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Characteristics associated with resilience in children at high risk of involvement in anti-social and other problem behaviour

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There is a considerable body of literature which explores numerous characteristics that are associated with young people's involvement in anti-social behaviour and delinquency. These characteristics are often referred to as 'risk factors'. Also, within the literature, there is evidence of characteristics which can counteract risk factors possessed by children who are considered to be at high risk of involvement in anti-social behaviour. These are known as 'protective factors' (Youth Justice Board, 2001).

The analysis presented here draws on a sample from the Avon Longitudinal Study of Parents and Children (ALSPAC) birth cohort to build on the existing literature. ALSPAC is a large study run by Bristol University following a cohort of children born to mothers living in Avon while pregnant in the early 1990s. This analysis is based on a sample of 6,553 children for whom there was data on anti-social behaviour at age 8½ from the overall ALSPAC sample. Individual and family-related characteristics associated with high risk and resilient children are examined and compared. These findings are based on data on the children up to the age of 8½.

Key points

- 13% of the sample was defined as experiencing a level of family adversity which put them at high risk of involvement in anti-social and other types of problem behaviour.
- From the sample of children said to be at high risk, 88% were defined as being resilient; that is despite being in the high risk group, they nevertheless reported involvement in none or only one type of anti-social behaviour up to age 8½.
- The study focused on the 'at risk' group and compared the children defined as resilient with the non-resilient group. The resilient children had significantly fewer peer problems; higher IQ and self-esteem; greater school enjoyment and lower levels of family adversity compared with the non-resilient group. In addition, the mothers of the resilient children had better parenting skills (i.e., interaction with the child) but surprisingly reported less positive parenting experiences (e.g. bonding with the child).
- Gender was significantly associated with resilience – girls were significantly more likely to be resilient than boys.
- Analysis that was conducted on the sample of boys-only showed that the characteristics associated with resilience amongst boys were: school enjoyment; demonstrating high levels of pro-social behaviour and having mothers with high levels of parenting skills.

A considerable body of literature exists which documents characteristics which are predictive of involvement in anti-social and other types of problem behaviour (e.g., Farrington, 1996; Utting et al., 1993). However, there is also a mounting body of evidence which suggests that the majority of those children who possess these risk factors

never become involved in such behaviour. It is, therefore, difficult to predict which at risk children are likely to become involved in anti-social behaviour based on the existing research evidence. The current study aimed to fill this evidence gap.

The differences between children who are at high risk of involvement in anti-social and other problem behaviour and do become involved in such behaviour and those children at high risk who do not become involved are examined here. This study identifies a group of children from the ALSPAC sample who despite being at 'high risk' of involvement in anti-social and other problem behaviour report involvement in no or only one anti-social behaviour by the age of 8½. The characteristics of these resilient and remaining high risk children are compared.

Definitions used in the study

Anti-social and other types of problem behaviour

The term anti-social behaviour can be used to describe a range of behaviours which may be found to be distressing for members of the local community where it takes place. For the purpose of this study, children were asked about a range of behaviour; some of which fall within the typology of anti-social behaviour devised by the Home Office (see Harradine et al., 2004) and others which do not. There are also differences between the behaviours analysed here and the behaviours included in analysis of British Crime Survey and Offending Crime and Justice Survey data (Patterson and Thorpe, 2006; Budd et al., 2005). This reflects the fact that children as young as those in this study are unlikely to have the opportunity to engage in many of the forms of anti-social behaviour defined in these other Home Office publications. Also, behaviour which is not defined as anti-social behaviour can be regarded as problem behaviour for children at this age. Therefore, this study refers to 'anti-social and other problem behaviour' as listed in Table 1.

High risk

The definition of 'high risk' for the purpose of this study was based on the level of exposure to a number of 'risk factors'. The study used the Family Adversity Index as a measure of risk factors. This index has been developed by the ALSPAC study team and describes various aspects of family functioning during pregnancy such as major care-giving problems; substance abuse and involvement in crime (see Methodological note). The Family Adversity Index as a measure was found to be associated with involvement in anti-social and other problem behaviour in another study based on the ALSPAC cohort (Findings 282 Bowen et al., 2006). In that study, greater levels of family adversity were associated with children who reported involvement in anti-social and other problem

behaviour than those who were not involved in such behaviour. The Family Adversity Index was, therefore, deemed to be a suitable measure on which to base the definition of high risk.

