Original Article

Prologue to the Multi-Theory Model (MTM) of Health Behavior Change: A Phenomenological Case Study to Determine Vaping Cessation Strategies Among Young Adults

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Abstract
Introduction: Vaping has become a pressing public health issue among young adults, yet qualitative evidence on cessation strategies remains limited. The Multi-Theory Model (MTM) of health behavior change offers a framework to understand initiation and sustenance of quitting behavior. This case study explored the lived experiences of a young adult in vaping cessation, applying MTM constructs to identify facilitators and barriers relevant for health promotion interventions.
Methods: A hermeneutic phenomenological case study was conducted with a 23-year-old Asian American male, living in a southwestern state in the United States. A structured, fifty-minute duration, in-depth interview was facilitated. Data were transcribed, coded, and analyzed using directed content analysis grounded in MTM. Trustworthiness was ensured through reflexivity, member checking, triangulation, and an audit trail.
Results: The participant, who began vaping at age 16, successfully quit after three failed attempts. Analysis produced 39 codes across 11 themes aligned with MTM constructs. For initiation, participatory dialogue highlighted more perceived advantages (e.g., improved appetite, reduced irritability) than disadvantages (e.g., stress management challenges). Behavioral confidence was reinforced by self-reflection and observing others, while environmental modifications such as avoiding vape shops supported cessation. Sustenance constructs included emotional transformation, self-practice strategies (e.g., mimicking vaping motions), and strong family and social support. The participant emphasized stress management, healthy coping mechanisms, and a preference for face-to-face cessation programs.
Conclusion: MTM provides a valuable framework for understanding vaping cessation among young adults. Interventions should strengthen self-efficacy, build confidence, and incorporate familial/social support to enhance sustained cessation. Tailored health promotion strategies are needed to address psychosocial and environmental factors.
Keywords: Vaping cessation, young adults, Phenomenology, Multi-theory model, Self-Efficacy, Health behavior change

Introduction

Vaping and e-cigarette use, especially among young adults (YAs), is a significant public health issue. Research on interventions for quitting e-cigarette use, also known as "vaping," is currently lacking. Further investigation is required to develop and refine efficient and effective vaping cessation interventions. Vaping is a multifaceted behavior with specific consequences for cigarette consumption. Promising delivery modes could include personalized and technology-driven methods.[1] The findings of recent studies that highlight the confusion and lack of information that is limited and available to young adults and adolescents regarding the health effects of electronic cigarettes are supported by this piece of evidence, which rarely introduces lived experiences.[2,3] Vaping quitting has been described as a 2020 resolution on social media

platforms by young adults and has resulted in a vaping quitting campaign through many social media accounts.[4]

Some initial qualitative work on the quitting aspect of vaping has not been conducted. It is just within the last 10 years that young adults' perspectives on e-cigarette components, safety, addictive qualities, societal norms, availability, cost, and regulations have been highlighted. These qualitative studies explained reasons for young adults in the process of experimentation and discontinuation.[5] Focus group discussions with young adult smokers and nonsmokers revealed their perception and awareness about various methods of using e-cigarettes as a means of quitting smoking.[6] On the other hand, social and interpersonal factors significantly influence the various stages of alternative tobacco products (ATP) use initiation, continuation, and cessation among young

adults, of which e-cigarettes are the commonest.[7]

The propositions for such qualitative studies are to explore the ontological paradigm which continues with the notion of a constructivist approach linking the participant's subjective embedding in the young adults' peer environment. The tradition has incorporated the "hermeneutic phenomenology" as the interpretive phenomenon of meanings and continual review. Epistemologically, the joint interpretation of knowledge about being a young adult with a vaping quitting behavior has been explored together, and in the context of axiology, the values and influences of the participants are to be gathered on how they want to mentor their peers or develop empathy based on their own rhetoric.[8]

Single-case phenomenological study, particularly in the context of vaping among young adults, offers a powerful methodological framework for understanding the nuanced lived experiences of individuals. This immersive approach focuses on the subjective experiences of users to elucidate the personal meanings and societal implications surrounding vaping behaviors, which are critical in a rapidly evolving public health landscape. Studies indicate that there is a significant interplay between individual perceptions of harm related to vaping and their quitting behaviors among young adults. For instance, Eggers et al discuss how health concerns strongly correlate with intentions to quit vaping, a finding consistent with qualitative research highlighting that such concerns prominently arise among young users.[9] This implies that by employing a phenomenological approach, researchers can illuminate how young adults internalize health-related narratives, which influence their behavioral choices regarding vaping and smoking.[10] Such insights are invaluable in crafting targeted interventions informed by the genuine fears and rationale of young adults, thereby improving cessation strategies.

Furthermore, single-case phenomenological studies can delve deeper into the heterogeneous reasons that why individuals choose to vape or smoke, providing a richer context for behaviors often generalized in broader epidemiological studies. For example, Khouja et al found that curiosity was a prevalent motivation among young adults at the onset of vaping, suggesting diverse underlying psychological drivers that warrant exploration.[11] This notion aligns with phenomenological principles, emphasizing individualized narratives that elucidate the complex motivational landscape influencing vaping behaviors among youth.

Moreover, qualitative methodologies can shed light on the implications of vaping-related marketing and its effects on perceptions among young adults, as observed by Alpert et al who utilized qualitative interviews to gather data on attitudes towards vaping content on social media platforms, developing a nuanced understanding of how societal influences intersect with personal choices

in vaping.[12] Such findings underscore the need for a phenomenological lens to unpack the social constructs that shape vaping perceptions and behaviors among young adults, advancing our understanding of their psychological and sociocultural contexts.

In addition, the articulation of lived experiences through phenomenological analysis aids in recognizing the challenges faced by individuals struggling with substance use. As mentioned above, researchers have highlighted that how narratives of personal experiences with vaping provide insight into the emotional ramifications and identity transformations that often accompany cessation attempts. While specific propositions on this point were not identified, it remains a relevant aspect of phenomenological inquiry. The integration of single-case phenomenology within vaping research not only enriches our comprehension of individual motivations and experiences but also informs public health campaigns and interventions aimed at reducing vaping prevalence among young adults. Such a qualitative perspective is critical for developing age-appropriate strategies that resonate with the lived realities of young vapers.

Based on this perspective, the propositions are generated underscoring the importance of the multi-theory model of behavior change (MTM).[13] Inclusion of an apriorism for knowledge and description can generate findings from the reflections of the participant: (1) young adults perceive a higher prospective of advantages than disadvantages of vaping quitting; (2) young adults will have more positive attitudes towards their behavioral confidence and self-efficacy in quitting vaping; (3) young adults have limited knowledge about the negative effects of vaping; (4) young adults will have the continued transition in their continued cessation of vaping; and (5) young adults who have previously used e-cigarettes or vapes will have more positive attitudes in quitting and greater misconceptions removed about vaping quitting compared to those who have not quit. The research question will focus on the lived experiences of young adults, i.e.,

What are the experiences of young adults in vaping cessation by bringing about a change in behavior from initiation to cessation in vaping ?

