

Matthew T. Sutherland
Elisa M. Trucco

Advances in Psychotherapy –
Evidence-Based Practice

Reducing Teen Vaping and E-Cigarette Use



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Advances in Psychotherapy – Evidence-Based Practice

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Dedication

To my family (Mom, Dad, Kayla, Kelley, Bethany, Stef, Eli, Jonah, and Manny), whose love and energy have been a constant source of strength and perseverance. To my students and colleagues who challenge me to think more deeply and work more diligently. – M.T.S.

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Preface

Teen vaping and e-cigarette use has emerged as one of the more pressing US public health challenges of the past decade. Once marketed as a harm-reduction strategy for adult cigarette smokers, *electronic nicotine delivery systems* (ENDS) have rapidly become the preferred nicotine product among today's adolescents and young adults, many of whom would never experiment with the drug otherwise. Sleek designs, appealing flavors, and targeted marketing have fueled experimentation, while evolving technology has increased nicotine yields and addiction liability. Teen vaping is not a benign trend, but rather a complex, multifaceted behavior with implications for brain development, long-term physical health, and future substance use trajectories.

The purpose of this volume is to provide clinicians, educators, policy-makers, and researchers with a comprehensive, evidence-based resource on the nature, risks, and mitigation of adolescent vaping and nicotine addiction. Drawing from current scientific literature, developmental perspectives, and clinical recommendations, we aim to offer a practical guide integrating research with real-world assessment, prevention, and cessation strategies. This is not simply a manual for addressing the symptoms of nicotine addiction, rather it is an exploration of the broader biopsychosocial contexts in which adolescent vaping arises and persists. Each chapter builds toward a fuller understanding of the pathways into and out of nicotine use via ENDS, highlighting both vulnerabilities and opportunities for change.

The book is organized to move from foundational knowledge to applied practice. Early chapters define vaping, review the latest epidemiological data, and briefly summarize available assessment tools (Chapter 1). We then introduce theoretical and conceptual models framing nicotine addiction as the interaction between biological, psychological, and social forces in the context of the developing brain (Chapter 2). These frameworks provide a lens to more fully appreciate the progression of use, unique challenges faced by adolescents when quitting, and a need for personalized interventions. Later chapters delve into diagnostic considerations (Chapter 3), the tailoring of interventions to individual needs and preferences, and youth-oriented practical tools for education, prevention, intercession, and cessation (Chapter 4).

A unifying theme throughout is the importance of developmental sensitivity when addressing teen vaping. Adolescence is a period of heightened neuroplasticity, social influence, and identity formation, making both health-related risks and opportunities particularly pronounced. The same developmental factors that render adolescents vulnerable to addiction can be leveraged to promote resilience, skill building, and engagement in prosocial activities as an alternative to vaping. We emphasize collaboration with teens, family involvement where appropriate, and appreciation for the broader contexts in which vaping behaviors develop, escalate, and ideally dissipate.

We acknowledge that no single approach will be universally effective. The diversity of adolescent experiences, co-occurring mental health conditions, and various environmental influences require flexible, personalized approaches. The interventions discussed range from brief motivational conversations to intensive, multimodal treatments combining behavioral counseling, digital treatment extenders, and pharmacotherapy. In our coverage here, we aim to equip practitioners with a menu of options positioning them to select interventions aligned with each youth's unique risk profile, strengths, stage of change, and personal goals. Importantly, we also highlight limitations and gaps in the evidence base, underscoring the need for continued research and innovation.

Ultimately, this book is grounded in a belief that every adolescent deserves accurate information, supportive guidance, and access to interventions that respect their autonomy while encouraging optimal health-related decision making. Teen vaping is a preventable and treatable health challenge, but only if we respond with urgency, evidence, and empathy. Our hope is that the material presented herein not only outlines best practices to curb adolescent vaping but will also inspire collaborative, multilevel efforts to protect the health and well-being of the next generation.

Description of Vaping and E-Cigarette Use

Vaping and *e-cigarette* use have rapidly transformed the landscape of adolescent substance use, emerging as the preferred form of nicotine consumption among US teens. Once promoted as a safer alternative for adult cigarette smokers, *electronic nicotine delivery systems* (ENDS) have evolved into high-tech, youth-appealing devices that deliver potent doses of nicotine in flavors that attract young users. This chapter provides a foundation for appreciating the scope, nature, and characterization of teen vaping. We begin with clear definitions, device descriptions, diagnostic frameworks, and measurement tools. By grounding the reader in terminology, epidemiology, and assessment, we set the stage for deeper appreciation of the theories, perspectives, and interventions presented in later chapters.

