



## Self-control and smoking in a sample of adults living with HIV/AIDS: A cross-sectional survey

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### ABSTRACT

**Introduction:** Cigarette smoking prevalences are very high in persons living with HIV (PLWH). Identifying variables among PLWH that are linked to smoking in community samples (e.g., self-control) can inform smoking treatments for PLWH. The current study examined the association of self-reported self-control and smoking (e.g., smoking status, cigarette dependence) in a sample of PLWH.

**Methods:** Adult PLWH were recruited from the Center for Positive Living (Montefiore Medical Center, Bronx, New York, US). All participants completed measures of demographics, cigarette smoking, and self-control. Participants who reported current cigarette smoking completed measures of cigarette dependence; intolerance for smoking abstinence; and motivation, confidence, and desire to quit smoking.

**Results:** The overall sample included 285 PLWH (49.1% cigarette users, 55.4% male, 52.7% Black race, 54.8% Latino/a ethnicity). PLWH with current cigarette smoking reported lower self-control than PLWH with no current cigarette smoking ( $M = 116.88$ ,  $SD = 17.07$  versus  $M = 127.39$ ,  $SD = 20.32$ ;  $t = -4.15$ ,  $df = 211$ ,  $p < 0.001$ ). Among PLWH with current cigarette smoking, lower self-control was associated with greater cigarette dependence ( $\rho = -0.272$ ,  $p < 0.01$ ), and lower confidence in quitting smoking cigarettes ( $\rho = 0.214$ ,  $p < 0.05$ ). Lower self-control was associated with greater overall smoking abstinence intolerance ( $\rho = -0.221$ ,  $p < 0.05$ ) and withdrawal intolerance ( $\rho = -0.264$ ,  $p < 0.01$ ).

**Discussion:** Among a sample of PLWH, lower self-control was related to cigarette smoking (versus no smoking), greater cigarette dependence, lower confidence in quitting smoking, and greater intolerance for smoking abstinence. It may be useful to target self-control among PLWH to increase confidence in quitting and abstinence intolerance with the goal of improving smoking cessation outcomes.

### 1. Introduction

The cigarette smoking prevalence among persons living with HIV (PLWH) is much higher than the general population in the US and other countries (Weinberger, Smith, Funk, Rabin, & Shuter, 2017; Park, Hernández-Ramírez, Silverberg, Crothers, & Dubrow, 2016; Rasmussen et al., 2015; Tron, Lert, Spire, & Dray-Spira, 2014). In addition to well-known smoking-related health consequences (USDHHS, 2014); smoking consequences for PLWH include HIV-related complications (e.g., increased viral load) and greater mortality (Ande et al., 2015; De, Farley,

Lindson, & Aveyard, 2013; Calvo, Laguno, Martinez, & Martinez, 2015; Silverberg et al., 2015; Helleberg et al., 2015). Quitting smoking reduces HIV-related symptom burden (Vidrine, Arduino, & Gritz, 2007); HIV/AIDS-related causes of mortality (De et al., 2013; Bénard et al., 2010); and cardiovascular morbidity (Petoumenos et al., 2011). PLWH who smoke cigarettes want to quit (Pacek, Latkin, Crum, Stuart, & Knowlton, 2014); and there is need for smoking cessation treatment development for PLWH (Pool, Dogar, Lindsay, Weatherburn, & Siddiqi, 2016; Pacek & Cioe, 2015). Smoking treatments for PLWH can be informed by identifying potentially modifiable variables related to smoking among PLWH

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(e.g., self-control).

Self-control, also known as self-regulation, plays a significant role in the inability to stop using cigarettes and other drugs (Sinha, 2008; Webb, Sniehotta, & Michie, 2010; West, 2009). High levels of self-control are required over long periods of time to resist smoking while experiencing intense abstinence symptoms and cravings during a quit attempt (West, 2009; Piasecki, 2006). However, self-control is conceptualized as a limited resource that can be exhausted, making continued self-control more difficult (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Baumeister, Vohs, & Tice, 2007; Hagger, Wood, Stiff, & Chatzisarantis, 2010) including resisting smoking (Shmueli & Prochaska, 2009; Heckman et al., 2017).

