour syndrome may vary according to the geographical and cultural context.

It was decided to address some of these issues by conducting further analysis of the data from a project in which the prevalence of a wide range of risk behaviours among high-school students in the Cape Peninsula was investigated. The specific aims of the analysis were: (i) to ascertain whether the notion of a syndrome of adolescent risk behaviour is valid for this population; and (ii) to

investigate whether suicidal behaviour and behaviour that exposed the adolescent to risk of injury should be included in this syndrome.

Methods

Since the methodology of the study of which this analysis comprises a part has been described in detail elsewhere,²⁷ only key information will be provided. The study population was defined as all Cape Peninsula high-school students. Cluster sampling yielded a sample of 7 340 students from 16 schools in the three major education departments. Of these, 3 269 were boys, 3 981 were girls, and 90 did not state their gender. The self-administered questionnaire was completed by each student under conditions approximating those of examinations. Means were weighted to account for the fact that different proportions of students were selected from each education department.

Eight of the risk behaviours were included in the analysis (Table I). Variables were selected to ensure that the following were included:

1. The variables corresponding to those comprising the 'original' syndrome of adolescent risk behaviour as described by Jessor and Jessor,¹ viz. problem drinking, cannabis use, having had sexual intercourse, and 'general deviance' (which was defined in the present study as 'carrying a knife to be used as a weapon');
2. Cigarette smoking, for which there is a large amount of evidence to justify its inclusion in the syndrome of adolescent risk behaviour; and
3. Variables for which there is limited evidence to justify their inclusion in the syndrome of adolescent risk behaviour, viz. suicidal behaviour and behaviour that exposes the adolescent to risk of physical injury. Two items were included that assess exposure to injury: not wearing a seat belt while travelling in a motor vehicle, and going out at night beyond the neighbourhood and walking home alone. The former assessed exposure to injury from motor vehicle accidents and the latter exposure to interpersonal violence.

Table I. Definitions of risk behaviours

Variable No.	Definition
1.	Having 5 or more drinks on at least one occasion in the previous 14 days ²⁸
2.	Ever having smoked cannabis ²⁹
3.	Ever having had heterosexual vaginal intercourse ³⁰
4.	Having carried a knife to school to be used as a weapon during the previous 4 weeks ³¹
5.	Currently smoking at least one cigarette per day ³²
6.	Attempting suicide in the previous 12 months ³³
7.	Not using a seat belt on the last occasion when travelling in the front passenger seat of a motor vehicle ³⁴
8.	Going out at night beyond the neighbourhood and walking home alone during the previous 4 weeks ³¹

The relationships between the risk behaviours were demonstrated by means of unadjusted odds ratios. The analysis was stratified according to gender since the previous analysis of this data set had shown differences between the genders with regard to the prevalence of most types of risk-taking.²⁷

Results

The prevalences of the risk behaviours will not be reported because they have been published previously.²⁷ Knife-carrying was not included for girls, given the low prevalence of this risk behaviour among them.³¹ The unadjusted odds ratios for the relationships between the risk behaviours are presented in Tables II and III for boys and girls respectively.

All the odds ratios were greater than 1, which indicates that there is a *trend* for all the risk behaviours to be related to each other. Furthermore, there are statistically significant odds ratios between all the pairs of risk behaviours included in the 'original' syndrome of risk behaviour as described by Jessor and Jessor.¹ In addition, there were statistically significant relationships between cigarette smoking and these risk behaviours except, in the case of the girls, for cigarette smoking and having had sexual intercourse. Finally, there were statistically significant relationships between all these risk behaviours and suicidal behaviour as well as the behaviours that exposed the adolescent to risk of physical injury, except for failure to use a seat belt and the following

behaviours: (i) attempted suicide in the previous 12 months (boys and girls); (ii) ever having had sexual intercourse (girls); and (iii) going out at night and walking home alone during the previous 4 weeks (girls).

Discussion

The results confirm that the notion of a syndrome of adolescent risk behaviour as described by Jessor and Jessor¹ is valid for Cape Peninsula high-school students. Notwithstanding the minority of pairs of risk behaviour for which the 95% confidence interval for the odds ratios includes 1, the results confirm that cigarette smoking is a component of the syndrome and provide evidence for extending the boundaries of the syndrome to include suicidal behaviour as well as behaviour that exposes the adolescent to risk of both unintentional and intentional injury.