1.1 Terminology

1.1.1 Diagnostic Codes

There are several designations in the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition, Text Revision (DSM-5-TR; American Psychiatric Association [APA], 2022) that relate to vaping and ENDS use. These include:

- Tobacco use disorder (TUD):
 - Mild 305.1 (Z72.0): Presence of 2–3 symptoms.
 - Moderate 305.1 (F17.200): Presence of 4–5 symptoms.
 - Severe 305.1 (F17.200): Presence of ≥6 symptoms.
- Tobacco withdrawal 292.0 (F17.203):
 - Tobacco withdrawal can only be present with the comorbid presence of a moderate or severe TUD. Coding a mild TUD with tobacco withdrawal is not possible.
- Unspecified tobacco-related disorder 292.9 (F17.209):
 - This designation is used when presentations do not meet full TUD criteria (or another substance-related disorder), yet symptoms have a clinically significant negative impact on social, occupational, or other areas.

Tobacco use disorder (TUD) is the diagnosis related to problematic vaping

Under DSM-IV, a *substance dependence* diagnosis required endorsement of ≥ 3 symptoms in a 12-month period, and *substance abuse* required ≥ 1 symptom. We note that DSM-III and DSM-IV did not include a nicotine abuse category, given the relative absence of legal or major social consequences associated with nicotine use. Over time, the abuse versus dependence distinction raised psychometric and conceptual concerns. In DSM-5-TR, *legal consequences* were removed as a diagnostic criterion, due to low prevalence, and a new *craving* criterion was introduced to better capture motivational aspects of addiction, based, in part, on research findings identifying it as a useful treatment target. Consequently, DSM-5-TR now utilizes a unidimensional TUD construct with severity specifiers, reflecting a dimensional approach more consistent with contemporary research. Table 1 summarizes differences in DSM-IV and DSM-5-TR criteria.

Table 1. Criteria for DSM-IV Abuse and Dependence and DSM-5-TR Tobacco Use Disorder

Symptom/criteria	DSM-IV substance abuse ^a	DSM-IV nicotine dependence	DSM-5-TR TUD
Interference with major roles	✓		✓
Hazardous use	✓		✓
Social consequences	✓		✓
Legal consequences	✓		
Taken in larger amounts than intended		✓	✓
Desire/unsuccessful efforts to limit use		✓	✓
Withdrawal		✓	✓
Tolerance		✓	✓
Activities given up		✓	✓
Use persists despite problems		✓	✓
Significant time spent using		✓	✓
Craving			✓

Note. TUD = tobacco use disorder. Based on the *Diagnostic and Statistical Manual of Mental Disorders*, 4th edition (DSM-IV; American Psychiatric Association, 1994) and the *Diagnostic and Statistical Manual of Mental Disorders*, 5th Edition, Text Revision (DSM-5-TR; American Psychiatric Association, 2022). ^aOne or more abuse criteria met within a 12-month period *and* no dependence diagnosis, applicable to all substances except *nicotine* (American Psychiatric Association, 1994).

Theories and Models of Vaping and Nicotine Use

Multiple theories and models of nicotine addiction exist. As opposed to a thorough review, this chapter briefly discusses the most relevant perspectives for practicing clinicians working to curb youth vaping. The chapter's goal is to highlight frameworks that may provide deeper appreciation of teen vaping, factors leading to and maintaining use, and ultimately, intervention approaches (Chapter 4).

Nicotine addiction is a chronic, relapsing brain disease characterized by compulsive drug seeking and taking despite negative consequences. Appreciating how the disease develops and persists, particularly among teens, requires a multifaceted perspective. A *biopsychosocial heuristic* (Borrell-Carrio et al., 2004) frames nicotine addiction as the product of interacting biological, psychological, and social processes visually represented in the triangle of dependence (Figure 1).

