Carrying or using a weapon at age 17

Evidence from the UK Millennium Cohort Study

Adolescence is a developmental stage characterised by biological and environmental changes that influence risk taking behaviours, including increased involvement in criminal activities.[1] Although much offending tends to taper off after adolescence, these behaviours are nevertheless concerning as they pose a risk of onward development of criminal behaviour and other future negative prospects for the individual.[2] Another major concern around adolescent offending is the harm caused to others, particularly in relation to serious and violent crimes involving a weapon.

The Millennium Cohort Study (MCS) is a UK nationally representative birth cohort study following an initial sample of over 19,000 individuals born around the millennium (Sep 2000–Jan 2002).[3] The initial survey was at age 9 months, with follow-ups at ages 3, 5, 7, 11, 14 and 17. This longitudinal study is highly multidisciplinary with detailed information collected on individuals (cohort members) and their families. In 2018-19 at age 17, a range of offending behaviours were self-reported by cohort members. This report focuses specifically on carrying or using a weapon at age 17, which is considered one of the most serious types of offences. The analyses are based on 13,277 cohort members.

This report shows the overall prevalence of weapon carrying and use at age 17 and its co-occurrence with other types of offences. Various prior factors are examined in terms of their association with carrying or using a weapon, including individual characteristics, socioeconomic background, family environment, mental health, school and peer factors, and prior behaviours and experiences.

Key findings

- **At age 17, 6.4% of young people reported carrying or using a weapon in the preceding year.** This was an increase from age 14 where 3.7% reported this. At age 17 the prevalence for males (8.8%) was more than twice that for females (3.9%).
- **Weapon carrying or use at age 17 intersected with other types of offences at the same age.** Those who had engaged in weapon carrying or use also reported much higher rates of assault, shoplifting, neighbourhood crime, criminal damage and arson, cybercrime, and online bullying. Those carrying or using a weapon were also much more likely to have taken part in multiple types of these other offences, and were likely to have offended many times. Compared to those who did not, a higher proportion of those who carried or used a weapon were current or previous gang members.
- **Childhood experiences of low household income, domestic abuse between parents, and conduct/hyperactivity problems were linked with carrying or using a weapon at age 17.** Factors from earlier adolescence (age 14) that were associated with carrying or using a weapon at age 17 include self-harm, substance use, being excluded from school, and having peers who use multiple substances.

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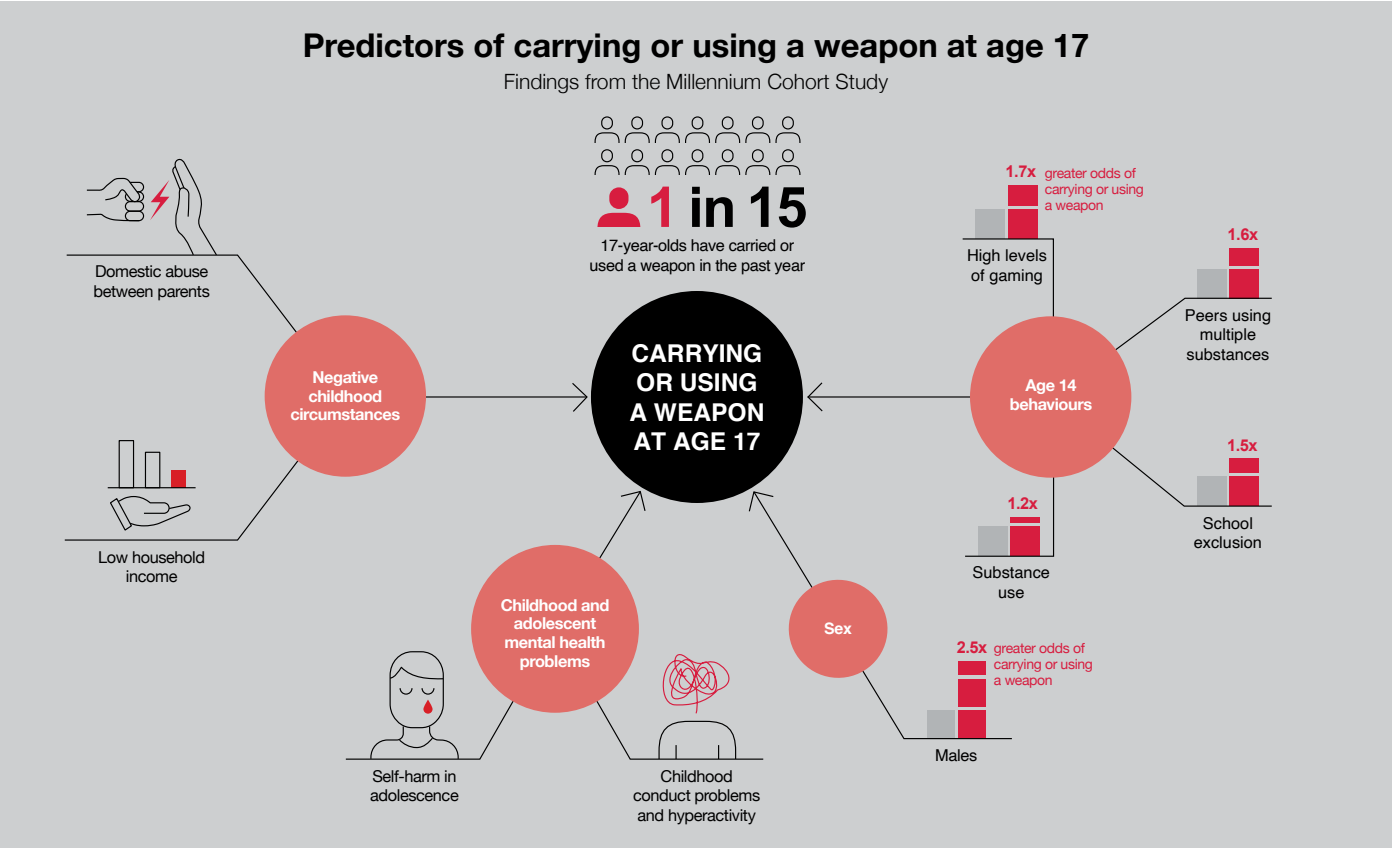


