

What if my parents allow me to consume alcohol and/or tobacco? Consequences of (non) parental permissiveness on vaping among teens

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**Políticas públicas para la salud:
perspectivas desde la economía y la sanidad**

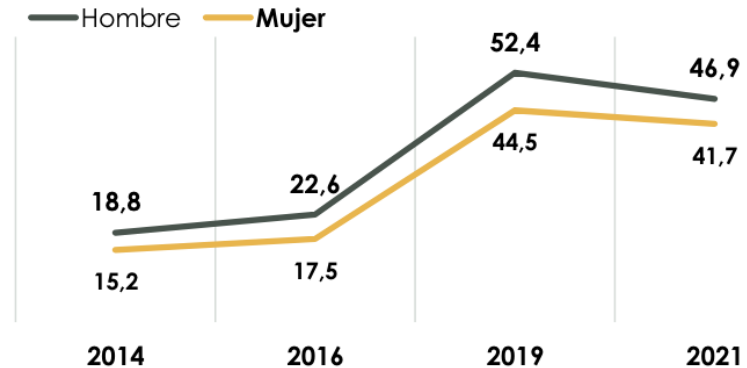
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Introduction

- The use of vapes (e-cigarettes) has increased globally among teens, despite the decline in alcohol & tobacco consumption.
- 18% of teens reported having vaped at least one time in their life, and 10% in the last 30 days. (WHO Regional Office for Europe, 2024).
- In Spain (ESTUDES, 2021):
 - 8,1% in the last 30 days
 - 22,8% in the last 12 months
 - 44,3% ever in lifetime

Prevalence of vaping among Spanish teens



Source: ESTUDES (2021)

Introduction

Risks associated with vaping among youth (U.S. Department of Health and Human Services, 2016):

- E-cigarettes contain nicotine that harms brain development (this normally lasts until the age of 20), and different parts of it, specially those that control attention, learning, mood, and impulse control.
- Aerosols of e-cigarettes (nicotine, flavorings and other additives) contain some chemicals that are harmful for lungs.
- The use of e-cigarettes is associated with the use of normal cigarettes, i.e., teens that currently vape today, might be smokers of normal cigarettes tomorrow.

Related literature

Motivations for consuming drugs among teens have been related to different characteristics.

- ***Parental socioeconomic position*** (SEP) is inconsistently associated to adolescent alcohol consumption (Hanson & Chen, 2007)
- ***Adolescents' own income*** is highly correlated with alcohol consumption (Bosque-Prous et al., 2017; Lintonen & Nevalainen, 2017; Vargas-Martínez, et al., 2020).
- Weekly binge drinking among teens was not associated with ***parents' SEP*** but with their ***academic achievement*** (Bosque-Prous et al., 2017)

Related literature

Other papers focused their attention on the role of environmental factors such as parental monitoring and peers.

- A *high parental involvement* in teens' lives is positively associated with responsible drinking, and negatively with positive expectancies toward alcohol (Yakam, 2021; Bartolo et al., 2023).
- *Peers' pressure* influences positively on teens' expectancies toward alcohol consumption and on less motivation to drink responsibly (Bartolo et al., 2023).
- *Peers' consumption* increases the probability of using alcohol but not tobacco among teens in Spain. (López-Mayan & Nicodemo, 2023). Peer effects on alcohol consumption were stronger in private than public schools.

Objective

- No prior studies focused their attention on teens' motivations toward vaping in Spain and the role of parental permissiveness.
- To test whether allowing teens to consume the most normalized drugs in society, i.e., tobacco and/or alcohol, lead them to vape in different time periods.
- To check whether mothers, fathers, or both parents' permissiveness influence differently on teens' decisions about vaping.

Database

- We used *Spanish School Survey on Drug Use* (SSDU), that collects information about drug consumption among adolescents enrolled in secondary education in Spain.
- SSDU is a national representative survey conducted by the Ministry of Health every two years since 1994.
- We employed the wave of 2021, where teens were interviewed between 8th March and 18th May 2021.
 - Response rate among schools was of 88.7% (slightly lower than of previous wave, 93.2%), and response rate among students was of 97.6%.