Rationale

Therefore, the purpose of this phenomenological study was to understand the vaping quitting behavior for a young adult between the age of 18-26 years in a southwestern state. At this stage in the research, vaping quitting behavior has been generally explained as the initiation and sustenance of the vaping quitting behavior, which has currently gained heightened attention towards present and psychological well-being, potentially due to experiencing adverse health effects from vaping or enhanced awareness of such effects.[14]

E-cigarettes, also known as vapes, are the most commonly

used tobacco product among young people in the United States.[15] Tobacco products, including e-cigarettes, are inherently unsafe, particularly for children, adolescents, and young adults.[16] The majority of e-cigarettes contain nicotine, which has a high potential to damage the regions of a young person's brain responsible for attention, learning, mood regulation, and impulse control.

Marketing strategies for e-cigarettes, the accessibility of flavored products, peer pressure, and the addictive properties of nicotine can all exert an influence on young individuals, prompting them to initiate or sustain their vaping habits.[17,18] Many individuals and networks can play a crucial role in safeguarding young adults from vaping, including parents and caregivers, educators, college/university administrators, healthcare providers, and community partners. States and local communities have the capacity to adopt evidence-based policies, programs, and services to decrease the prevalence of youth vaping. Therefore, this qualitative case study has served as the preliminary basis for the initial reflection on the need to plan an efficacy trial and later strategize with other organizations to be involved in larger studies involving multicentric trials and health education interventions.

Theoretical Underpinnings

The theoretical basis of this case study is embedded in the multi-theory model of health behavior change (MTM). It is the newer fourth-generation theory that has two main components of the MTM, namely, "initiation" and "sustenance." The "initiation" components are conceptualized as the "participatory dialogue," "behavioral confidence," and "changes in the physical environment." The "sustenance" constructs for longer-term behavior change are composed of "emotional transformation," "practice for change," and "changes in the social environment." Our phenomenological case study has identified the primary elements that might lead to young adults' behavior of quitting vaping. Furthermore, the findings will help in developing health promotion programs aimed at assisting, especially young adults, in the cessation of vaping behavior. Our study also investigated the characteristics associated with the preliminary propositions for, (1) the initiation of quitting vaping in young adults at academic institutions, (2) the maintenance of quitting vaping among young adults in the long run, and (3) the health promotion interventions aimed at helping young adults to quit vaping consistently.

Given this context, the aim of this phenomenological qualitative study is to understand the prologue of young adult's own self-disciplinary measures and how health education interventions can synergistically help mitigate such behavior which has been explained through a detailed research plan. The assumptions have been made in this case study that the participant would possess the ability to remember the situations and provide precise and comprehensive information regarding the vaping quitting behavior. It was also assumed that all principals would consistently follow the questionnaire format and respond to the questions with honesty.

Methods

Study Design and Rationale

The study was conducted as a phenomenological qualitative case study to comprehend the responses of a young adult by conducting an in-depth interview on quitting vaping. The interview was conducted in June 2024 in a southwestern state of the United States of America. The interview was structured and mapped on the theoretical constructs of MTM to comprehend the extent of e-cigarette or vape usage, the perceptions regarding the impact of vaping, and behavioral factors contributing to quitting.

Participant and Setting

Our participant was an adult between the age of 18 to 26 years, with racial/ethnic background of Asian American, high socioeconomic status, and with no disclosure of marital status. Phenomenological data have been gathered through a one-on-one structured interview. The researcher has not collected any personal identifiers, and the selected participant has also been de-identified around a specific geographical location. The case study has been approved by the Institutional Review Board at the University of Nevada, Las Vegas as excluded activity under protocol #UNLV-2025-441.

Ethical Treatment of the Participant

Our study adhered to the principles of research, discerning that the primary objective of researchers in utilizing phenomenological techniques was to convert facts into a lived experience. We articulated personal experiences by data collection, then subsequently endeavored to comprehend those experiences through the analysis of statements, and to classify the underlying themes in the subsequent phase.[19] We documented the fundamental aspects in written form, leading to a thorough depiction of the phenomena. We learned about the experiences and expectations of the lived experience of quitting vaping, and described in depth the past, present, and future rhetoric of a young adult which would add to the body of knowledge and the need for family and support services provided in the communities.

Research Team and Positionality Statement

The primary research team consisted of three researchers with two senior faculty members who supervised the process, while the primary researcher collected all the data and conducted the interview. To promote the ideal of trustworthiness, the primary researcher disclosed their researcher positionality and reduced researcher bias

by disclosing as an Asian American immigrant female working towards the doctorate degree and has been involved with vaping cessation public efforts, especially for adolescents and young adults. The primary researcher explained that the power of structural inefficacies frequently went unrecognized or untreated, shaping the researcher's experiences. The intersections of identity act as both obstacles and, in certain instances, advantages, through which the researcher interpreted the world. The primary researcher explained the positionality,

"Prior to presenting the findings, and with a focus on self-reflection, I acknowledge my standpoint as an educated, immigrant Asian American woman. I am not an avid participant in current online spaces and comments, blogs, or vlogs, or have in-depth familiarity with contemporary young American adults' culture, but I have observed the interactions of young adults, participated in young adults' forums and online spaces, and am intrigued by the current trends in vaping use and quitting narratives by many young adults for whom I wanted to voice and protect their health behavior and youthful identities. I recognize that my personal perspectives had an impact on this project to a certain degree; the resources available to me as a researcher are valuable assets that have aided me in interpreting the experiences of young adults in quitting vaping."

Data Collection

The interview protocol was designed to explore the young adult's lived experiences and perspectives on vaping cessation through the lens of the Multi-Theory Model (MTM) of Health Behavior Change. The MTM emphasizes both initiation and sustenance of health behavior change, focusing on constructs such as participatory dialogue (weighing advantages and disadvantages), behavioral confidence, emotional transformation, changes in the physical environment, and social support. By applying this theoretical framework, the case study uncovered the internal motivations, external influences, and contextual factors that facilitate or hinder successful vaping cessation for a young adult aged 18–26 years.

The interview questions were also structured to encourage reflection and storytelling, allowing the participant to describe their personal journey in attempting to quit vaping, including the number of quitting attempts, perceived benefits and barriers, confidence-building strategies, emotional experiences, and social support systems. Additional questions addressed demographic characteristics and substance use behaviors to provide contextual understanding of participant's backgrounds. Probing questions were included to elicit deeper insights and clarify meanings when needed. (Appendix I). This qualitative approach aligned with the phenomenological inquiry, which sought to capture the essence of participant's lived experiences. The findings would contribute to developing evidence-based and theory-driven intervention strategies tailored to young adults, ultimately guiding public health initiatives and cessation programs that promote long-term behavioral change and wellness.

Hence, the case study described in detail the methodology within the context of qualitative research. Qualitative data analysis is referred as the systematic process of transforming non-quantifiable information into meaningful insights. Possible sources of information may include client or consumer feedback, surveys, website recordings, customer reviews, or in-depth interviews. Our comprehensive data analysis and management plan utilized the qualitative data which is regarded as more comprehensive and human-centered compared to quantitative data. This helped us to develop a conceptual framework based on MTM to comprehend social phenomena in real-life situations, rather than controlled research settings. The approach placed significant importance on the subjective interpretations, personal experiences, and perspectives of the individual involved. We utilized the qualitative-directed content analysis methodology, specifically utilizing the multi-theory model of health behavior change (MTM) for the in-depth, structured interview conducted with the young adult. Qualitative content analysis may be categorized as either deductive or inductive, and as such, our research study utilized a deductive approach for this fourth-generation theoretical framework of MTM.