Measures of carrying and using a weapon at age 17

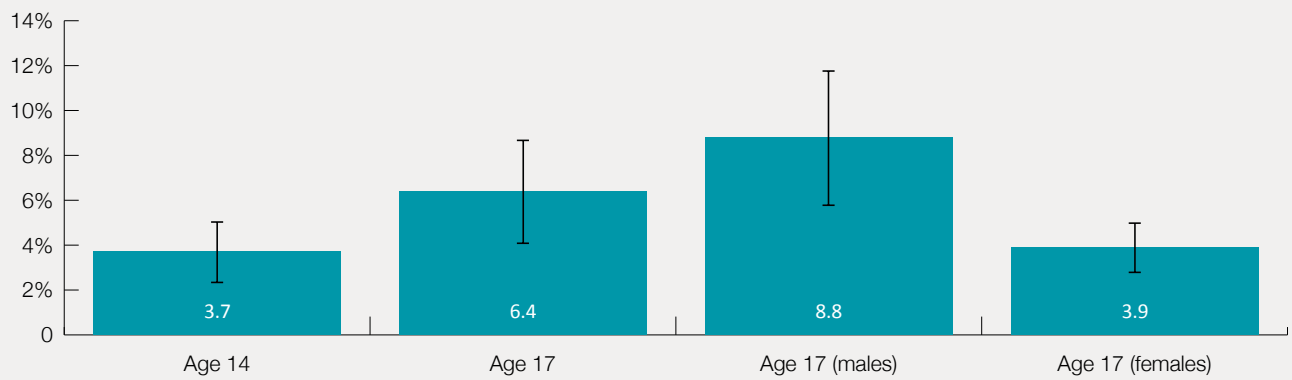
CARRYING OR USING A WEAPON

Carried a weapon: In the last 12 months have you carried a knife or other weapon? (For your own protection, because someone else asked you to or in case you get into a fight).
Use of weapon: In the last 12 months have you hit someone with or used a weapon?

Prevalence of carrying or using a weapon

The prevalence of carrying or using a weapon at age 17 was 6.4% for the sample overall (Figure 1). This was a significant increase compared to when cohort members last reported this at age 14, where the prevalence was 3.7%. At age 17 the prevalence for males (8.8%) was more than twice that for females (3.9%).