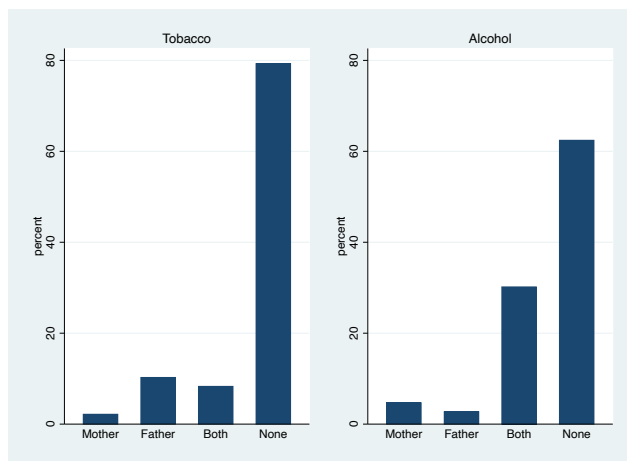
Outcome variable

Prevalence of vaping	Past month		Past year		Ever in lifetime	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Full sample	0.07	0.26	0.22	0.41	0.42	0.49
Males	0.09	0.28	0.24	0.43	0.45	0.50
Females	0.06	0.24	0.19	0.39	0.39	0.49
14 years old	0.07	0.26	0.20	0.40	0.31	0.46
15 years old	0.07	0.25	0.20	0.40	0.38	0.48
16 years old	0.08	0.27	0.23	0.42	0.47	0.50
17 years old	0.07	0.26	0.22	0.42	0.49	0.50
18 years old	0.09	0.28	0.24	0.42	0.52	0.50

Source: own elaboration based on 2021 SSDU

Explanatory variables

Variable of interest - Parental permissiveness



Rest of explanatory variables

Female (n= 22,321)	0.50	0.50
Age (n= 22,321)		
15 years old	0.26	0.44
16 years old	0.25	0.43
17 years old	0.23	0.42
18 years old	0.07	0.26
Non-Spanish (n = 22,254)	0.08	0.27
Mother labor status (ref. employed) n = 20,528		
Homemaker	0.18	0.39
Unemployed	0.07	0.25
Retired	0.01	0.11
Deceased	0.01	0.09
Father labor status (ref. employed) n = 20,196		
Homemaker	0.02	0.12
Unemployed	0.04	0.20
Retired	0.03	0.18
Deceased	0.02	0.14
Mother education (ref. tertiary) n= 19,147		
No studies	0.02	0.15
Primary	0.05	0.22
Secondary	0.45	0.50
Father education (ref. tertiary) n = 18,005		
No studies	0.03	0.17
Primary	0.07	0.25
Secondary	0.51	0.50
Opinion on family economy (ref. below average) n = 21,947		
Above average	0.13	0.34
About average	0.83	0.38
Live close to school (n = 21656)	0.82	0.39
Smoking cohabitants (n = 21,805)	0.38	0.49
Smoking teachers (n = 20,319)	0.39	0.49
Smoking peers (n = 21,368)	0.59	0.49
Smoking others (n = 19,462)	0.32	0.47
Opinion on vaping side effects (ref. few or no problems) n = 21,704		
Quite a few or many problems	0.18	0.38
Do not know	0.22	0.41

Empirical strategy

- A multilevel perspective to distinguish between the different sources of variation in vaping, i.e., individual, school, and province level.
- We estimated three-level random-intercept models, with a binary response, vaping (y), for individual i nested in school j in province k

$$y_{ijk} = \beta_0 + \beta X + (v_{0k} + \mu_{0jk} + \varepsilon_{0ijk})$$

Empirical strategy

- We also calculated the intraclass correlation coefficients (ICC) to know the proportion of variance explained by the variation between schools (ρ_{school}) and provinces ($\rho_{province}$)

$$\rho_{school} = \frac{\sigma_j^2 + \sigma_k^2}{\sigma_j^2 + \sigma_k^2 + \alpha} \quad \rho_{province} = \frac{\sigma_k^2}{\sigma_j^2 + \sigma_k^2 + \alpha}$$

- We conducted our estimations for the full sample, by sex, and considering different time spans of our dependent variable, i.e., whether teens have vaped during the last month, the last year and ever in lifetime.