In line with a strategy used previously in similar studies (e.g., Fergusson and Lynskey, 1996), a point on the distribution of the Family Adversity Index was selected so that children who experienced numbers of family adversities higher than the point selected were described as being at high risk. A consideration in deciding the cut-off point on the Family Adversity Index scale was the size of the sample which needed to be sufficiently large for meaningful analysis to be conducted. The 'high risk' group consists of all children who were born into families experiencing at least three family adversities during the mother's pregnancy.

Resilience

The definition of 'resilience' for the purpose of this study was based on levels of self-reported anti-social and other problem behaviour. As with the definition of high risk, the definition of resilience similarly required a cut-off point which would ensure a sufficiently large sample for the analysis. As shown in Figure 1, the majority of children in the sample reported involvement in no anti-social behaviour and a further 15% reported involvement in only one type of anti-social behaviour.

The term resilience has been used here to describe children who reported that they were involved in none or only one type of anti-social or problem behaviour ever by age 8½ although deemed to be at high risk.

Figure 1 Distribution of whole sample by number of types of anti-social and other problem behaviour at age 8½

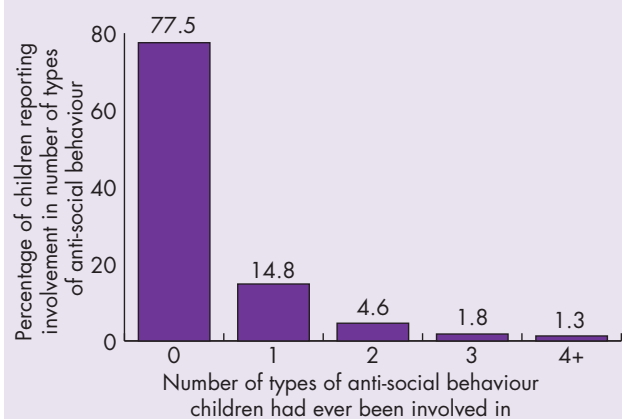


Table 1 Types of anti-social behaviour and other problem behaviour asked about at age 8½

The children were asked at age 8½ whether they had ever committed any of the types of behaviour listed below:

- stolen: bicycles, from a shop, from a house/garden, from a car, entered a building to steal, pick-pocketed
- used substances: drunk alcohol, smoked cigarettes without parental consent
- set fire to property
- carried a weapon in case of a fight ('a weapon' is defined as any object that the respondent child has judged can be used in a fight)
- been intentionally cruel to animals.

Child, family and extra-familial characteristics

The other variables of interest were those which had been identified in the previous literature as having some associations with risk and resilience. Table 2 shows the characteristics that were examined and the child's age at the time of the assessment.

The data described in Table 2 was collected via a range of methods including parental questionnaires, semi-structured interviews with the children at age 8½ and a clinic-based cognitive task at age 8½ where self-report data on anti-social and other problem behaviour was collected.

Patterns of involvement in anti-social behaviour and experience of family adversity

Table 3 shows that a total of 837 children (416 males, 421 females) were identified as being at high risk of involvement in anti-social behaviour. This represents 13% of the whole study sample (6,553).

Figure 2 shows the percentage of children reporting involvement in two or more anti-social and other types of problem behaviour by the number of family adversities. 12% (n=93) of the high risk group reported involvement in two or more types of problem behaviour by age 8½. The majority of children (n=740, 88%) within the high risk group therefore reported fewer than two anti-social and other types of problem behaviour; in line with the definition set for this study. These children were termed the resilient group.

It can be seen from Figure 2 that the percentage of children reporting involvement in two or more types of problem behaviour increased as the number of family adversities increased.