FIGURE 1: PREVALENCE OF CARRYING OR USING A WEAPON

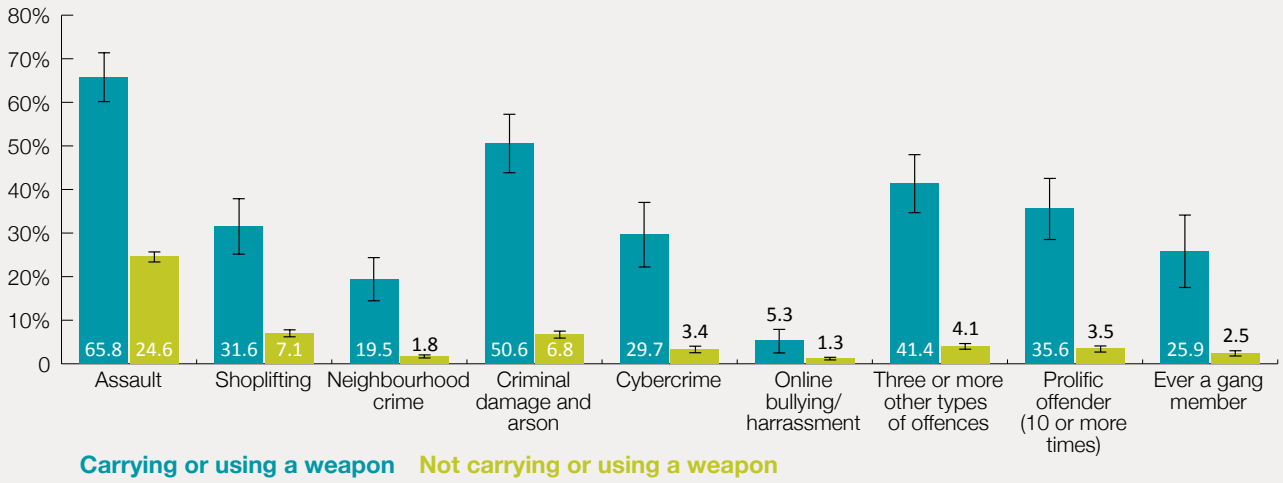


Note: Vertical lines are 95% confidence intervals of estimates

Carrying or using a weapon and overlap with other offences at age 17

Carrying or using a weapon at age 17 intersected with other types of offences at the same age as shown in Figure 2. Of those who had carried or used a weapon in the past year, 66% reported assault, 32% had shoplifted, 20% committed neighbourhood crime, such as breaking and entering, stealing from others, or vehicle theft, 51% were involved in criminal damage, 30% reported cybercrime, and 5.3% had participated in online bullying. In contrast, rates of these offences were much lower for those who had not carried or used a weapon as shown in Figure 2. Those carrying or using a weapon were also much more likely to have participated in several other offences; 41% had engaged in three or more out of these six other types of offences, compared to just 4.1% of those who had not carried or used a weapon. They were also more likely to be prolific offenders, meaning that they had committed various offences a great number of times, with 36% having offended 10 or more times in the past year, compared to 3.5% of those not carrying or using a weapon. A high proportion (26%) of those who had carried or used a weapon were currently or previously a member of a gang, compared to just 2.5% of the other cohort members who had not carried or used a weapon.

FIGURE 2: PREVALENCE OF OTHER OFFENCES AT AGE 17, BY WHETHER OR NOT CARRYING OR USING A WEAPON



Predictors of carrying or using a weapon at age 17

Carrying or using a weapon at age 17 was associated with a range of prior factors across various aspects of cohort members' lives, including individual characteristics, socioeconomic background, family environment, school factors, child and adolescent mental health, and behaviours and experiences previously at age 14. Multivariate regressions were carried out to identify the key factors predicting weapon carrying or use at age 17, controlling for other variables. Results are shown in Table 1. The first model includes individual characteristics and family socioeconomic circumstances and home environment; in the second model mental health in childhood and adolescence are added; and in the third model age 14 experiences and behaviours are included. Coefficients are reported as odd ratios (OR). An OR greater than one means a higher likelihood in comparison to the reference group, so a risk factor for weapon carrying or use, while an OR below one signifies a lower likelihood, or a protective factor against weapon carrying or use.

Results show that being male is a significant risk factor for weapon carrying or use. A range of aspects of individuals' lives in early adolescence were also associated with the outcome: use of substances at age 14, having peers who use multiple substances at age 14, being excluded from school between age 11 and 14. As the association with earlier childhood experiences weakened/disappeared once these age 14 experiences and behaviours were included, this suggests that they are an important channel (mediator) through which earlier life experiences matter for later outcomes. These included low household income, domestic abuse between parents, externalising problems (i.e., conduct/hyperactivity), and self-harm in adolescence. Additional analyses showed that these risk factors were similar for males and females.

