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Characterizing e-cigarette use among Virginia middle and high school youth using confiscated products

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Abstract

Introduction: There has been heightened research interest on JUUL use among youth, but less information is available on the use of other electronic cigarette (ECIG) brands, like NJOY or Smok. Other than self-report, methods such as collection of confiscated ECIGs may provide an unbiased estimate of youth ECIG use behavior. This study aims to characterize ECIG use using confiscated products among middle and high school youth to inform prevention and intervention efforts.

Methods: Confiscated ECIG products (N=62) were collected from Central Virginia public school districts during September 2019 - December 2019. Products were placed in a zip-lock bag with a form completed by school personnel that included date, grade level, and possible side effects. Form details, product characteristics, and presence of tampering were recorded using a standardized instrument and double-data entry method. Data was analyzed using descriptive and bivariate statistics with SPSS V26.

Results: ECIG device + liquid reservoir (i.e., a pod) comprised a majority of products confiscated (77.4%) followed by ECIG liquid only (17.7%) and ECIG device only (4.8%). The top two brands were NJOY Ace (40.3%) and JUUL (24.2%). Grades with the most confiscated products were 11th (30.6%), 8th (19.4%), and 9th (17.7%). Suspected tampering was present in about one-third of products. Middle school students (MSS; grades 6-8; n=15) preferred JUUL (n=8, 53%) while high school students (HSS; grades 9-12; n=39) preferred NJOY Ace (n=20, 51%). Blueberry and watermelon twist NJOY Ace flavors were common among HSS.

Discussion: Pod mod brands other than JUUL were common among confiscated products. HSS appeared to prefer NJOY Ace, while MSS used JUUL (only available in tobacco/menthol flavor during data collection). HSS may prefer NJOY Ace due to available flavors, more mL per pod, and lower cost. Findings emphasize the need for greater restrictions and youth access controls for ECIGs. Current policies for age and pod mod flavors may not be sufficient to deter youth use.

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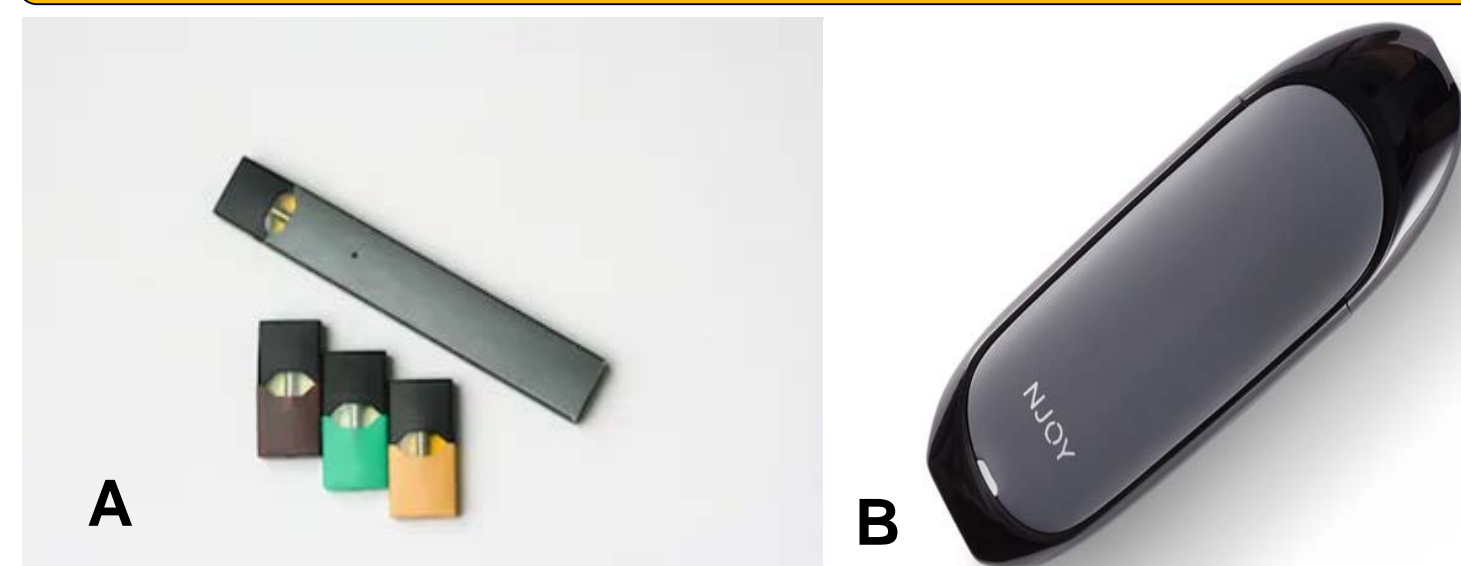
Introduction