Further analysis based on the logistic regression analysis described below and conducted on the data from the whole

Table 3 Distribution of family adversity scores

Number of family adversities	N	% of sample
0	3,051	47
1	1,784	27
2	881	13
3+	837	13
Total	6,553	100

sample of 6,553 children also revealed that those in the high risk group were more likely than the rest of the sample to report involvement in two or more anti-social and other problem behaviour. The odds of reporting at least two types of anti-social and other problem behaviour was 73% higher for those children who were in the high risk group compared with those who were not. This helps to justify the cut-off points used for the definitions of high risk and resilience in this study (see Methodological note for explanation of odds ratio).

Characteristics associated with resilience

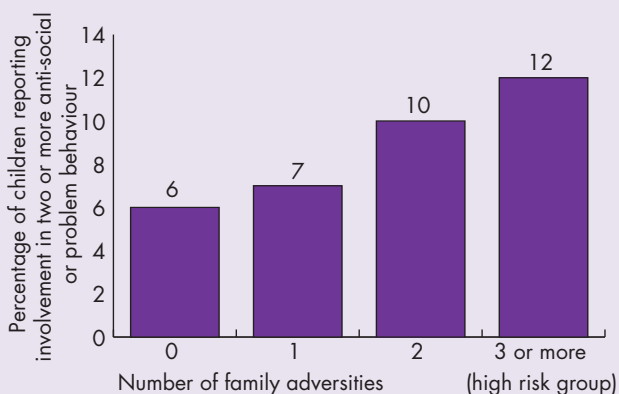
Initial analysis of the data was carried out to explore the differences in the characteristics between the resilient children and the remaining high risk children. For each of the characteristics listed in Table 2, average scores were compared for the resilient and non-resilient children. It was found that in contrast to the remaining high risk children, the resilient children:

- had significantly fewer peer problems as reported by parents at the 4 years assessment period
- achieved significantly higher performance IQ scores at age 8½
- had significantly higher self-esteem at age 8½

Table 2 Child, family and extra-familial characteristics examined

Category of characteristic	Characteristic examined and nature of characteristic	Age of child at assessment time point
Child characteristics	Pro-social behaviour that benefits other people e.g., empathy	4 and 6¾ years
	Peer problems – relationships and interaction with peers	4 and 6¾ years
	Friendships – contentment and association with friends	8½ years
	Intelligence – performance IQ	8½ years
	Intelligence – verbal IQ	8½ years
	Locus of control – the belief in one's ability to control life events	8½ years
	Self-esteem – e.g., how happy children are with themselves	8½ years
	Attachment to adults – mother, father, teacher	7½ years
Family characteristics	Family adversity – e.g. parental criminality; inadequate housing; financial problems	Mother's pregnancy and birth to 2 years
	Parenting skills – parental interaction with child	6 months, 1½, 3, 3½ years
	Parenting experiences – e.g., parental bonding and perceived levels of confidence with the child	8 months and 1¾ years
Extra-familial characteristic	School enjoyment – e.g., child looks forward to going to school, bored by school, stimulated by school	4½ years, 7½ years and 8½ years

Figure 2 Proportion of children reporting involvement in two or more types of problem behaviour by number of family adversities



- were more likely to report enjoying school at age 8½ and were more likely to have been rated as enjoying school by parents at the age 4½ years assessment and at the 7½ years assessment
- had mothers at 1½ years who scored significantly higher on parenting skills such as parental interaction and bonding, but surprisingly, had mothers who reported less positive parenting experiences at child's age 1¾ years
- had experienced significantly lower levels of family adversity as recorded at all three time assessments.

All these differences were statistically significant at the 5% level.

A series of univariate logistic regression analyses were then conducted in order to identify the characteristics predictive of resilience. All of the variables found to be predictive of resilience are presented in Table 4. These characteristics explain 72% of the variance between the resilient and the remaining high risk group.

As table 4 also shows, the school enjoyment variables, as reported by the parent and child, were the characteristics most strongly predictive of resilience. In other words, children who enjoyed school were more likely to be resilient to involvement in anti-social and other problem behaviour than those children who did not report enjoying school.