Preliminary results – full sample

Dependent variable	Vaping past month [♦]	
	OR	95%CI
Permissiveness on tobacco (ref. none)		
Only mother	1.50	(0.91-2.48)
Only father	1.21	(0.90-1.64)
Both	2.10***	(1.58-2.79)
Permissiveness on alcohol (ref. none)		
Only mother	1.68***	(1.15-2.45)
Only father	1.17	(0.69-1.98)
Both	1.56***	(1.23-1.97)
_cons	0.04***	(0.02-0.09)
Random effects		
σ_j^2	0.42	
σ_k^2	0.00	
ICC ^{♦♦}		
ρ_{school}	10.94%	
ρ_{province}	2.07%	
Sample size	8,628	

- ♦ Estimations were adjusted for teens' sociodemographic characteristics, parents' socioeconomic status, and other mediators such as teens' opinions about side effects of vaping, and whether they witnessed other people to smoke (e.g., cohabitants, teachers, school peers, and others)
- ♦♦ Intraclass coefficients were estimated for the unadjusted model, i.e., without adding predictors in the regression.

Preliminary results – different time spans

Dependent variable	Vaping past year [♦]		Vaping ever in lifetime [♦]	
	OR	95%CI	OR	95%CI
Permissiveness on tobacco (ref. none)				
Only mother	1.61***	(1.15-2.25)	2.80***	(1.99-3.92)
Only father	1.24**	(1.03-1.49)	1.60***	(1.38-1.85)
Both	2.06***	(1.70-2.50)	2.12***	(1.76-2.54)
Permissiveness on alcohol (ref. none)				
Only mother	1.53***	(1.19-1.97)	1.82***	(1.45-2.29)
Only father	1.42**	(1.03-1.94)	1.68***	(1.29-2.19)
Both	1.58***	(1.37-1.83)	1.73***	(1.53-1.95)
_cons	0.18***	(0.12-0.27)	0.25***	(0.18-0.36)
Random effects				
σ_j^2	0.13		0.12	
σ_k^2	0.05		0.02	
ICC ^{♦♦}				
ρ_{school}	6.20%		4.07%	
ρ_{province}	1.94%		0.72%	
Sample size	8,637		9,040	

- ♦ Estimations were adjusted for teens' sociodemographic characteristics, parents' socioeconomic status, and other mediators such as teens' opinions about side effects of vaping, and whether they witnessed other people to smoke (e.g., cohabitants, teachers, school peers, and others)
- ♦♦ Intraclass coefficients were estimated for the unadjusted model, i.e., without adding predictors in the regression.

