

implemented to ensure telehealth is done safely and effectively. Along with regulations comes laws that must be followed. As the metaverse grows, the more difficult it can be to control each factor which requires stakeholders to be more involved. The metaverse has exciting potential for people across the globe. ■

REFERENCES

- Lawrence, A. T., & Weber, J. (2023). *Business and society stakeholders, ethics, public policy*. McGraw Hill Education.
- Lucas, J. W., & Villarroel, M. A. (2022, October 12). Products - data briefs - number 445 - October 2022. *Centers for Disease Control and Prevention*. Retrieved April 28, 2023, from <https://www.cdc.gov/nchs/products/databriefs/db445.htm>
- Kolhe, H. (n.d.). Healthcare in metaverse market - A big revolution in healthcare industry expected to hit with a CAGR of 48.3% over the forecast period 2024 – 2030. *LinkedIn*. Retrieved April 26, 2023, from <https://www.linkedin.com/pulse/healthcare-metaverse-market-big-revolution-industry-harsh-k-?trk=pulse-article>
- MarketsandMarkets Research Pvt. Ltd. (2022, November 17). Metaverse market size projected to gain US\$426.9 billion by 2027, growing at a CAGR of 47.2%-report by MarketsandMarkets™. *GlobeNewswire News Room*. Retrieved March 20, 2023, from <https://www.globenewswire.com/en/news-release/2022/11/17/2558308/0/en/Metaverse-Market-Size-Projected-to-Gain-US-426-9-billion-by-2027-Growing-at-a-CAGR-of-47-2-Report-by-MarketsandMarkets.html>

■ **Ashley Todd** is an IU East Student



A LITERACY REVIEW ON WHAT IS CAUSING VAPING TO INCREASE IN YOUTH?

Addison Tuttle

ABSTRACT

A literacy review on the causes, consequences, and solutions of vaping in younger generations. First, I had to gather information about vaping in adolescents and what drew them into wanting to vape. The information gathered was very helpful when writing the article. Most sources reviewed thought teens were vaping and discussed the potential harm in their future. Each article believed that the main consequence of vaping was addiction. While vaping can slow down body functions too, addiction was the main focus. The causes of vaping varied from the appealing flavors, wanting to fit in with others, and optimal bias.

Key words: literature review, vaping, youth, addiction, health risks, being cool, social pressure, flavor appeal

What is Causing Vaping to Increase in Youth?

Vaping has become an apparent issue among adolescents throughout the past decade due to them wanting to “look cool” and wanting to fit in. For several years, vaping has been on the rise, especially in youth. The vapes seem more appealing to those who are younger because of the flavors they use. With younger kids getting access to the products, they are putting themselves at risk for threats to their health. To increase understanding of vaping in adolescence, this paper will examine the issues and possible solutions in regard to adolescents using vapor products. This paper will also include the

negative effects of vaping and possible solutions.

Kiersten Strombotne, an Assistant Professor of Health Law at Boston University, portrayed the issue of teens experiencing optimal bias, in her article “Who, me? Optimism bias about US teenagers’ ability to quit vaping”. The author of this article conducted a study to discover how many teens were experiencing optimal bias and thought that it would not be hard to stop vaping. Strombotne concluded that when teenagers try to quit, they see how hard it is. “More than 60 percent of teenagers were optimistically biased about their ability to quit vaping” (Strombotne, 2021). Before conducting her research, the vaping rate in teens has doubled (Strombotne 2021). With these numbers growing continuously, young adults are at more risk of being addicted to nicotine.

Simone Pettigrew et al. wrote on different issues for the topic of vaping in the article “School staff perceptions of the nature and consequences of students’ use of e-cigarettes”. These authors examine how vaping is becoming a problem in schools. The authors also examined the teacher’s standpoint on vaping and how it has become an issue. Throughout the study of the teachers, more than half (51%) of teachers reported that there was an increasing in vaping use while in school (Pettigrew et al, 2022).

Jamie Tam (Assistant Professor in the Department of Health Policy and Management at the Yale school of public health) and Andrew Brouwer (Assistant Research Scientist) studied the incline of vaping among adolescents and how they are at more risk for health issue in their article, “Comparison of e-cigarettes use prevalence and frequency by smoking status among youth in the United States, 2014-19”. “Public health leaders are especially concerned that never smoker youth might become addicted to nicotine through e-cigarettes...” (Tam, Brouwer, 2021). In response to the number of users inclining, some states had put out temporary restrictions on the sales of e-cigarettes because of lung injuries. In addition to the issues of vaping, these

sources also declared what they believed were the leading causes of vaping in adolescents.

The articles studied for this literature review mentioned that the number of people who use vapes has gone up tremendously from the past years. Each article also had their reasonings for why they believed the numbers were going up. Based on the results from the online survey at the school in Australia, there was a tied response as to why teens were vaping. The adolescents want to look cool and fit in with their peers and because they think that vapes are less harmful than cigarettes or marijuana (Pettigrew et al. 2022).