These findings provide support for a *lifestyles* approach to adolescent risk behaviour.^{25,35} According to this approach, specific behaviours are embedded in general styles of

Table II. Unadjusted odds ratios (with 95% confidence intervals) for the relationships between risk behaviours in boys*

	Cannabis (2)	Intercourse (3)	Knife-carrying (4)	Cigarettes (5)	Suicide (6)	Seat belt (7)	Walk home (8)
Alcohol (1)	6.0 4.8 - 7.6	3.4 2.8 - 4.1	2.3 1.8 - 3.0	4.7 3.9 - 5.6	2.0 1.4 - 2.8	1.6 1.3 - 1.9	2.2 1.9 - 2.7
Cannabis (2)		3.6 2.8 - 4.6	3.9 3.0 - 5.0	7.2 5.7 - 9.1	2.7 1.9 - 3.8	2.0 1.5 - 2.5	2.2 1.8 - 2.8
Intercourse (3)			3.5 2.7 - 4.5	3.0 2.5 - 3.6	2.4 1.7 - 3.3	1.6 1.3 - 1.9	2.5 2.1 - 2.9
Knife-carrying (4)				3.3 2.6 - 4.1	2.8 2.0 - 4.1	1.9 1.5 - 2.5	2.7 2.1 - 3.3
Cigarettes (5)					2.4 1.7 - 3.2	1.5 1.3 - 1.9	2.2 1.9 - 2.6
Suicide (6)						1.2 0.9 - 1.7	2.0 1.5 - 2.7
Seat belt (7)							1.5 1.3 - 1.7

* See Table I for definitions of terms; the number in parentheses is the number of the risk behaviour in Table I.

Table III. Unadjusted odds ratios (with 95% confidence intervals) for the relationships between risk behaviours in girls*

	Cannabis (2)	Intercourse (3)	Cigarettes (5)	Suicide (6)	Seat belt (7)	Walk home (8)
Alcohol (1)	10.9 7.7 - 15.4	1.8 1.4 - 2.4	6.1 4.8 - 7.6	2.8 2.1 - 3.6	1.5 1.2 - 1.9	2.4 1.9 - 3.1
Cannabis (2)		3.6 2.5 - 5.3	16.4 11.4 - 23.4	3.1 2.1 - 4.6	2.3 1.6 - 3.3	2.3 1.6 - 3.3
Intercourse (3)			1.1 0.9 - 1.4	1.4 1.1 - 1.8	1.2 1.0 - 1.5	2.2 1.8 - 2.7
Cigarettes (5)				3.5 2.8 - 4.4	1.6 1.3 - 2.0	1.9 1.5 - 2.4
Suicide (6)					1.3 1.0 - 1.6	2.6 2.1 - 3.3
Seat belt (7)						1.2 1.0 - 1.5

* See Table I for definitions of terms; the number in parentheses is the number of the risk behaviour in Table I. Knife carrying is not included (see text).

adaptation which are maintained by complex networks of social and cultural reinforcement.^{36,37} The utility of this approach is that it directs attention to the adolescent as a whole rather than to individual risk behaviours.² The implication in terms of intervention is that programmes should attempt to influence the lifestyle of which the risk behaviours comprise a part, rather than focus on specific behaviours.³⁸

This study did not address the reasons for the covariation of risk behaviour. The following possibilities have been suggested: (i) they may share common aetiologies, for example a high level of sensation-seeking;³⁹ (ii) they may reflect interchangeable means of achieving the same social goals, e.g. gaining of admission to a peer group;⁴⁰ (iii) they may be related through intervening variables, for example, alcohol bingeing's resulting in increased impulsiveness, which removes inhibitions that usually prevent unsafe sexual behaviour;⁴¹ and (iv) they may occur together in the social ecology of adolescence, which is characterised by organised opportunities to learn risk behaviours together as well as expectations that they will be performed together.² These possibilities need to be explored in projects designed specifically to elucidate this issue. It is probable that the explanations for the covariation are a function both of the characteristics of the individual and the risk behaviours involved.

Finally, the analysis reported in this article was confined to the bivariate relationships between pairs of behaviours. This has the limitation that the influence of other variables on the relationships between the pairs of behaviours was not taken into account. This aspect will be addressed in the next article in this series.

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