Curbing youth vaping requires a multifaceted perspective

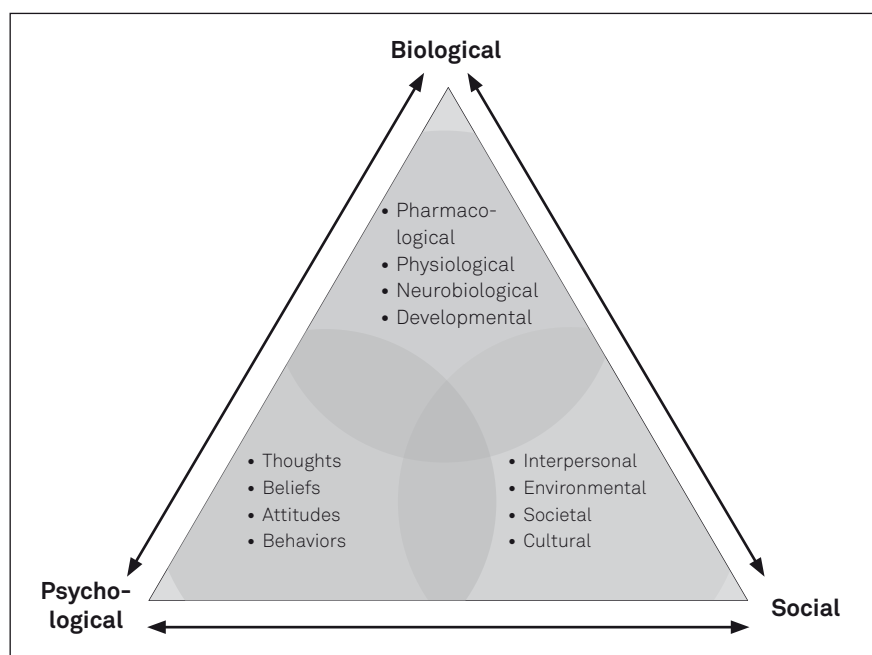


Figure 1. Triangle of dependence.

Diagnosis and Treatment Indications

Grounded in theories and etiological processes underlying teen ENDS use, this chapter offers guidance to inform treatment planning and therapeutic decision making. The goal is to align interventions with the unique constellation of risk and resilience factors that influence an individual's initiation and progression of ENDS use.

3.1 Externalizing and Internalizing Etiological Processes

Consistent with different etiological processes linked to ENDS initiation, appreciating early problem behaviors, personality traits, and use-related expectancies can help identify adolescents most in need of prevention, or inform case conceptualizations and treatment plans for those with tobacco use disorder (TUD). One of the more common etiological trajectories involves an externalizing pathway characterized by high impulsivity (i.e., deficiencies in behavioral inhibition) and/or high sensation seeking, a presentation generally more common among boys than girls. Empirically, high-risk scores on the SURPS (impulsivity: ≥ 13 , sensation seeking: ≥ 15) have been linked with elevated ENDS risk in high school students (Castellanos-Ryan et al., 2013), and elevated ASEBA subscale *t* scores (borderline clinical: 65–70, clinical: > 70) for rule breaking or aggressive behavior (or DSM-oriented scales of ADHD, ODD, or conduct problems) may further indicate adolescents on this pathway (Trucco & Hartmann, 2021). Adolescents with this presentation also tend to endorse social facilitation expectancies on the AECQ (Madan et al., 2020) and often have a treatment history for ADHD, ODD, or conduct disorder (Lochman et al., 2008).

Adolescents fitting an externalizing profile may benefit most from interventions that build self-control while honing problem-solving and drug refusal skills. For example, *Coping Power* (Lochman et al., 2008) is a late-elementary to middle-school prevention intervention that strengthens problem solving, emotion regulation, social competence, and positive parental involvement. Likewise, adolescent-focused clinical programs such as *Supporting Teens' Academic Needs Daily* (STAND) for ADHD (Sibley et al., 2013), and *Defiant Teens* (Barkley et al., 1999) for ODD may be useful when paired with vaping interventions, as they emphasize parental management skills, positive

Targeting self-control may most benefit externalizing clinical presentations

communication styles, and shared problem solving to address behavioral vulnerabilities contributing to ENDS use.

Although less common, ENDS use may also emerge through an internalizing pathway characterized by elevated hopelessness and anxiety sensitivity, a clinical presentation generally more common among girls than boys (Trucco & Hartmann, 2021). Importantly, anxiety sensitivity may play a dual role, either exacerbating or mitigating ENDS risk, depending on developmental timing and contextual factors. For example, during earlier developmental periods when substance use is less normative, high anxiety sensitivity may be protective given greater fear of negative consequences (e.g., punishment from authority figures, peer rejection, physical health effects; Wills et al., 1998). Yet, in later adolescence these same traits may increase risk (Trucco & Hartmann, 2021). Based on existing work, SURPS scores ≥ 17 for hopelessness or ≥ 18 for anxiety sensitivity indicate higher risk for ENDS use among high school students (Castellanos-Ryan et al., 2013). Elevated scores on ASEBA subscales for anxious/depressed or withdrawn/depressed behaviors (i.e., *t* scores 65–70 borderline, > 70 clinical) or DSM-oriented depressive and anxiety problems scales (self-report) also signal greater odds of ENDS initiation. Adolescents fitting this profile commonly endorse negative affect reduction expectancies on the AECQ (Madan et al., 2020).

