Background
An inverse association between teenage smoking and academic achievement is long established. Little is known about e-cigarettes and achievement.

Objectives
To examine associations between teenage academic achievement and lifetime/current smoking, and current e-cigarette use, in the same sample.

Methods
ESPAD (European Schools Project for Alcohol and Other Drugs) has surveyed students since 1995 on substance use, including cigarette smoking. In 2019, in Ireland, 1,967 students, born in 2003, were surveyed from a stratified random sample of 50 Irish schools. Variables included student achievement measured by their average grade (categorised from very high (A and B) to very low (E or lower)); lifetime smoking, current smoking, and current e-cigarette use. Descriptive and bivariate analyses were carried out using Stata version 16.

Results
Students' average grade was significantly associated with lifetime and current smoking. 75.4% (n=645) of high-achieving students (average grades mostly A and B) had never smoked in their lifetimes or in the past 30 days (91.6%, n=784). Only 3.3% (n=28) of high-achieving students had ever smoked more than 40 cigarettes and smoked everyday (1.9%, n=16). Conversely, those who reported lower average grades smoked more both in their lifetimes and everyday as shown in Table 1 and Figure 1.

A strong association was also observed between achievement and current e-cigarette use (Table 2). 86.8% (n=743) of high-achieving students had never used e-cigarettes compared to 61.1% (n=22) who scored E or lower. Only 2% (n=17) of high-achieving students used e-cigarettes every day. However, the most high-achieving students (A or B grades) were less likely to be non-e-cigarette current users (86.8%, n=743) than to be non-current smokers (91.6%, n=784), suggesting that, for these high achievers, e-cigarettes are more acceptable than cigarettes.

Conclusion
As with cigarettes, we find a similar inverse association between achievement and e-cigarette use. This has implications for health education.

	Average Grade									
Lifetime smoking (number of occasions)	A and B (70 - 100%)		Mostly C (51-69%)		Mostly D (40 to 50%)		E or lower (39% or less)		Total	
	N	%	N	%	N	%	N	%	N	%
None	645	75.4	491	65.2	126	59.2	18	48.7	1280	68.9
1-2	81	9.5	102	13.5	19	8.9	4	10.8	205	11.0
3-39	101	11.8	96	12.7	44	20.7	4	10.8	245	13.2
40+	28	3.3	64	8.5	24	11.3	11	29.7	127	6.8
Total	855	100.0	753	100.0	213	100.0	37	100.0	1857	100.0

	Average Grade									
Current smoking (number of cigarettes)	A and B (70 - 100%)		Mostly C (51-69%)		Mostly D (40 to 50%)		E or lower (39% or less)		Total	
	N	%	N	%	N	%	N	%	N	%
None	784	91.6	629	83.5	165	77.1	20	55.6	1598	86.0
Less than one per week	43	5.0	66	8.8	19	8.9	5	13.9	133	7.2
Less than one a day	13	1.5	15	2.0	6	2.8	1	2.8	35	1.9
Every day	16	1.9	43	5.7	24	11.2	10	27.8	93	5.0
Total	856	100.0	753	100.0	214	100.0	36	100.0	1859	100.0

Table 4.17: Lifetime and current smoking by average school grade

Table 1: Lifetime and current smoking by average school grade
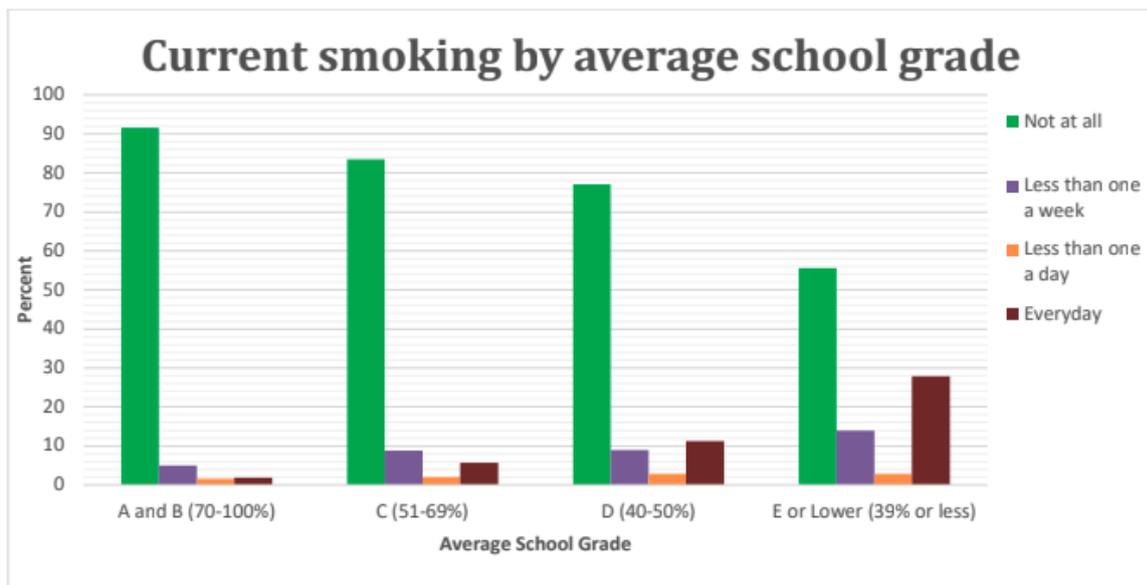Lifetime smoking by average grade: [X2 (9)= 83.977, p<.001,]
Current smoking by average grade: [X2 (9)=93.989, p<.001]

Figure 4.7: Current smoking by average school grade

Figure 1: Current smoking by average school grade

Average Grade										
Current e-cigarette use (frequency of e-cigarettes use)	A and B (70 - 100%)		Mostly C (51-69%)		Mostly (40 to 50%)		E or lower (39% or less)		Total	
	N	%	N	%	N	%	N	%	N	%
None	743	86.8	607	80.9	155	71.8	22	61.1	1527	82.2
Less than once per week	68	7.9	75	10.0	27	12.5	7	19.4	177	9.5
At least once a week	28	3.3	25	3.3	16	7.4	5	13.9	74	4.0
Every day	17	2.0	43	5.8	18	8.3	2	5.6	80	4.3
Total	856	100.0	750	100.0	216	100.0	36	100.0	1858	100.0

Table 4.46: Current e-cigarette use by average grades reported

Table 2: Current e-cigarette use by average grades reported
Current e-cigarette use by perceived relative wealth: [X2 (12)= 34.667, p=.001. Cramer's V= .007].
Current e-cigarette use by average grade: [X2 (9)=54.941, p<.001. Cramer's V= .099]

References
Dearfield CT, Chen-Sankey JC, McNeel TS, Bernat DH, Choi K. E-cigarette initiation predicts subsequent academic performance among youth: Results from the PATH Study. Preventive Medicine. 2021 Dec 1;153:106781.