Data Trustworthiness

In qualitative research, data trustworthiness reflects the credibility, dependability, and authenticity of findings, ensuring they genuinely capture the participants' experiences and perspectives.[20] In our case study, we enhanced trustworthiness through approaches of triangulation, member checking, reflexivity, and maintained a comprehensive audit trail to promote transparency and rigor (Figure 1). Together, these strategies paralleled quantitative notions of validity and reliability, and also provided the basis to evaluate the quality, value, and applicability of our research. The participant was instructed to contemplate the vaping quitting experiences and was asked in-depth questions within a structured interview lasting for about 45-50 minutes. The participant was also asked to respond to the questions based on the constructs of the MTM; hence, the study is considered "explanatory deductive", where the correlates of the behavior change based on MTM were analyzed as the directed content analysis of the hermeneutic phenomenology and traditions recorded from the young adult participant. The interview was conducted based on the questions modified below and along with the demographic questions (Appendix I).
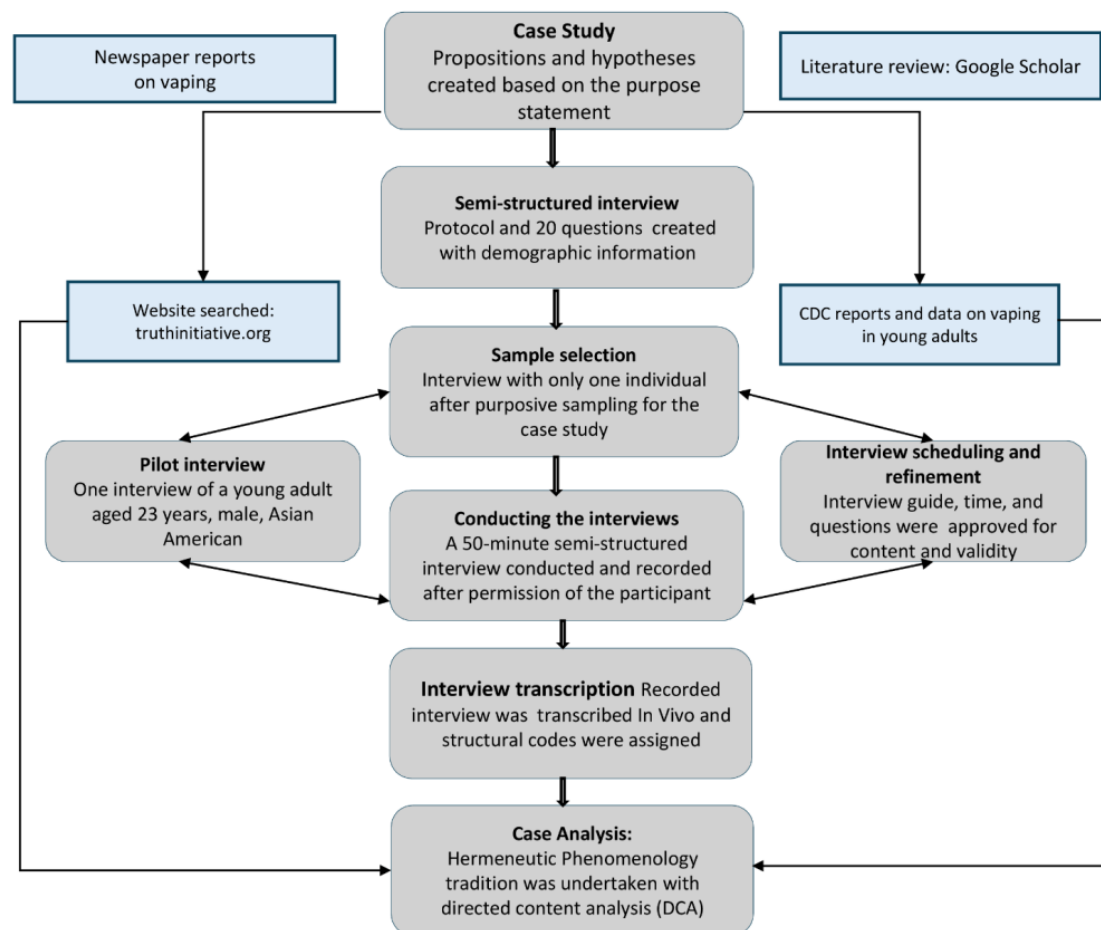
Figure 1. Audit trail for trustworthiness to determine the strategies for a phenomenological study based on the multi-theory model (MTM) of health behavior change

(1) *When you tried quitting vaping, what were some advantages that you thought of?* (2) *What are some disadvantages of quitting vaping?* (3) *When you tried quitting vaping, how did you build your confidence?* (4) *What are some changes in your physical environment that you used when you tried quitting vaping?* (5) *What were some emotions that you had when you tried quitting vaping?* (6) *When you tried quitting vaping, what approaches did you employ to practice quitting your vaping behavior?* (7) *What kind of social support did you have when you tried quitting vaping?* (8) *What are some components you would like to see in programs that help young adults quit vaping?* (9) *What should be the modality of delivery of such programs (e.g., face-to-face, online, etc.)?* and (10*) Anything else you would like to share?*

Data Analysis

During the initial data analysis phase, we organized the activities such as verbatim transcription, description, and inscription.[21] This indicated that the process of collecting and analyzing data has occurred concurrently, fulfilling the assumptions of values influencing the research process (axiology and methodology) with the value of promoting public health by supporting individuals who wish to quit

vaping, and analyzing themes and patterns to emerge from participants' narratives to understand the context-specific experiences of individuals attempting to quit vaping.[8] Our case study encompassed the three key components for qualitative data analysis procedures: *data organization, summarization,* and *categorization.*[22] During the process of *data organization*, the questionnaires were categorized into different theoretical data sets. The organization of data guaranteed that each of the data sets were evaluated individually.[22] *Summarization* condensed complex and lengthy information into concise, comprehensible, and well-organized phrases. Finally, *categorization* entailed the systematic arrangement of the given information into the three data sets.

Our qualitative analysis referred to the examination and interpretation of qualitative data, which was subjective and lacked numerical values. Therefore, we carried out numerous functions, such as:
1. Organizing data
2. Interpreting data
3. Identifying patterns
4. Forming the basis for informed and verifiable conclusions
5. Connecting the research objectives to data

Based on the above explanations, we utilized a

framework of qualitative content analysis and derived possible accurate conclusions by organizing and extracting implicit meaning from the material, i.e., interview content provided by the participant.

The Process of Qualitative Data Analysis
Our study utilized the following steps:

Step 1: Organizing the data
> The data was transcribed, cleaned, structured under theoretical questions and answers, and familiarized.

Step 2: Identifying the framework
> The framework identified was explanatory with a deductive approach, and the codes were generated based on the MTM constructs.

Step 3: Sorting data into a framework
> Data was coded based on the modified constructs of MTM, and entered into computer packages

Step 4: Using the framework for descriptive analysis
> The data was analyzed for the description of the range of responses, participant category, and identification of recurrent themes.