Dependent variable	Vaping past month				Vaping past year				Vaping ever in lifetime			
	OR	Males 95%CI	Females OR	Females 95%CI	OR	Males 95%CI	Females OR	Females 95%CI	OR	Males 95%CI	Females OR	Females 95%CI
Permissiveness on tobacco (ref. none)												
Only mother	1.86*	(0.91-3.78)	1.46	(0.71-3.04)	1.48	(0.87-2.49)	1.89***	(1.23-2.92)	3.10***	(1.80-5.34)	2.76***	(1.79-4.25)
Only father	1.07	(0.70-1.66)	1.32	(0.87-2.01)	1.11	(0.86-1.43)	1.38**	(1.08-1.76)	1.54***	(1.25-1.90)	1.60***	(1.31-1.95)
Both	2.53***	(1.72-3.71)	1.63**	(1.03-2.59)	2.52***	(1.91-3.33)	1.76***	(1.34-2.31)	2.43***	(1.85-3.19)	1.88***	(1.47-2.41)
Permissiveness on alcohol (ref. none)												
Only mother	1.55	(0.85-2.82)	1.61*	(1.00-2.68)	1.19	(0.78-1.82)	1.72***	(1.26-2.35)	1.59**	(1.07-2.36)	1.90***	(1.44-2.50)
Only father	1.43	(0.70-2.93)	0.92	(0.41-2.06)	1.36	(0.85-2.16)	1.46*	(0.95-2.24)	1.40*	(0.94-2.09)	1.98***	(1.39-2.82)
Both	1.90***	(1.38-2.63)	1.20	(0.85-1.71)	1.53***	(1.25-1.88)	1.55***	(1.27-1.89)	1.63***	(1.37-1.93)	1.81***	(1.54-2.13)
Age (ref. 14 years old)												
15 years old	0.74	(0.49-1.13)	0.79	(0.52-1.19)	1.11	(0.85-1.44)	0.97	(0.76-1.24)	1.34***	(1.09-1.66)	1.45***	(1.17-1.78)
16 years old	0.85	(0.56-1.29)	0.87	(0.58-1.31)	1.28*	(0.98-1.67)	0.94	(0.73-1.20)	1.92***	(1.54-2.39)	1.76***	(1.42-2.17)
17 years old	0.85	(0.55-1.31)	0.53***	(0.33-0.85)	1.41**	(1.07-1.86)	0.71**	(0.54-0.93)	2.15***	(1.71-2.70)	1.65***	(1.32-2.06)
18 years old	0.76	(0.43-1.34)	0.74	(0.39-1.39)	0.90	(0.61-1.32)	0.91	(0.63-1.32)	1.97***	(1.43-2.71)	1.83***	(1.34-2.51)
Non-Spanish (ref. Spanish)	1.54	(0.90-2.63)	0.82	(0.43-1.56)	0.81	(0.54-1.19)	0.81	(0.57-1.17)	0.93	(0.68-1.28)	0.89	(0.68-1.17)
Mother labor status (ref. employed) *												
Homemaker	0.81	(0.57-1.15)	0.85	(0.56-1.26)	0.92	(0.74-1.15)	0.80*	(0.63-1.01)	0.87	(0.73-1.05)	0.90	(0.75-1.08)
Unemployed	1.07	(0.61-1.85)	1.58*	(0.93-2.70)	0.88	(0.61-1.28)	1.26	(0.91-1.76)	0.88	(0.65-1.19)	1.08	(0.82-1.42)
Retired	0.90	(0.26-3.17)	2.91**	(1.09-7.72)	0.98	(0.45-2.11)	2.00*	(0.99-4.05)	0.79	(0.41-1.55)	1.82*	(0.94-3.53)
Father labor status (ref. employed) *												
Homemaker	0.92	(0.34-2.51)	1.28	(0.44-3.76)	0.66	(0.33-1.34)	1.62	(0.86-3.06)	0.98	(0.58-1.66)	2.72***	(1.55-4.75)
Unemployed	2.24***	(1.28-3.90)	0.99	(0.49-2.01)	1.39	(0.91-2.14)	1.15	(0.78-1.71)	1.11	(0.76-1.63)	1.04	(0.75-1.45)
Retired	0.51	(0.21-1.25)	0.66	(0.27-1.60)	0.75	(0.45-1.24)	0.78	(0.48-1.27)	1.03	(0.69-1.53)	0.78	(0.53-1.14)
Mother education (ref. tertiary)												
No studies	1.17	(0.36-3.78)	3.33**	(1.27-8.73)	1.62	(0.75-3.52)	2.36***	(1.27-4.39)	0.97	(0.50-1.90)	1.14	(0.67-1.93)
Primary	0.92	(0.44-1.93)	1.33	(0.65-2.72)	0.82	(0.51-1.32)	1.10	(0.71-1.70)	0.93	(0.63-1.37)	1.14	(0.80-1.62)
Secondary	1.37**	(1.01-1.86)	1.22	(0.88-1.70)	1.12	(0.93-1.37)	1.14	(0.94-1.38)	1.07	(0.91-1.25)	1.13	(0.97-1.33)
Father education (ref. tertiary)												