Table 1: Results of multivariate logistic regression predicting weapon carrying or use at age 17

	Model 1 OR	Model 2 OR	Model 3 OR
INDIVIDUAL CHARACTERISTICS			
Male	**2.36*** **	**2.53*** **	**1.68** **
Oldest child in household	0.93	1.00	1.03
Cohort member age in months at age 17 survey	1.00	0.99	0.99
Ethnicity (ref. White)			
Mixed	0.91	0.95	0.87
Indian	0.78	0.94	1.23
Pakistani and Bangladeshi	0.71	0.92	1.08
Black or Black British	0.76	0.97	1.08
Other Ethnic group (incl. Chinese)	0.55	0.68	0.68
FAMILY SOCIOECONOMICS			
Household income weekly (average 9mths to age 11) (ref. 80-100% highest)			
20% lowest	**1.73***	1.57+	1.32
20-40%	1.57+	1.46	1.30
40-60%	1.23	1.17	1.11
60-80% highest	1.19	1.15	1.12
FAMILY ENVIRONMENT			
Breastfed	0.89	0.90	0.94
Mother smoked during pregnancy	1.25	1.20	1.06
Parent-child relationship (parent reported) age 3[a]	0.95	1.04	1.02
Main parent mental health problems (9mths-11yrs)[a]	1.06	1.04	1.04
Domestic abuse between parents (9mths-11yrs)	**1.36***	**1.34***	1.24
Main parent used recreational drugs (age 3, 5 or 14)	1.47+	1.41	1.17
Ever single parent between 9mths and 11yrs	1.29	1.26	1.08
CHILDHOOD MENTAL HEALTH			
Childhood externalising problems (age 3-11)[a]		**1.29** **	1.10
Childhood internalising problems (age 3-11)[a]		0.87	0.92
ADOLESCENT MENTAL HEALTH			
Age 14: Self-harmed in past year		**2.09*** **	1.39+
SUBSTANCE USE AT AGE 14			
Binge drinking, regular smoking, trying cannabis/drugs (ref. none of these)			
One type of substance			**1.49***
Two or three types of substances			**2.08** **
SOCIAL MEDIA AND GAMING AT AGE 14			
Age 14: Social media time use[b]			1.09
Age 14: Computer/electronic gaming time use[b]			**1.75***
SCHOOL FACTORS			
Five A to C GCSEs			0.81
School exclusion in secondary between age 11 and 14			**1.77***
Persistent truancy (more than just the once) past year at age 14			1.42
PEER FACTORS AT AGE 14			
Age 14: Spending time with friends in leisure time on most days			1.15
Age 14: Victim of peer bullying			1.13
Age 14: Peer substance use (alcohol, smoking, drugs) (ref. no substance use)			
One type of substance			1.36
Two or three types of substances			**1.99*** **

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10
OR=Odds Ratio

a This predictor variable is standardised (z score), meaning that the odds ratio coefficient is for one standard deviation increase in the predictor.

b This predictor variable is a ridit score, which is a transformation of ordinal scale responses (here hourly time use bands) into a continuous measure. The odds ratio coefficient corresponds to differences between those with the highest time use compared to those with the lowest.

Discussion and conclusion

Increase in weapon carrying or use since age 14

We found that the prevalence of carrying or using a weapon at age 17 had increased from age 14 when cohort members were last surveyed. This finding is consistent with the well-established crime-age curve: rates tend to be relatively low in childhood, then increase dramatically from early adolescence, with a peak in middle to late adolescence, before declining steeply in early twenties, followed by a more steady decline through adulthood.[4] Our finding is different to the pattern seen in some studies of previous UK cohorts of young people, which have shown that weapon carrying peaks earlier than in the current study.[5, 6] The age crime curve has been shown to be different for self-reported studies (showing an earlier peak) compared to official statistics (showing a later peak).[7] Our finding of an increase between early and late adolescence, suggesting a later peak, is therefore more consistent with official offending statistics. The robust approach used in the current study of using well-established imputation methods to deal with missing data may account for differences compared to previous self-report studies.

Gender

One of the most striking, but unsurprising findings in relation to weapon carrying or use was the much higher prevalence among males than females. This is consistent with numerous previous studies[8], and reflected in official statistics.[9] This suggests that biological sex is a potential driver in offending behaviours and is supportive of evolutionary approaches to understanding crime.[10] However, the narrowing of the gender gap in offending over time highlights that social aspects of gender play a role.[11] Our finding that other risk factors were similar for males and females suggest that the same types of prevention programmes may work for both groups, although different strategies may still be needed in relation to engagement and implementation.