Step 5: Second-order analysis
> It was done to understand and report recurring clusters, regularities in the data, and causal relationships, and the results were reported based on interconnected themes and the chronological sequence of events.
> Additionally, the propositions formulated were verified based on research questions and results.

Results
The respondent, a 23-year-old Asian American male, acknowledged his previous use of recreational drugs and alcohol. He started vaping at the age of 16 and made three unsuccessful attempts to quit prior to finally succeeding over the two months ago. The findings from the interview were coded for initial in vivo coding using the software, Atlas.ti.[23] A total of 39 codes were derived and categorized under 11 themes for the directed content analysis (DCA) based on the multi-theory model of health behavior change (Appendix II). The themes were later categorized for "initiation" phase: 1) advantages, 2) disadvantages, 3) behavioral confidence, and 4) changes in physical environment; for "sustenance" phase: 5) emotional transformation, 6) practice for change, and 7) changes in social environment; and for others: 8) young adults' voice; 9) types of vaping quitting efforts and programs; 10) modes of programs; and 11) programs' expectations. Findings for the proximity and co-occurrence of codes and connectivity to the MTM constructs are shown in Figure 2 and Table 1.

Vaping Quitting Efforts
The participant expla ined different views about e-cigarettes, which were reported to impede the efforts to quit vaping, leading to its repeated discontinuation and adoption behavior. Participant reported on several young adults' perspectives, e.g., e-cigarette or vaping identity, lack of confidence in refraining, and efforts to overcome e-cigarette barriers, and dealing with stress and tensions.
"Uh, three times. Three times I tried. Couldn't quit." (Answer to Q2).
[Quit vaping] *"Almost two months ago, on May 6th of this year."* (Answer to Q3).

Repeated quitting behavior was the rhetoric that the person has adopted, the person showed struggle and the truthfulness to oneself. In addition, the recent endeavor provided an opportunity to engage in broader examinations of other young adults' behavioral dynamics, incorporating diverse perspectives on vaping, quitting, and relapse. It also positioned the interviewee to contribute meaningfully to conversations that advance equity and advocacy for all.

Advantages
"Benefits are– not running out of breath anymore. Being less irritated all the time and your proper appetite comes back." (Answer to Q4).

Disadvantages
"It's just relearning how to deal with stress normally instead of being dependent on a little device all the time." (Answer to Q5).

The person was weighing the advantages more than the disadvantages of quitting, which would increase the effect of participatory dialogue, a construct of the initiation phase of MTM. This can be considered if ever needed to design an intervention.

Behavioral Confidence
"Yeah, just convincing myself that it's horrible for me and then observing other grown adults who vaped that I saw in public and realized how ridiculous they looked." (Answer to Q6).

Some of the strong potential findings were grounded in the "behavioral confidence" which explained the explanatory behavior adopted by the participant. Behavioral confidence in this context reflected the individual's conviction in his capacity to effectively modify the behavior, specifically in the context of quitting vaping. It also entailed persuading oneself of the adverse outcomes of the activity and observing individuals who have effectively quit it to bolster one's own self-assurance in the capacity to do the same.

Changes in the Physical Environment
"I'm just more sure of not, not going out of my way to get it, that's it. It's like everything else is the same, it's just not going out of my way to buy it…. Yeah. It's like going to the same. Vape shop for the last five years and then
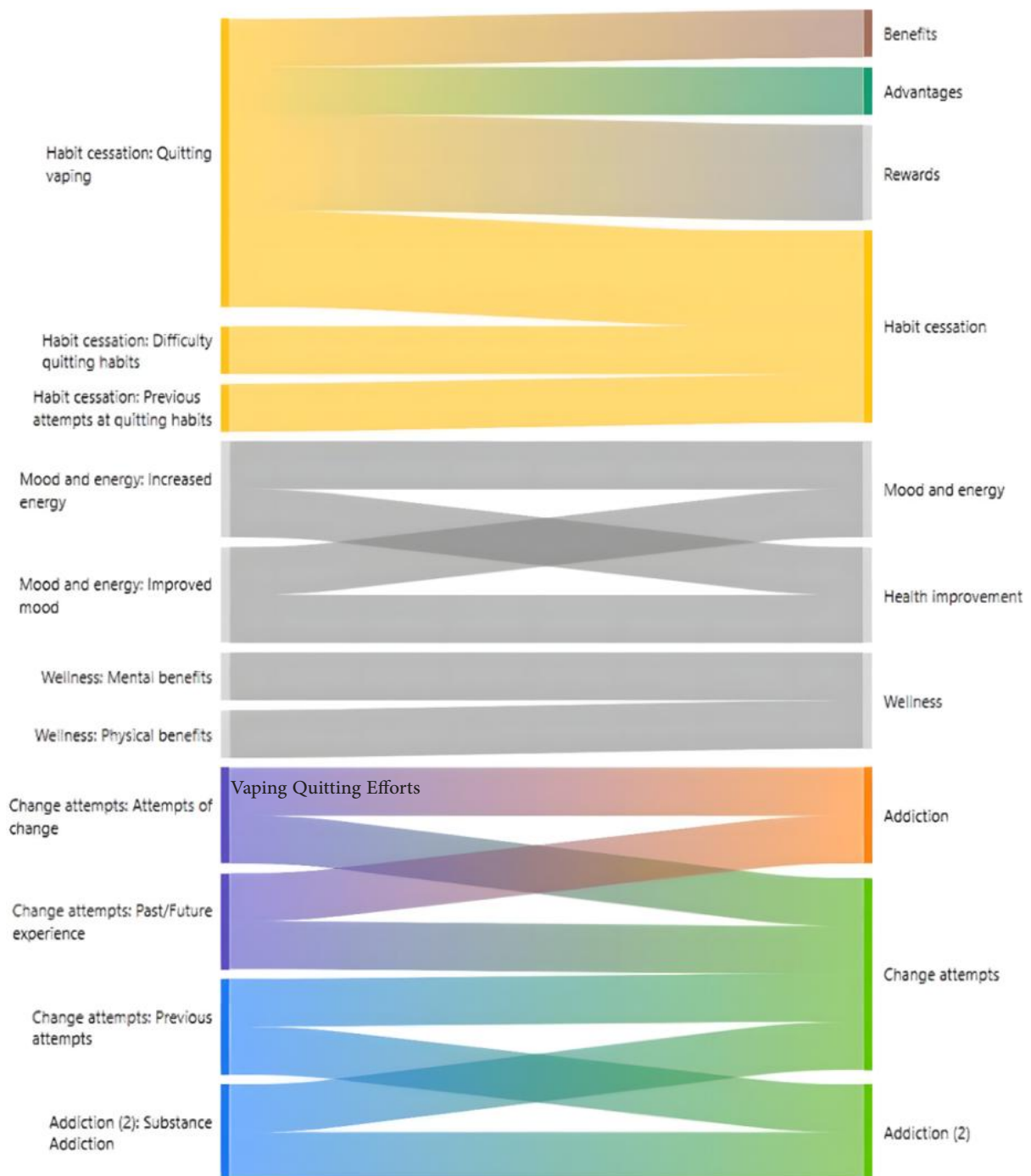
Figure 2. Major themes and overlapping codes for vaping quitting behavior

stopped.". (Answer to Q7).