Social appearances are not the only reason for teens vaping. Tam and Brouwer (2021) explained that the cause of vaping in adolescents is due to the flavors being more appealing for the younger generations: "...and that flavors could be the 'on-ramp' to addiction." With flavors that are more appealing to youth, they are at more risk of becoming addicted to nicotine. Not only are kids getting addicted to nicotine, the FDA has had to ban flavors in brands like the JUUL because of health issues in people who were smoking them (Tam & Brouwer, 2021)

As previously discussed, Strombotne et al. (2021) examined that a possible cause of vaping in adolescents is because of the optimal bias they are experiencing. Teens believe that they would have relatively little trouble in quitting (Strombotne et al. 2021). Teens experiencing this think that they can sit a vape down and easily be able to quit. Teenagers think that it would be easy until they attempt it and then experience nicotine withdraws.

In addition to adolescents experiencing these withdraws, they also have consequences they have to face. Strombotne et al. (2021) suggested that the consequences of vaping at a young age can lead to addiction to other substances. She also suggests that if nothing is done while the person is young, there is a higher chance of addiction in their adulthood. Not only will these people have an addiction, there are health risks, like issues with lungs, mind, and other parts of the body.

(Strombotne et al. 2021).

One of the effects on the mind is "poor school performance, mood, and behavior" (Pettigrew et al. 2022). Based on the study conducted within school systems in Australia and New Zealand, Pettigrew et al. examine many consequences of vaping within school buildings. "...understanding students' motives for vaping; where and when vaping is occurring on school grounds; and how students' moods, behaviors, and school-related performance are being affected" (Pettigrew et al, 2022). Students' demeanors can change with or without "hitting a vape", and the consequences of vaping can affect their performance in subjects or extracurriculars.

Like Strombotne et al. (2021), Tam and Brouwer (2021) also examine that a consequence of vaping in adolescents is that the people who are using vapes will become addicted. "The average nicotine concentration in e-cigarettes sold has increased overtime, and the e-cigarette market has shifted towards advanced, pod-based products that have been shown to deliver more efficiently to its users compared to early-generation 'cig-alike' products" (Tam, Brouwer, 2021). With the more advanced vapes, the amount of nicotine delivered to the body is higher than it was in past generations and makes it easier for younger kids to become addicted.

In order to solve the issue of vaping within schools, Pettigrew et al. recommended that teachers try to reduce the exposure of e-cigarettes on school grounds. To do this, it was recommended that there be more effective vaping prevention interventions at school (Pettigrew et al 2022). With school staff knowing each factor into why students are vaping, it will make it easy to understand what needs to be done in order to limit vaping on school premises.

Vaping prevention interventions were also recommended by Tam and Brouwer. The article mentions "Interventions need to consider which groups are most at risk, which requires consideration of both numbers of people and magnitude of potential harm" (Tam, Brouwer, 2021).

Strombotne et al. (2021), Pettigrew et al. (2022), Tam and Brouwer (2021) all believed that in order to solve the issue of vaping, intervention needs to occur. While there is an occurring issue of vaping throughout the world, more research is needed to understand the real-world impact of e-cigarettes on youth never smokers versus current smokers” (Tam, Brouwer, 2021). Vaping has been on the rise for the past few years but is still a new issue and to fully understand research needs to be conducted. Strombotne et al. (2021) discussed optimal biased within teens and mentioned that teens are still vaping is because they think they would be able to quit easily. Pettigrew et al. (2022) conducted a study in Australia to see what the teachers had thought about the vaping issues and the majority concluded that students wanted to fit in with everyone else. Lastly, Tam and Brouwer (2021) discussed that not only the social appearance, but the appealing flavors is a cause for adolescents wanting to use a vape. The main consequence between all three sources was that vaping is addictive and it might lead to addictions later in life. Vaping has been on the rise for the past few years but is still a new issue and to fully understand vaping, more research needs to be conducted. ■

REFERENCES

- Amano M, Kawano Y, Kubo T, Kuwahara T, Kobayashi H. Population-level laterality in foraging finless porpoises. *Scientific Reports*. 2021;11(1).
- Laterality definition & meaning. [accessed 2022 Nov 12]. <https://www.merriam-webster.com/medical/laterality>
- Lilley MK, de Vere AJ, Yeater DB. Laterality of Eye use by Bottlenose (*Tursiops truncatus*) and rough-toothed (*Steno bredanensis*) dolphins while viewing predictable and unpredictable stimuli. *International Journal of Comparative Psychology*. 2020;33.
- Manns M, Basbasse YE, Freund N, Ocklenburg S. Paw Preferences in mice and rats: Meta-analysis. *Neuroscience Biobehavioral Review*. 2021;127:593–606.

- Marcori AJ, Okazaki VH. A historical, systematic review of handedness origins. *Laterality*. 2020;25(1):87–108.
- McDowell LJ, Wells DL, Hepper PG. Lateralization of spontaneous behaviours in the domestic cat, *Felis silvestris*. *Animal Behaviour*. 2018;135:37–43.
- Poindexter SA, Reinhardt KD, Nijman V, Nekaris KAI. Slow lorises (*nycticebus* spp.) display evidence of handedness in the wild and in captivity. *Laterality*. 2018;23(6):705–721.
- Rodgers RMR, Cain KE. No evidence for side preference or handedness in a New Zealand rail species with habitual foot-usage, the pukeko. *Behavioral Processes*. 2019;167:103910.
- Somers M, Ophoff RA, Aukes MF, Cantor RM, Boks MP, Dauwan M, de Visser KL, Kahn RS, Sommer IE. Linkage analysis in a Dutch population isolate shows no major gene for left-handedness or atypical language lateralization. *The Journal of Neuroscience*. 2015;35(23):8730–8736.