Targeting emotion regulation may most benefit internalizing presentations

Adolescents fitting an internalizing profile may benefit most from interventions that target emotion regulation and distress tolerance skills. For example, CBT approaches, which incorporate cognitive restructuring and behavioral activation, and *interpersonal psychotherapy for adolescents* (IPT-A), which emphasizes the connection between interpersonal relationships and mood, have demonstrated efficacy in reducing depressive symptoms among adolescents (Weersing et al., 2016). For anxiety-related presentations, the *Coping Cat* program (Kendall et al., 2002) is a widely utilized CBT protocol combining skills training with exposure techniques to reduce anxious arousal and avoidance behavior, which could also potentially decrease reliance on ENDS as a coping strategy for negative affect.

3.2 Attitudes and Use History

Consider vaping attitudes, social influences, and prior quit attempts

A detailed understanding of adolescents’ attitudes toward ENDS is essential for selecting appropriate interventions. Key attitudinal factors include curiosity, intentions, perceived harm, expectancies, motivations, and beliefs surrounding vaping’s utility (e.g., stress relief, social acceptance). Assessment of these constructs can help identify adolescents who may be primed for educational interventions, particularly those with misconceptions about ENDS’ health risks or nicotine’s role in worsening anxiety and depressive symptoms. Because adolescent attitudes are strongly influenced by their social environments, it is also critical to consider exposure to peers, caregivers, school personnel, and social media messaging that either condones or discourages ENDS use. Gathering information on general parenting practices (e.g.,

Treatment

A strong and sudden rise in *electronic nicotine delivery systems* (ENDS) use identified in the 2018 *National Youth Tobacco Survey* prompted US health officials to declare teen vaping an epidemic (FDA, 2018). The scope of the problem triggered rapid development and deployment of regulatory tools, prevention strategies, and intervention approaches, targeting this new public health challenge. Building on decades of research targeting cigarette smoking (Fiore et al., 2008), current clinical guidelines and best practices were adapted and modernized with a focus on vaping and a refreshed youth-oriented perspective. The national collective response to this epidemic appears to have been effective, as rates of use among middle and high school students in 2023 (10.0%) appreciably declined from their peak in 2019 (27.5%; National Law Review, 2023).

While early success is encouraging, teen ENDS use remains concerning, given the known impact of vaping on multiple organ systems, increased risk of cigarette smoking and cannabis use, and because most vapes contain nicotine, which alters brain structure and function (Sutherland & Stein, 2018). Teens who start vaping now may become lifetime users, and it remains unknown what the long-term health consequences are of decades of ENDS use. As such, strategies to reduce youth vaping are deemed vital for the future health of individuals and the nation.

4.1 Methods of Treatment

This chapter compiles theory-based, evidence-informed, and/or evidence-based resources, with the goal of providing a comprehensive approach for curbing youth vaping. In line with strategies from national health organizations (e.g., American Lung Association [ALA], 2023; American Academy of Pediatrics [AAP], 2025; SAMHSA, 2020; FDA, 2024), such a multicomponent approach targets various stakeholders and involves several levels of response including Education, Prevention, Intercession, and Cessation (EPIC; Figure 2). In other words, a vaping epidemic necessitates an EPIC response.

Coordinated multilevel efforts across community settings helped to reduce teen cigarette smoking (e.g., public education, school-based prevention curricula, smoke-free air laws, increased taxes, and youth-oriented access restrictions and treatments; Department of Health and Human Services, 2012). These efforts worked synergistically by pairing policy and

A vaping epidemic requires an EPIC response (education, prevention, intercession, cessation)

Box 1. Asking About Use: Example Questions

Opener: Start conversation in a natural way

- I saw this [post/meme/article] about vaping earlier. What are your thoughts about vaping?
- Do you know anybody from school who vapes or uses e-cigs, mods, Elf Bars, Vuse, or Juul? (Use specific lingo and names of products used locally.)
- Have you seen anybody from school vaping or using e-cigs?