Physical environment and a person's engagement with the description of the needs drew inspiration and was linked to cognitive, emotional, social, and practical experiences. In this way, changes in the environment could have suppressed the wants and needs due to inadvertent behaviors.

Emotional Transformation
The interviewee also ascertained the feelings associated with quitting vaping,

"It's mostly positive because you realize how dependent you are on it because you convince yourself that you need it, but after you stop for like three days, you don't need it." (Answer to Q8)

Self-efficacy in people with substance use during the quitting phase could provide a stronger sense of purpose that helped them abstain from substance use.

Practice for Change
"*I just started slowing like Cold Turkey completely, but it's more so the motion of you, like, constantly breathing*

Table 1. Themes and supporting data organized by MTM constructs

MTM Construct	Themes	Supporting Data / Participant Expressions	Interpretation
Participatory Dialogue	Perceived Advantages of Quitting	"Improved breathing," "better self-control," "saves money," "feel healthier"	Participants recognized physical and psychological benefits as motivators for cessation.
Participatory Dialogue	Perceived Disadvantages of Quitting	"Difficult to stop," "feel stressed," "miss the habit," "social disconnection"	Highlighted perceived losses and challenges in quitting despite awareness of harm.
Behavioral Confidence	Observing Others and Self-Efficacy	"Seeing grown adults vape looked ridiculous," "realized how horrible it was for me," "I saw others quit successfully."	Confidence built by self-reflection and observation of others' behavior reinforced intent to quit.
Changes in the Physical Environment	Avoiding Triggers and Access Restrictions	"Not visiting vape shops," "not going out of my way to buy it," "stopped buying vapes."	Environmental restructuring reduced temptation and supported initiation of quitting.
Changes in the Physical Environment	Environmental Barriers	"Being around friends who vape," "exposure to vape shops," "availability of products."	Accessibility and peer environments made abstinence harder to maintain.
Emotional Transformation	Awareness of Dependence and Emotional Adjustment	"You convince yourself you need it," "after three days you realize you don't," "you feel positive."	Emotional awareness and transformation supported longer-term abstinence.
Practice for Change	Substitution and Behavioral Alternatives	"Blowing through an empty straw," "cold turkey quitting," "replacing action with deep breathing."	Practical behavioral strategies replaced the physical act of vaping.
Practice for Change	Self-Regulation and Consistency	"Started slowing down," "practiced self-control daily," "created routines."	Sustained cessation linked to self-discipline and habit replacement.
Changes in the Social Environment	Social Support Networks	"Support from family," "friends encouraged me," "counselor helped," "social media programs."	Social encouragement and peer or family support reinforced continued quitting.
Changes in the Social Environment	Program and Resource Awareness	"Found videos online," "many programs available," "others' quitting stories helped."	External informational and motivational sources were instrumental in sustaining abstinence.
Integrative Theme	Young Adults' Voices and Generation Stressors	"My generation's addicted," "they feel stressed," "vaping is a coping mechanism," "nothing feels fair."	Contextualized vaping as a generational coping strategy; underlined need for tailored interventions.

in and out of something. It's like blowing through an empty straw for a couple [of] days, that sometimes helps. It's like, it's more so the action that people get addicted to, more so than the nicotine. More so, the action of constantly breathing in and out, breathing in and out." (Answer to Q9)

Thick descriptions of the practices adopted by the participant would be the additional lived experiences that could be documented and interpreted as 'self-reflection'. Hence, the experiences would be described and categorized under different categories, including 'peer networks', 'participation in society', and 'new interests', for different individuals.

Changes in the Social Environment

"More so, just support from family, and then did a lot of social media digging to see how other people's experiences quitting vaping [were] too. And a lot of them were very similar to mine.

So, there are a few programs. There are a lot of programs out there." (Answer to Q10)

Participant described that different individuals may have their own way of gathering information, social networks help, and the agility of knowledge generation.

Vaping Quitting Programs

"It's just more so like ways to help people deal with

their stress better. Because vaping is a really easy coping mechanism, and how hard things are for my generation. That's why so much of my generation is addicted. Because they believe everything isn't fair to them. So, they just rely on the vape. So, it's like they deal with the problem. The first thing they want to do is vape. They feel stressed. The first thing they want to do is vape. It's just more finding healthier hobbies and how to deal with stress."* (Answer to Q11)

The interviewee provided a detailed and thick description of the needs, which were pertinent to the vaping quitting phenomenon, extensively. These were analyzed as the singular the viewpoint of the individual being interviewed, but can be emphasized as one of the numerous aspects and levels of significance implicated for the phenomenological experiences and later life outcomes.

"I definitely think in person is the best. Best way to go. It's like you can see, there are a bunch of videos online on how to quit and this and that, but honestly, it's mindset more than anything. It's like you have to convince yourself that you don't need it or you have to actually want to quit in order to quit. You can't say you're gonna quit and then not do take action upon it." (Answer to Q12)

In vaping quitting programs for young adults, this thick description involved capturing detailed accounts

that blended the participant's perspectives with the researcher's interpretations. This approach highlighted both the personal meaning individuals assigned to vape quitting and the broader behavioral and health dimensions of the process.

Final Words to Share

"*It's just more so vaping is very normalizing [in] today's society, and then people's emotions become based upon it, and then it gets to the point where everyone in my age group gets annoyed without it and their body becomes very, very dependent on it. It's like once you figure out a way to stop, you realize how bad it actually is for you.*" (Answer to Q20)

These words reflected on a young adult who, while attempting to quit vaping, was caught in a series of interconnected cycles of vaping and failed attempts to quit before finally achieving successful cessation. There were identifiable behavioral elements that contributed to the continuation of these cycles, as well as insider and outsider factors that also facilitated their disruption. The extent of the interviewee's efforts in quitting would only conform better if people with similar characteristics were to be interviewed. These perceptions have given explicit insight into the hermeneutics of the interviewed young adult.[24] Specific interventions are necessary to support the continued cessation of vaping among young adults, tailored specifically based on the demographics of this unique population.

Discussion

The young adult described quitting as a trade-off between clear benefits (health, control, savings) and salient costs (stress, loss of a familiar habit/social routine), reflecting participatory dialogue. Confidence grew from self-reflection and vicarious learning (e.g., observing older adults vaping "looked ridiculous" or "was horrible for me"), mapping to behavioral confidence. Physical-environment changes—avoiding vape shops and not going out of one's way to buy devices—helped initiation. For sustenance, participants emphasized emotional transformation ("after three days you realize you don't need it") and practice for change (behavioral substitutes like "blowing through an empty straw," gradual slowing, or cold-turkey attempts). Social environment mattered the most as the support from family/friends, counselors, and stories/programs discovered online. Many themes favored in-person programs but acknowledged practical value of videos and digital content. A cross-cutting theme was stress and coping in this generation, with vaping framed as an easy coping mechanism that required skills training and alternative hobbies to quit.