The school enjoyment variables were based on questionnaires to parents and a semi-structured interview with the child. The overall school enjoyment variable is derived from scoring various measures of attitudes to school including how much the child enjoys going to school, how much they like their teacher and their level of stimulation from school. The analysis does suggest that there may be a causal relationship between school enjoyment at ages 4 and 7½ and resilience. However, it should be noted that the school enjoyment variable at age 8½ was assessed during the same time period as the assessment on problem behaviour and it is beyond these data to determine any causal link.

In addition to these findings, gender interaction analysis was conducted to determine whether there were any sex

Table 4 Characteristics predictive of resilience

Category	Characteristic predictive of resilience in order of importance
Extra-familial	School enjoyment 4½ years* School enjoyment 7½ years School enjoyment 8½ years (parent and child rating)*
Child characteristic	High levels of self-esteem at 8½ years
Family characteristic	Positive parenting experiences at 1 year 9 months Family adversity experienced between ages 2–4
Child characteristic	High verbal IQ 8½ years
Family characteristic	Attachment to father 7½ years**

Notes: * These characteristics remained independently predictive of resilience even after accounting for the possible influence of the other variables. ** This characteristic was independently predictive of resilience for boys but not girls.

differences in the predictors of resilience. It was found that child gender was the most significant predictor of resilience – girls were significantly more likely to be resilient than boys.

Characteristics independently predictive of resilience

A final step in the analysis enabled the predictive qualities of the variables described in Table 4 to be explored independently of the influence of the other variables. All of the variables listed in Table 4 were entered into a multiple logistical regression model. This multivariate analysis essentially tells us whether each of the 'independent variables' (the child, family and extra-familial characteristics examined in this case) is statistically significantly associated with the 'dependent variable' (resilience in this case) while all other independent variables included in the analysis are held constant.

The characteristics found to be independently associated with resilience are shown in bold in Table 4. These were school enjoyment at age 4½ and at age 8½. This analysis also shows that:

- children who reportedly enjoyed school at age 4½ had 79% higher odds of being resilient than those who did not enjoy school
- children who reported liking school at age 8½ had 44% higher odds of being resilient than those who did not enjoy school (see Methodological note for explanation of the odds ratio).

The school enjoyment variable at age 8½ was assessed at the same time period as the assessment on problem behaviours and, therefore, a causal link between school enjoyment at this age and resilience cannot be inferred.

In addition to the school enjoyment variables, attachment to father emerged as a significant predictor for boys. For girls, attachment to father curiously had the opposite effect in that it was found to reduce the likelihood of resilience. Boys who were attached to their father had odds that were 35% higher of being resilient than girls who were attached to their father.

Gender

As already mentioned, the most significant predictor of resilience was gender in that girls were significantly more likely than boys to be resilient. Because of the potential gender bias in the overall results, the boys-only data was analysed using the same tests as were used for the sample as a whole.

Characteristics associated with resilience in boys-only sample

In line with the findings from the overall sample of boys and girls, school enjoyment remained an important factor. The resilient boys in contrast to the remaining high risk boys were significantly more likely to report enjoying school at age 8½ and were more likely to have been rated as liking school by parents at the age 4½ years assessment and the 7½ years assessment.

High levels of parenting skills were also significantly associated with resilience amongst the boys-only sample, although this only related to parenting at ages 1½ and 3½.

Having a high level of pro-social behaviour (demonstrating behaviour that benefits other people) was a further characteristic which was found to be associated with resilience amongst the boys-only sample.

In contrast to the findings from the overall sample, self-esteem and family adversity were not variables which were found to be associated with resilience amongst the boys-only sample.

Characteristics predictive of resilience in boys-only sample

Table 5 shows that in line with the findings on the overall sample, school enjoyment continued to be a significant predictor of resilience. However, unlike the findings from the whole sample, the first assessment time point (age 4½) for school enjoyment did not emerge from the boys-only data as being significantly predictive.

Table 5 Characteristics predictive of resilience for boys only

Category	Characteristic
Extra-familial	School enjoyment 7½ years* School enjoyment 8½ years (parent and child rating)*
Child characteristic	Pro-social behaviour 6 years 9 months
Family characteristic	Parenting skills 3½ years*

Note: * These characteristics remained independently predictive of resilience even after accounting for the possible influence of the other variables.