Screening questions: Inquire about use

- Have you ever tried a vape or e-cig? What kind(s)?
- Do you currently use any vaping, nicotine, or tobacco products?
- When was the last time that you used?

Follow-up questions: Characterize dependence level

- How many times have you used? How often do you vape? (ask about amount, frequency)
- Since you started, have you noticed any negative health impacts? (ask about consequences)
- What happens when you cannot use, try not to use, or try to stop? (ask about withdrawal symptoms)

Counsel: Don't give a lecture, have a conversation

Counsel all young people to not vape, smoke, or use nicotine products, regardless of amount used or dependence level (i.e., to not start or to quit). Such interactions are recommended to be framed as conversations, not lectures, thereby setting the tone for a collaborative partnership, as opposed to an instructor–pupil interaction. Open-ended questions should encourage teens to reflect on broader concepts, such as motivations for not using and potential barriers. Often cited reasons for not vaping include concerns about physical fitness, loss of autonomy (i.e., dependence), social disapproval (e.g., parents, teachers), and cost. As such, all young people may benefit from reminders of vaping’s health impacts (Box 2). Personalized examples of benefits linked with not using, may resonant better with some teens (e.g., improved athletic performance, more money for hobbies). Often-cited reasons for initiating or continuing use include social pressures, accessibility, curiosity, appeal of flavors, positive sensory and/or cognitive experiences, and stress reduction. Help the youth recognize and anticipate these potential barriers to the goal of not using. For those who do not use, offer encouragement and reinforcement, and acknowledge future challenges that may arise.

Explore readiness to quit

For adolescents who do use, work to understand reasons for doing so and potential readiness to quit. Most adolescents who vape are interested in quitting (~65%) and many of them (~60–70%) have tried to stop (Dai et al., 2023). By receiving support, encouragement, and resources, those who have previously tried to quit will be better positioned for success. Inquire about promoters of use, to identify triggers and healthier ways to navigate them. Assess motivation and readiness to quit with the aid of numeric scaling (Appendix 4). For example, ask them to rate the importance of quitting on a scale of 0 to 10 (0 = *not at all*, 10 = *extremely*) and then to rate their confidence in being able to do so. This may prompt further discussion of reasons for change and associated barriers. To determine what degree of assistance

Appendix: Tools and Resources

- Appendix 1: *Monitoring the Future* Data – Annual and 30-Day Vaping Rates
- Appendix 2: Assessment Tools (Ask) – Nicotine Dependence and Craving
- Appendix 3: Motivational Interviewing Principles (Counsel)
- Appendix 4: Assessment Tools (Ask) – Quit Motivation, Self-Efficacy, and Readiness
- Appendix 5: Educational Resources for Various Stakeholders
- Appendix 6: Prevention Resources for Different Settings and Various Stakeholders
- Appendix 7: Intercession Resources for Motivating Behavioral Change
- Appendix 8: Decisional Balance Exercise (Counsel)
- Appendix 9: Cessation Resources – Behavioral Support Formats
- Appendix 10: Vaping Diary Exercise (Treat)

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Appendix 3: Motivational Interviewing Principles (Counsel)

This is a **preview** of the content that is available in the downloadable material of this book. Please see p.95 instructions on how to obtain the full-sized, printable PDF.

Motivational interviewing (MI) is a collaborative, goal-oriented counseling approach intended to strengthen a person's intrinsic motivation and commitment to behavioral change (Miller & Rollnick, 2023). In MI, a facilitator does not tell a participant what they should or should not do or try to persuade them into action. Rather, they guide a participant in self-identifying and resolving barriers to success. MI can be helpful for addressing ambivalence toward change, discrepancies between current behavior and personal values and goals, building self-efficacy, and strengthening internal motivation (rather than imposing external pressure). The goal is to help participants move toward change, not to get them to quit vaping, per se.

Four basic interaction skills facilitate building rapport, exploring ambivalence, and promoting intrinsic motivation, summarized by the acronym OARS: Open-ended questions, Affirmations, Reflective listening, and Summarizing.