The procedure employed in the hermeneutic phenomenology of vaping quitting might prove to be more demanding than it initially appeared. In order to confront existing assumptions, it was necessary to identify hidden prejudices, even those that researchers themselves might have underestimated, both in relation to themselves and the community being studied.[8] These findings could also elucidate and emphasize the benefits of quitting vaping, such as enhanced well-being and decreased costs, and could actively aid in mitigating vaping problems. Therefore, educational interventions should give priority to highlighting the positive outcomes and benefits of adopting healthy behavior or correcting harmful health behavior. There was a connection among several aspects of the MTM and the association of vaping with risky behavior[25-27] and quitting protective factors for problem vaping,[28-30] which reflected on the motivation to start vaping, and the impact of vaping on general health.

The interview yielded ontological insights into the experiences of a young adult, which can be further investigated by combining phenomenology with heuristic inquiry. Heuristics have been employed with techniques and procedures to discover new information about the vaping phenomenon in young adults.[31] We have attributed the continuance of these cycles to identifiable components, as well as identify elements which would have allowed for interruption of such behaviors with the positionality of an external observer. The interviewee identified means of self-assurance to quit by persuading himself of the detrimental effects of vaping and witnessing the behavior of others who engaged in vaping. The cessation process was facilitated by familial and internet sources of social support. The respondent stressed the significance of discovering healthy strategies for managing stress. Face-to-face programs were perceived as the most efficacious mode for cessation of vaping. The conversation embodied the statement regarding the acceptance of vaping in society and the significance of overcoming addiction to it. The interview results were examined utilizing the multi-theory model of health behavior change.

All the phrases seemed to overlap with many constructs of MTM, with some notable associations observed between future orientation, parental monitoring, and vaping. However, significant connections were found between protective variables (rewards, benefits, health improvement) and the intention to quit vaping. Co-creating strategies to identify codes and themes to promote protective characteristics in young adults and their parental support systems and peer circles has provided valuable insights for preventing vaping and other substance use, depending on the severity and stage of the addiction and dependence level. In vivo codes provided the participant's own words and created a matrix for the coding scheme for analysis. The text of the data itself had such a profound meaning that it was worth incorporating into the case study, e.g., mood, increased energy, improved wellbeing, mental benefits, and addiction.

Our participant's weighing of benefits (health, finances,

control) against costs (stress, social loss) aligned with the Multi-Theory Model (MTM) premise that initiation hinges on perceived pros and cons. A cross-sectional MTM work in U.S. young adults has shown that MTM constructs could predict vaping-quit intentions/behavior, support the present themes and suggesting that MTM is a usable planning framework for interventions. This case study supported MTM testability and added context on concrete "costs" fo which social behavior and routines presented as the planners to neutralize erratic behavioral outcomes.[30,32]

Reflection and modeling of the participants described growing confidence after seeing others' experiences or reassessing his own use. In the same vein, a meta-analysis showed that self-efficacy predicted cessation across populations, while adding nuance that *negative role modeling* (observing undesirable vaping in older adults) could also build confidence to quit—an angle under-discussed in prior work.[33] Trigger control explained the avoidance of retail outlets and purchase opportunities a mirror evidence that environmental cues and retail exposure precipitated the lapse/relapse. Experimental and real-world data also showed that smoking-related environments reduced resistance and daily cue exposure drove its use. Our study supported these effects and extended them to concrete youth-relevant actions (e.g., "don't go where you buy").[34,35]

Our case study also reported that the first ~3 days were hardest, then cravings/emotions eased, which echoed affect-focused models for emotion dysregulation predicting withdrawal severity and relapse risk. In addition the study also supported the role of emotional regulation and added nuance by timing the inflection (early abstinence) where coaching could be most impactful.[36,37] Behavioral substitutions and routines of the participant explained substitution (deep breathing, "empty straw") and structured routines. Cochrane-type review also endorsed behavioral support and skills training for which our study supported these strategies. It also added novice techniques of surfacing non-nicotine, sensorimotor substitutes to address oral/hand-to-mouth habits, a tactic less emphasized in e-cigarette–specific literature and worth systematic testing.[38]

Interpersonal and digital support of family/friends, counselors, and online communities/programs were helpful. Evidence in young adults showed behavioral interventions—including tech-mediated ones—which improved quit rates; social-media and text-message trials (Tweet2Quit; This Is Quitting) demonstrated scalable support.[39] Our finding supported this literature and extended it to vaping by highlighting how peer narratives and identifications discovered online could catalyze confidence and persistence in behavior change.[40] Modality preferences for in-person versus digital platform weighed in that the participant valued in-person programs in addition to videos and remote resources. Similarly, other RCTs indicated that text-message programs were effective for adolescents and young adults; Quitline and hybrid models also showed promise, while some adult smoking programs still described an edge for in-person groups.[41,42] Our study added nuance because young adults may prefer blended access—face-to-face for connection, digital for immediacy or scalability.

Generational stress and coping context for tailoring interventions and framing vaping as a coping mechanism resonated with reviews calling for developmentally tailored cessation for young adults, including stress-management and alternative hobbies. Our case study supported these calls and extended them by specifying the kinds of coping skills participants requested (stress skills, hobbies, media-based learning).[43] Taken together, the case study supported the MTM's core domains of initiation and sustenance constructs for vaping cessation, corroborated the established predictors (self-efficacy, cue control, behavioral support), and added subtleties in three areas: (a) the early-days emotional turning point; (b) low-cost sensorimotor substitutions for the hand-to-mouth "action"; and (c) a pragmatic preference for blended delivery (in-person plus scalable digital supports). These insights can sharpen MTM-based intervention design for young adults by targeting the most actionable levers at the moments that matter most in quitting.[30]

Teens may turn to vaping as a coping mechanism for stress, anxiety, or depression, yet the habit often intensifies these problems over time. While some adolescents who vaped have reported higher engagement in physical activity, they also described experiencing more severe, ongoing stress within the broader context of their lived environments.[44] In the given situation, it was seen that quitting vaping have provided benefits such as achieving success in peer circles, saving on financial resources, and breaking the cycle of vaping with less frequent and self-motivated non-visits to vape shops.[41] This is especially true for those who were driven to quit vaping. Alexis-Garsee and colleagues (2018) explained that the complex interaction of these elements may have understated the personal effort needed to sustain vaping and strengthened participants' belief that the e-cigarette was inferior to traditional cigarettes, but here, strong code dimensions were found in the habit cessation.[44] Detailed descriptions beyond simple and factual interpretation can be envisaged by offering a more profound assessment of the significance, circumstances, and consequences of the experience.