A high level of parenting skills at age 3½ emerged from this analysis as independently significantly predicting resilience amongst the boys in the sample.

An earlier finding based on the analysis conducted on the whole sample (Table 4) showed that attachment to father was a significant predictor for boys but not for girls. Although this finding did not emerge significantly from the analysis on the boys-only data, the findings did still show that attachment to father was positively associated with resilience in boys.

Conclusions

It was found that the vast majority of the high-risk group were resilient by the terms of the definition adopted in this study i.e., did not report more than one anti-social activity at age 8½. This may reflect the rarity of anti-social behaviour at this age and indicates that at such a young age, resilience as presently defined is the norm.

The high rate of protective factors also indicates that risk factors can be poor predictors of involvement in problem behaviour. This study's finding that only 12% of those at risk were involved in 2 or more anti-social and other problem behaviours (1% of the overall study sample) is a crucial one and further lends credence to this view. These findings highlight the importance of protective factors in the 'risk factors' discourse.

Even after accounting for potential gender bias in the findings of the overall sample of girls and boys, school enjoyment still consistently emerged as a characteristic that was predictive of resilience. This lends credence to the role of a positive school experience in preventing involvement in early anti-social behaviour. However, it remains unclear from these results what underlying mechanisms inherent in the school context reflects children's reports of school enjoyment. Whilst the data indicate that perceptions of school achievement were not associated with resilience, there are myriad factors that could have contributed to the reported school enjoyment. These include friendships, teacher support, involvement in activities and organisations (clubs). More research that focuses on the determinants of school enjoyment would be useful in order that interventions can be appropriately focused.

By far the strongest predictor of resilience was child gender with females significantly more likely to be resilient than males. It was found that in addition to school enjoyment, parenting skills also protected against early involvement in anti-social behaviour amongst boys. This finding indicates that for boys in particular, interventions aimed at improving parent-child interaction may be beneficial. The influence of a positive male role-model for boys is also apparent from this study.

As this study sample was not representative of the overall ALSPAC cohort nor therefore the population as a whole, the findings do not acknowledge differences that may exist in relation to young people from Black and Minority Ethnic groups. Further research could explore this.

Methodological note

Representativeness of the study sample

The sample for this study was drawn from the Avon Longitudinal Study of Parents and Children (ALSPAC). The families in the overall ALSPAC sample are broadly characteristic of families in Britain as a whole. However, the families of the children who formed the sample for the current study were not representative of the overall ALSPAC cohort. The mothers of children in this study sample are overall better educated, more likely to own their own house, and were older at the time of their first child. In addition, the children in the study sample were less likely to come from a minority ethnic group. For further information on the representativeness of the ALSPAC cohort, see:

http://www.alspac.bris.ac.uk/protocol/rep_nature_of_sample.shtml

The Family Adversity Index

The child and family adversity index was based on a series of measures describing various aspects of family functioning during the period of pregnancy including: young maternal age at first pregnancy/child birth; housing; basic living conditions; no educational qualifications; financial difficulties; partner relationship status; family size; major care-giving problems; social network; maternal affective disorder; substance abuse; involvement in crime. Each individual item is assigned a value of 1 if an adversity is present and 0 if it is not present. (For further details on the construction of this index, see Bowen et al., 2004.)

Statistical significance

Tests of statistical significance are those which are used to identify which changes are unlikely to have arisen by chance. Statistical significance at the 5% level is the level at which there is a 1 in 20 chance of incorrectly identifying a difference solely due to chance.

Multivariate analysis

This allows underlying factors that drive the dependent variable of interest (e.g. resilience) to be identified.

Odds ratio

The odds ratio that are produced allow one to understand which categories within independent variables are more likely to be associated with the dependent variable of interest (e.g. resilience) compared with other categories of variables within the independent variable.

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For a more detailed report of the study see *Anti-social and other problem behaviours among young children: findings from the Avon longitudinal study of parents and children*. Home Office Online Report No. 02/08. London: Home Office. Copies will be available on the Home Office RDS website <http://rds.homeoffice.gov.uk/rds/>

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