Ethnicity

We found no evidence of ethnic minority groups reporting higher rates of weapon carrying or use than those of white origin. Other studies relying on self-reported offending have tended to find very few ethnic differences, while official crime statistics show higher rates among ethnic minorities.[12] Bias in the criminal justice system against ethnic minorities has been highlighted as a possible explanation.[13] Ethnicity in relation to offending is a complex matter as different patterns may exist for different types of offences, and as also reflected in official offending statistics it is not useful to consider all ethnic groups under a combined Black, Asian and minority ethnic (BAME) heading as there is much heterogeneity between groups.

Childhood circumstances

Our finding that low household income during childhood was linked to later weapon carrying or use reflects a well-established pattern in the criminological literature.[14] We showed that childhood domestic abuse between parents was a risk factor for weapon carrying or use, which is consistent with previous research.[15] In terms of implications for policy, strategies that directly address low income, while also targeting the family environment such as early identification of domestic violence, may be effective approaches for reducing weapon carrying or use later in adolescence and beyond.

Mental health

Mental health was found to be linked to carrying or using a weapon, with risk factors including childhood externalising problems (conduct problems and hyperactivity) and self-harm in early adolescence. Previous research has also highlighted these links.[16,17] Mental health may be an important avenue for prevention of weapon carrying or use and other offending behaviours in young people.

> “Mental health may be an important avenue for prevention of weapon carrying or use and other offending behaviours in young people”

Substance use

The association between substance use and weapon carrying or use was not unexpected.[18] In addition to own substance use, we found that peer substance use was associated with carrying or using a weapon at age 17, again a finding consistent with previous examinations.[19] In terms of policy implications, targeting substance use in adolescents may help reduce weapon carrying or use and other offences. It is interesting that there is evidence of a downward trend in the use of substances among young people over the last two decades,[20,21,22] while youth offending has also been seen to decline over this period.[23] Further research is needed to examine the extent to which there may be a causal relationship.

School exclusion

We found school exclusion between the age of 11 and 14 to be related to carrying or using a weapon at age 17. Previous UK examinations have shown this association.[24,25] However, these have tended to be concurrent associations and not longitudinal, or fail to account for childhood conduct problems, which may confound the relationship between school exclusion and later offending. The current study provides a more robust association but is not a causal estimate. Nonetheless, this is an important finding and highlights the value of early intervention to prevent school exclusion.

Computer/electronic gaming

Our finding that spending a lot of time on computer/electronic gaming at age 14 was associated with carrying or using a weapon at age 17 warrants discussion. Previous studies have been mixed, with authors of a recent systematic review of 28 longitudinal studies concluding that there is no relationship between gaming and youth aggressive behaviours.[26] While it is possible that aggression and violence, which feature in some electronic games, affects those who play,[27] it is also plausible that those who choose to play violent games excessively are a selective group with preferences which also make them more likely to engage in offending behaviours. As we are unable to control for these unobserved preferences, the finding in the current study should therefore be treated with caution. This is an area for future research, given large increases in gaming in recent years.[28]

Conclusion

In conclusion, this study provided a thorough examination of weapon carrying or use at age 17, which was seen to have increased markedly in prevalence since age 14. Carrying or using a weapon at age 17 had a strong concurrent overlap with various other offences, so a focus on prevention and intervention for this type of offending is likely to reduce offending also more generally. This study showed that factors associated with carrying or using a weapon were multiple, which suggests a need for various strategies that target these core areas. Strategies in childhood should target low family income, domestic abuse between parents, and child conduct problems. In adolescence, the focus should be on adolescent mental health, substance use, peer substance use, and school exclusion. Policies to help improve children's lives earlier on may reduce the need for later intervention during adolescence as risk factors identified in childhood appear to be linked to weapon carrying or use through risk factors in the teenage years.

> “Policies to help improve children's lives earlier on may reduce the need for later intervention”

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About the Millennium Cohort Study

The Millennium Cohort Study (MCS) is following the lives of 19,517 children born across England, Scotland, Wales and Northern Ireland in 2000-02.

MCS provides multiple measures of the cohort members' physical, socio-emotional, cognitive and behavioural development over time, alongside detailed information on their daily life, behaviour and experiences.

There have been seven main sweeps of MCS to date, at ages 9 months, 3, 5, 7, 11, 14 and 17 years. Additionally, cohort members have taken part in an online survey across the five British cohorts during the COVID-19 pandemic, providing vital data on how the pandemic is affecting this generation.

Around 10,000 cohort members responded at age 17 but the sample was 'restored' back to the age 11 sample using multiple imputations. This ensured more accurate estimates of offending as well as a larger sample and thereby more statistical power. Weights were further used to adjust for attrition between the birth sweep and age 11.

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