- The public health field and policymakers have been particularly focused on understanding and addressing youth use of cartridge-based electronic cigarettes (ECIGs) such as JUUL (Zhan et al., 2019; NASEM, 2018).
- There has been less focus on understanding youth use of other common ECIG brands such as Puff Bar and NJOY Ace.
- Previous literature has relied on self-report methods from current ECIG users (McKeganey et al., 2019; Cullen et al., 2019).
- Examination of confiscated ECIGs among youth may provide novel and potentially less biased information about brand preferences and use behavior.
- The purpose of the present study was to characterize ECIG use using confiscated products from public school youth in Central Virginia to inform future prevention and intervention efforts.

Method

- School personnel at participating districts collected confiscated ECIG products and completed a form indicating date, grade level, and any noted side effects from the student in question.
- N=62 products/devices were included in the present analysis.
- Research staff entered form data and recorded device size, brand, other characteristics, and signs of tampering using a standardized instrument and double-data entry method.
- Descriptive and bivariate statistics were used to characterize the sample and compare ECIG brand and tampering by grade level.
- SPSS V26 was used for all analyses.

Common ECIG Devices



Note: Panel A is a JUUL device with tobacco/menthol pods. Panel B is a NJOY Ace with a single attached pod (Mary, 2018; Gibbie, 2020)