Self-Efficacy and Confidence
Growing evidence pointed to self-efficacy as a core determinant of young adults' intention and ability to quit vaping. Self-efficacy refers to the belief in one's own ability to successfully perform a behavior, such as quitting nicotine or e-cigarettes. Our case study has also

explained the facts given in multiple studies, which have consistently reported that higher self-efficacy is associated with a greater intention to quit and higher rates of actual quit attempts among young adult vapers. For example, it was found that self-efficacy had a significant, independent association with quit intentions among Australian young adults, after accounting for demographic differences and previous quit attempts.[45] This result was echoed in US studies where enhanced self-efficacy predicted both the initiation and sustenance of quitting behavior, supporting the application of behavior change models such as the Multi-Theory Model and Social Cognitive Theory for intervention design.[30]

Interestingly, intervention studies leveraging digital strategies such as text-messaging have shown that increases in self-efficacy from baseline are associated with higher self-reported abstinence rates and participant satisfaction. For instance, Latino young adults enrolled in Kick Vaping, a text-message intervention, reported significant increases in self-efficacy from baseline to follow-up, alongside high program satisfaction and notable rates of abstinence at three months.[46] Another randomized controlled trial found similar improvements in self-efficacy via a text-based quitting program, demonstrating that digital support can substantially boost confidence in cessation abilities.[47]

Furthermore, confidence—while closely related to self-efficacy—can be influenced by specific intervention features. Impactful messaging targeting both motivation (such as emphasizing health and financial benefits) and confidence (for example, strategies like patience and staying busy) proved effective in shifting quit importance and, to a lesser extent, quit confidence among young adults.[48] Confidence was also identified as a predictor of abstinence in broader tobacco cessation contexts, including national campaigns beyond vaping.[49]

Family Support and Social Networks
While self-efficacy and confidence were often considered as individual constructs, the social environment, particularly familial support, exerted a considerable influence on vaping cessation outcomes for young adults. Recent international research suggested that family support was the most beneficial in the form of emotional encouragement, shared routines (such as family meals), and by helping establish positive social norms towards quitting. A large cross-sectional study from South Korea documented a significant, dose-dependent association between eating meals together as a family and reduced likelihood of current smoking among adults—including both exclusive and dual users and highlighting familial environments as modifiable, supportive factors.[50] However, this effect on exclusive vaping behavior was less pronounced, indicating potential differences in how family influence manifests across different nicotine delivery systems.

Content analyses of ex-vaper experiences further underscored the significance of family help. Qualitative work from Canada and Australia highlighted social support—including family and friends—among the most commonly referenced facilitators of successful cessation.[51,52] These studies indicate that family can enable quitting not simply by exerting pressure, but mainly by offering supportive connections, reducing the normalization of vaping, and addressing underlying mental health or stress-related concerns that often drive use. For young adults, positive social and familial engagement increases their uptake of and persistence with unassisted or evidence-based cessation attempts.

Complex Interactions and Future Implications
Despite these clear associations, challenges remain. Many young adults attempting to quit vaping do so unassisted, and relapse rates are high—over 47% who reported successful cessation at some point, eventually relapsed and resumed vaping shortly after.[53] There is a marked gap in the consistent use of evidence-based cessation methods, and a reluctance or lack of awareness regarding professional support options, including both digital and family-mediated interventions.[54] In addition, social and family networks can be a double-edged sword, i.e., while positive reinforcement aided quits, negative influences and understanding may undermine self-confidence and self-efficacy.[51]

Intervention development must thus be multipronged, embedding strategies that directly boost self-efficacy and confidence, while also leveraging supportive family or peer structures. Digital health interventions, mobile apps, and community education campaigns which personalize support, deliver motivational content, and facilitate safe, anonymous social support (such as moderated online groups or peer mentorship) offer promising solutions.[55,56] However, scaling such resources and ensuring equitable family involvement, especially across cultures or nontraditional family forms required further research.[44]

Strengths and Limitations
This study offers several important strengths. By applying the Multi-Theory Model (MTM) of health behavior change, it provided a structured and theory-driven lens to examine both initiation and sustenance of vaping cessation. The hermeneutic phenomenological approach allowed for rich, in-depth exploration of lived experiences, yielding insights that extend beyond quantitative measures. Methodological rigor was strengthened through reflexivity, member checking, triangulation, and maintenance of an audit trail, thereby enhancing trustworthiness. Moreover, the focus on a young adult who successfully quit vaping highlighted the contextual factors such as self-efficacy, behavioral

confidence, and family support. These factors explained direct implications for designing practical cessation programs. Using this methodology, it also determined the cognitive and behavioral processes by which young adults deal with, navigate, and react to their life choices and experiences after quitting vaping. Another strength of the case study is that it provided the preliminary contexts in improving the analysis of qualitative data which can be accomplished by utilizing coding techniques and efficiently organizing detailed narratives within a specific theoretical framework.

At the same time, several limitations warrant consideration. The reliance on a single case constrained the generalizability of findings to broader populations of young adults. Self-reported narratives were inherently subject to recall bias and reflect subjective perceptions rather than objective measures. Furthermore, the participant's demographic characteristics, including age, ethnicity, and educational setting, may limit applicability to more diverse populations. The absence of longitudinal follow-up restricts understanding of long-term maintenance or relapse dynamics. Finally, despite careful attention to reflexivity and positionality, the researcher's prior experiences and advocacy in vaping cessation may have influenced the interpretation of the data. These limitations suggest the need for future research employing larger, more diverse samples and longitudinal designs to validate and extend these preliminary insights.

Conclusion

Vaping among young adults has drawn growing concern due to its rising prevalence and the difficulties tied to cessation. Key influences on quitting include self-efficacy, confidence, and familial support. Self-efficacy, or the belief in one's ability to succeed, shapes motivation to quit, with lower perceptions of harm and optimism bias often weakening quit attempts. Interventions that highlight vaping risks and strengthen self-efficacy can improve cessation outcomes. Confidence in managing cravings and withdrawal is equally important; individuals who feel capable of coping with these challenges are more successful in quitting. Strong social support, especially from family, further enhances confidence and persistence. Familial influence also impacts both initiation and quitting, as acceptance of vaping within households can reduce the perceived need to quit. Public health strategies should therefore address both personal belief systems and family dynamics to create a supportive environment that fosters sustained cessation among young adults. Self-efficacy and confidence are essential drivers of vaping cessation attempts and outcomes among young adults. Family help serves as an important facilitator or barrier, depending on the quality of support and the social environment. To maximize quit success, interventions should foster these psychological strengths, incorporate family or peer support, and offer targeted strategies for coping with stress and relapse triggers. Ongoing research and policy must continue to clarify and address the nuanced interplay between individual, social, and environmental determinants of quitting behavior in this population.

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Writing–original draft: Asma Awan.
Writing–review & editing: Asma Awan, Robert Levrant, Manoj Sharma.

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The authors declare that they have no competing interests.

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Not applicable.

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All data generated or analyzed during this study are included in this published article.

Ethical Approval
The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board at University of Nevada, Las Vegas as excluded activity under protocol #UNLV-2025-441.Informed consent was obtained from all participants involved in the study.