No studies	1.61	(0.61-4.24)	0.29*	(0.08-1.07)	0.75	(0.37-1.50)	0.55*	(0.31-1.08)	0.77	(0.44-1.34)	0.84	(0.52-1.33)
Primary	1.30	(0.71-2.37)	1.02	(0.56-1.86)	1.15	(0.77-1.72)	0.87	(0.60-1.27)	1.21	(0.86-1.70)	1.19	(0.88-1.60)
Secondary	1.16	(0.85-1.58)	0.91	(0.66-1.27)	0.96	(0.79-1.17)	0.96	(0.79-1.17)	1.18**	(1.01-1.39)	1.06	(0.90-1.24)
Opinion on family economy (ref. below average)												
Above average	1.56	(0.76-3.23)	2.62*	(0.95-7.20)	1.19	(0.73-1.96)	1.59*	(0.95-2.67)	1.18	(0.77-1.82)	1.39	(0.92-2.12)
About average	0.89	(0.45-1.77)	1.58	(0.61-4.09)	0.83	(0.52-1.31)	1.10	(0.69-1.77)	0.94	(0.63-1.40)	1.15	(0.79-1.68)
Live close to school	0.92	(0.67-1.28)	0.97	(0.68-1.38)	0.95	(0.77-1.17)	1.02	(0.82-1.26)	0.88	(0.73-1.05)	1.17*	(0.98-1.39)
Smoking cohabitants	1.36**	(1.05-1.77)	1.10	(0.82-1.48)	1.34***	(1.13-1.59)	1.39***	(1.18-1.65)	1.41***	(1.22-1.63)	1.48***	(1.29-1.70)
Smoking teachers	1.73***	(1.24-2.42)	1.14	(0.78-1.64)	1.24***	(1.00-1.53)	0.97	(0.78-1.20)	1.21**	(1.02-1.45)	0.80**	(0.67-0.95)
Smoking peers	0.90	(0.65-1.26)	0.92	(0.64-1.31)	1.04	(0.85-1.29)	1.14	(0.93-1.40)	1.11	(0.94-1.31)	1.30***	(1.10-1.53)
Smoking others	1.10	(0.79-1.52)	1.42*	(0.98-2.05)	1.51***	(1.22-1.86)	1.37***	(1.10-1.70)	1.50***	(1.25-1.80)	1.48***	(1.24-1.77)
Opinion on vaping side effects (ref. few or no problems)												
Quite a few or many problems	0.49***	(0.34-0.72)	0.43***	(0.28-0.65)	0.42***	(0.33-0.53)	0.53***	(0.42-0.66)	0.46***	(0.39-0.56)	0.52***	(0.44-0.62)
Do not know	0.35***	(0.22-0.55)	0.21***	(0.11-0.40)	0.32***	(0.24-0.41)	0.30***	(0.22-0.41)	0.41***	(0.34-0.49)	0.41***	(0.34-0.50)
_cons	0.04***	(0.02-0.09)	0.03***	(0.01-0.10)	0.19***	(0.11-0.33)	0.14***	(0.08-0.24)	0.32***	(0.20-0.52)	0.16***	(0.10-0.26)
Random effects												
σ_1^2	0.56		3E-01		0.19		0.02		0.13		0.06	
σ_0^2	0.00		1E-35		0.00		0.07		0.00		0.02	
Sample size		4,134		4,494		4,142		4,495		4,391		4,649

Conclusions

- When both parents allow their children to smoke and/or drink alcohol, teens' odds of vaping increase for all time spans, and for male and female teens.
- Parents are very permissive with alcohol consumption in our sample (30% both parents).
- Mothers' permissiveness influences more on teens' behavior than fathers', specially in trying vaping ever in lifetime among male and female students.
- Mothers' SES was important to explain vaping among female teens (particularly when they were unemployed, retired, and/or homemakers; and had no studies).

Conclusions

- Our results highlight importance of focusing health educational programs on teens but also on parents to avoid health-risk behaviors at early ages.
- Parental decisions within household matter for teens, and how these are agreed.
- We still observe a traditional gender role attached to Spanish women, as mothers' decisions and/or behaviors within household had a higher impact than fathers' on their children.

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