- **Open-ended questions.** An open-ended question requires a full answer using the individual's own words to express their knowledge or feelings. In contrast, closed-ended questions are those answered with a yes/no response. Examples of open-ended questions in the context of adolescent vaping might be: "What do you like about vaping and what do you not like?" "How does vaping fit (or not) with the kind of person you want to be?" "Could you share some of the health effects you've experienced from vaping?" "Could you tell me what you look forward to most about quitting and what benefits you will experience?"
- **Affirmations.** Affirmations are statements recognizing and reinforcing strengths and efforts toward behavioral change. Examples of affirming responses might be: "It sounds like you really care about your health and future." "You've already shown you can stick to goals in other parts of your life." "You have a lot of great ideas on ways to deal with vaping triggers." "I appreciate that you are willing to try the deep breathing exercise even though it's not something you would normally do."
- **Reflective listening.** Reflective listening is when one person seeks to understand another's ideas by offering those ideas back to them, confirming understanding and encouraging deeper discussion. Three basic strategies include repeating or rephrasing, paraphrasing, and reflection on feelings. Examples of reflective listening prompts might include: "It sounds like you're saying vaping helps with stress, but you also worry about the health effects." "You feel pressure from friends, but part of you wants to quit."
- **Summarizing.** Summary statements help ensure there is clear communication. Let the participant know you are summarizing what they told you with an opening such as "Let me see if I understand so far." or "Here's what I've heard. Tell me if I've missed anything." Concisely recap what they said, ending with an invitation for them to correct anything misstated or omitted ("Anything you want to add or correct?"). A summary statement example might be: "So far, you've said you started vaping to fit in, but you're noticing it's getting harder to control.... You want to feel healthier and have more money, and you're curious about ways to quit."

Five core principles provide a framework for guiding individuals toward behavioral change in a supportive, nonjudgmental way.

- **Expressing empathy** involves using reflective listening to understand the participant's perspective without criticism, creating a supportive tone for open conversations.
- **Developing discrepancy** helps individuals recognize the gap between their current behavior and their broader values and goals, increasing motivation for change.
- **Avoiding argumentation** refers to steering away from confrontations, as resistance is often a natural part of change rather than something to battle.
- **Rolling with resistance** involves accepting and exploring ambivalence instead of opposing it, which can reduce defensiveness and open the conversation to new topics.
- **Supporting self-efficacy** emphasizes building the participant's confidence in their ability to change, and reinforcing the acquisition of requisite skills for success.

Peer Commentaries

This is a must-read for educators, health care providers, community organizations, and the clinicians who work with these stakeholders as we all navigate the changing landscape of nicotine use in youth. The material is accessible and relevant for a broad audience, all the while maintaining the rigor of a scholarly publication. It is unique in emphasizing the challenges and opportunities for monitoring, preventing, and treating adolescent vaping, which is an entirely different ball game than cigarette smoking of past. Readers will be convinced of the importance of adopting a holistic framework that integrates and synergizes risk and protective factors across biological, psychological, and social domains which serve as drivers of both addiction and cessation outcomes. The book culminates with a scoping review of current vaping intervention programs accompanied by an incredible array of assessment tools, resources, and toolkits to meet the needs of caretakers and families, educators, healthcare providers, and the adolescents themselves.

Kristina Jackson, PhD, Professor, Department of Psychiatry, Rutgers Robert Wood Johnson Medical School; Associate Director of Epidemiology, Etiology, and Prevention Rutgers Addiction Research Center (RARC)

Reducing Teen Vaping and E-Cigarette Use is a timely, authoritative, and highly practical resource on one of the most pressing adolescent health challenges of our time. Drs. Sutherland and Trucco expertly synthesize the rapidly evolving science of youth vaping and nicotine addiction into an accessible framework that bridges research, assessment, prevention, and treatment. Particularly impressive is the book's developmental and biopsychosocial perspective, which provides clinicians with actionable strategies grounded in the realities of adolescent behavior and decision-making. This volume will be a vital resource for psychologists, physicians, counselors, educators, researchers, and anyone working to prevent and reduce nicotine use among youth.

Adam Leventhal, PhD, Director, USC Institute for Addiction Science; University Professor of Population & Public Health Sciences and Psychology, University of Southern California

Vape products are becoming increasingly potent and addictive, and concerningly we have seen a huge increase in young people using these products without understanding what the long-term impacts will be. This book by Drs. Sutherland and Trucco is a must-read for clinicians, researchers, educators, policymakers, and parents seeking clear, evidence-based information about vaping, including diagnoses, prevention, and treatment strategies. It is an invaluable resource for anyone wanting to better understand and address this growing public health concern and provides a strong foundation for people new to this topic, while still offering depth for those with more experience in this field.

Lindsay M. Squeglia, PhD, Professor, Department of Psychiatry and Behavioral Sciences, Medical University of South Carolina; Co-Director, MUSC Youth Collaborative