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Appendix I. Interview Protocol:

Prologue to the Multi-Theory Model (MTM) of Health Behavior Change: A Phenomenological Case Study to Determine Vaping Cessation Strategies among Young Adults

Questionnaire:

At what age did you start vaping? (About 1 minute)

1. **If you have tried quitting and not been successful, how many times did you do that?** (About 2 minutes)
2. **If you have quit vaping, when did you do that?** (About 2 minutes)
3. **When you tried quitting vaping, what were some advantages that you thought? (About 5 minutes)**
   Probe: Think of any benefits that may have occurred
   Probe: Think of any rewards that may have happened.
4. **What are some disadvantages of quitting vaping? (About 5 minutes)**
   Probe: Think of any costs that may have occurred
   Probe: Think of any difficulties that may have happened.
5. **When you tried quitting vaping, how did you build your confidence? (About 5 minutes)**
   Probe: How will you build your confidence to quit vaping?
   Probe: If you were asked to quit vaping today, how can you build your surety of doing so?
6. **What are some changes in your physical environment that helped you or hindered you when you were quitting vaping? (About 5 minutes)**
   Clarification, if needed , we mean things like not visiting a vape shop, buying vapes from stores, etc.
   Probe: What are some changes in your physical environment that will help you quit vaping?
7. **What were some emotions or feelings that you had when you tried quitting vaping? (About 5 minutes)**
   Probe: What negative emotions you experienced when you tried quitting vaping?
   Probe: What positive emotions you experienced when you tried quitting vaping?
   Probe: How can you change your emotions to achieve the goal of quitting vaping?
8. **When you tried quitting vaping what approaches did you employ to practice quitting your vaping behavior? (About 5 minutes)**
   Probe: How long was your quitting experience?
   Probe: What did you do to prolong or sustain your quitting vaping experience?
9. **What kind of social support did you have when you tried quitting vaping? (About 5 minutes)**
   Probe: Did your family help you? If yes, how? If not, why not?
   Probe: Did your friends help you? If yes, how? If not, why not?
   Probe: Did any health professional such as a counsellor help you? If yes, how? If not, why not?
   Probe: Do you think social media can help you?
10. **What are some components you would like to see in programs that help young adults quit vaping? (About 5 minutes)**
11. **What should be the modality of delivery of such programs (e.g., face-to-face, online, etc.)? (About 2 minutes)**
12. **How do you identify your sex/gender? (About 1 minute)**
13. **Which racial/ethnic group do you consider yourself belong to? (About 1 minute)**
14. **Are you in the age range between 18-26 years of age? (About 1 minute)**
15. **Have you been using tobacco products currently, or used in the past? (About 1 minute)**
16. **Have you been using recreational drugs currently, or used in the past? (About 1 minute)**
17. **Have you been taking weed (marijuana) currently, or took in the past? (About 1 minute)**
18. **Have you been drinking alcohol currently, or drank in the past? (About 1 minute)**
19. **Anything else you would like to share (About 3 minutes)**

Appendix II. In Vivo Codes. Derived from the Atlas.ti software

Category	Code	Count	% Codes	Cases	% Cases	Nb Words	% Words
Behavioral Confidence	who vaped that I saw in public	1	1.7	1	100	7	50.0%
Behavioral Confidence	horrible for me	1	1.7	1	100	3	20.0%
Behavioral Confidence	observing other grown adults	1	1.7	1	100	4	30.0%
Behavioral Confidence	realized how ridiculous they looked.	1	1.7	1	100	5	40.0%
Changes in the Physical Environment	Like visiting any vape shop,	1	1.7	1	100	5	40.0%
Changes in the Physical Environment	not going out of my way to buy it	1	1.7	1	100	9	70.0%
Changes in the Physical Environment	not going out of my way to get it,	1	1.7	1	100	9	70.0%
Changes in the Physical Environment	or buying vapes	1	1.7	1	100	3	20.0%
Changes in the Physical Environment	Vape shop for the last five years and then stopped	1	1.7	1	100	10	70.0%
Changes in the Social Environment	a lot of social media digging	1	1.7	1	100	6	40.0%
Changes in the Social Environment	are a lot of programs out there	1	1.7	1	100	7	50.0%
Changes in the Social Environment	just support from family	1	1.7	1	100	4	30.0%
Changes in the Social Environment	other people's experiences quitting vaping	1	1.7	1	100	6	40.0%
Changes in the Social Environment	there are a few programs	1	1.7	1	100	5	40.0%
Changes in the Social Environment	very similar to mine	1	1.7	1	100	4	30.0%
Emotional Transformation	but after you stop for like three day	1	1.7	1	100	8	60.0%
Emotional Transformation	It's mostly positive	1	1.7	1	100	4	30.0%
Emotional Transformation	like three days you don't need it	1	1.7	1	100	8	60.0%
Emotional Transformation	you convince yourself that you need it	1	1.7	1	100	7	50.0%
Emotional Transformation	you realize how dependent you are	1	1.7	1	100	8	60.0%
Modes of Programs	a bunch of videos online on how to quit	1	1.7	1	100	9	70.0%
Modes of Programs	Best way to go	1	1.7	1	100	4	30.0%

Appendix II. Continued

Category	Code	Count	% Codes	Cases	% Cases	Nb Words	% Words
Modes of Programs	I definitely think in person is the best	1	1.7	1	100	8	60.0%
Modes of Programs	It's like you can see	1	1.7	1	100	6	40.0%
Participatory Dialogue	Advantages	4	6.8	1	100	16	120.0%
Participatory Dialogue	Disadvantages	3	5.1	1	100	15	110.0%
Practice for Change	action that people get addicted to	1	1.7	1	100	6	40.0%
Practice for Change	breathing in and out.	1	1.7	1	100	4	30.0%
Practice for Change	constantly breathing in and out of something	1	1.7	1	100	7	50.0%
Practice for Change	it's more so the action	1	1.7	1	100	6	40.0%
Practice for Change	like blowing through an empty straw for a couple days	1	1.7	1	100	10	70.0%
Practice for Change	more so than the nicotine	1	1.7	1	100	5	40.0%
Practice for Change	more so the motion of you	1	1.7	1	100	6	40.0%
Practice for Change	started slowing like a cold turkey completely	1	1.7	1	100	7	50.0%
Practice for Change	that sometimes helps	1	1.7	1	100	3	20.0%
Practice for Change	the action of constantly breathing in and out	1	1.7	1	100	8	60.0%
Program Expectations	It's like you have to convince yourself	1	1.7	1	100	8	60.0%
Program Expectations	It's mindset more than anything	1	1.7	1	100	6	40.0%
Program Expectations	say you're gonna quit and then not do take action upon it	1	1.7	1	100	13	90.0%
Program Expectations	you have to actually want to quit in order to quit	1	1.7	1	100	11	80.0%
Types of Vaping Quitting Programs	deal with their stress better	1	1.7	1	100	5	40.0%
Types of Vaping Quitting Programs	finding healthier hobbies	1	1.7	1	100	3	20.0%
Types of Vaping Quitting Programs	how hard things are for my generation	1	1.7	1	100	7	50.0%
Types of Vaping Quitting Programs	how to deal with stress.	1	1.7	1	100	5	40.0%
Types of Vaping Quitting Programs	like ways to help people	1	1.7	1	100	5	40.0%
Types of Vaping Quitting Programs	vaping is a really easy coping mechanism	1	1.7	1	100	7	50.0%
Young Adults' Voice	like they deal with the problem	1	1.7	1	100	6	40.0%
Young Adults' Voice	my generation's addicted	1	1.7	1	100	4	30.0%
Young Adults' Voice	The first thing they want to do is vape	1	1.7	1	100	9	70.0%
Young Adults' Voice	The first thing they want to do is vape (again)	1	1.7	1	100	9	70.0%
Young Adults' Voice	they believe everything isn't fair to them	1	1.7	1	100	8	60.0%
Young Adults' Voice	They feel stressed	1	1.7	1	100	3	20.0%
Young Adults' Voice	they just rely on the vape	1	1.7	1	100	6	40.0%
Young Adults' Voice	you don't need it	1	1.7	1	100	5	40.0%