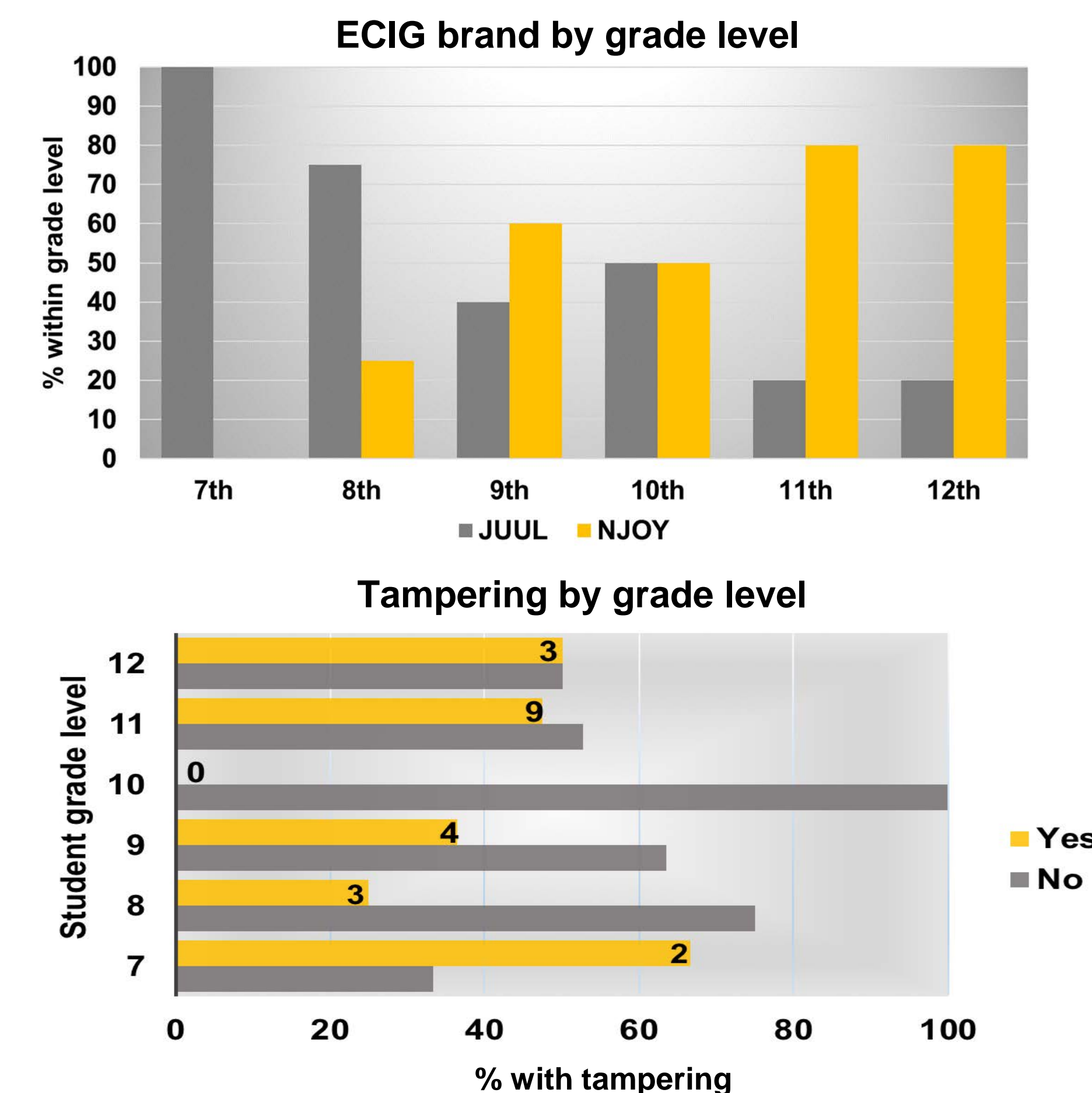
Product Characteristics (N=62)

ECIG Brand, N (%)	
JUUL	15 (24.2)
NJOY ACE	25 (40.3)
Smok Nord/Novo/Trinity Alpha	4 (3.5)
Suorin Air	2 (3.2)
Vuse Solo/Vibe	4 (3.5)
Avail	2 (3.2)
Other	10 (16.1)
Grade Level, N (%)	
6	0 (0)
7	3 (4.8)
8	12 (19.4)
9	11 (17.7)
10	3 (4.8)
11	19 (30.6)
12	6 (9.7)
Device type, N (%)	
Cigalike	0 (0)
Vape Pen	5 (8.1)
Box mod	1 (1.6)
Pod mod	44 (71.0)
Unknown/Other	12 (19.4)
Tampering of product, N (%)	
Yes	22 (35.5)
No	40 (64.5)

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ECIG Brand and Tampering by Grade Level



Discussion

- NJOY Ace which is sold with flavored pods like fruit was more common among grades 9-12, while JUUL (limited to tobacco/menthol flavors) appeared more frequently among grades 7-8.
- Product and/or device tampering by grade level varied between 0%-67%; future analyses are planned to test the relationship of tampering to liquid chemical contents.
- While current policy restricts the availability of all non-tobacco based pods/cartridges and limits tobacco sales to individuals 21+, these actions may not deter current youth effectively (FDA, 2020; FDA, 2019). Fruit and other flavored disposable ECIGs and liquids are still available and able to be accessed by youth.
- Research is needed to understand how youth may respond to these increased restrictions. Strategic and informed youth prevention and intervention efforts and policies are still needed.
- Of note, data represent a specific Virginia region and may not be representative of other areas. Similar studies are needed from other communities.