Self-control is related to cigarette smoking behavior and smoking cessation success in general populations (Shmueli & Prochaska, 2009; Heckman et al., 2017, 2018; Liu, Li, Lanza, Vasilenko, & Piper, 2013; Kassel, Shiffman, Gnys, Paty, & Zettler-Segal, 1994; Beenackers, Oude Groeniger, van Lenthe, & Kamphuis, 2018; Wilson & MacLean, 2013); and could be a potential treatment target for PLWH. Self-control related to HIV/AIDS has mainly focused on HIV-related risk factors, with lower self-control associated with greater HIV-related risk behaviors (e.g., (Hernandez & Diclemente, 1992; Esmailzadeh, Allahverdipour, Fathi, & Shirzadi, 2015; Arentoft et al., 2016), or on medication adherence (Camargo et al., 2019). To our knowledge, no study has compared self-reported self-control among PLWH with current cigarette smoking compared to PLWH with no current cigarette smoking. Further, no study has examined the relationship between self-control and smoking-related behaviors associated with difficulty maintaining abstinence (e.g., cigarette dependence, motivation to quit smoking, intolerance for smoking abstinence; Breslau, Johnson, Hiripi, & Kessler, 2001; Sirota et al., 2010; Baker, Brandon, & Chassin, 2004; Hyland et al., 2004) among PLWH with current cigarette smoking.

The current study sought to begin to address these gaps in the literature. The specific aims of this study were: (1) to compare self-reported self-control among PLWH with current cigarette smoking versus PLWH with no current cigarette smoking, and (2) to examine the relationship of self-control to smoking-related behaviors (e.g., cigarette dependence, motivation to quit smoking, intolerance for smoking abstinence) among PLWH with current cigarette smoking. It was hypothesized that lower self-control would be associated with current cigarette smoking (versus no cigarette smoking); greater cigarette dependence; greater cigarettes smoked per day; lower motivation, confidence, and desire to quit smoking; and greater intolerance for smoking abstinence.

## 2. Material and methods

### 2.1. Participants

Participants were adult PLWH receiving treatment at the Center for Positive Living (CPL) at the Montefiore Medical Center (Bronx, New York, US) from 3/22/2017 to 4/19/2018. Inclusion criteria included (1) being 18 years or older, (2) reporting a diagnosis of HIV, (3) having the ability to speak and read English, and (4) having the ability to provide oral informed consent.

### 2.2. Procedures

The study was approved by the Albert Einstein College of Medicine Institutional Review Board (IRB #2014-4204) with oral consent procedures to minimize the risk of breach of confidentiality. Participants were recruited from the CPL waiting room and the survey was anonymous. Study candidates went into a private room to complete oral consent procedures followed by a measure of expired breath carbon monoxide (CO) using a coVita Micro + pro Smokerlyzer® Monitor. Upon study completion, participants received a \$20 Target gift card and smoking cessation resources.

### 2.3. Measures

#### 2.3.1. Demographics

Demographics included age, gender, race, ethnicity, sexual orientation, and education.

#### 2.3.2. HIV characteristics

Questions related to HIV status included the year of HIV diagnosis, self-reported AIDS diagnosis, and use of antiretroviral medication.

#### 2.3.3. Smoking characteristics

Participants were asked to self-report their current cigarette smoking status by responding to the following question "What is your smoking status?" Participants who selected the response option "I currently smoke cigarettes" were classified as having Current Cigarette Smoking. Participants who selected either the response option "I used to smoke cigarettes but I do not smoke now" (i.e., former smoking) or "I never smoked cigarettes" (e.g., never smoking) were classified as having No Current Cigarette Smoking.

Participants with current cigarette smoking also completed: age of smoking onset, frequency of cigarette smoking (daily, less than daily), quantity of cigarette smoking (cigarettes per day), and cigarette dependence. Cigarette dependence was assessed using the Fagerström Test for Cigarette Dependence (FTCD, 7 items, range = 0–10, higher scores indicate greater cigarette dependence) (Heatherton, Kozlowski, Frecker, & Fagerström, 1991; Fagerström, 2012). Items from the Thoughts About Abstinence Scale (TAAS) (Hall, Havassy, & Wasserman, 1990) asked participants with current smoking to report their motivation to quit smoking (1 = not motivated; 10 = extremely motivated), confidence in quitting smoking (1 = not confident; 10 = extremely confident), and desire to quit smoking (1 = no desire to quit; 10 = extremely high desire to quit). All participants were asked to report their current use of non-cigarette tobacco products.

#### 2.3.4. Self-control

Self-control was measured using the Self-Control Scale (SCS) (Tangney, Baumeister, & Boone, 2004) where participants rated how typical each of 36 statements related to self-control was for them using a 5-point Likert scale ranging from 1 = not at all to 5 = very much (e.g., "I have trouble saying no"). The SCS has good reliability (i.e., internal consistency, test-retest) and validity (Tangney et al., 2004; Duckworth & Kern, 2011). The internal consistency reliability of the SCS for this sample of PLWH ( $\alpha = 0.84$ ) was similar to past research (Tangney et al., 2004).

#### 2.3.5. Intolerance for smoking abstinence

PLWH with current cigarette smoking were asked to complete the Intolerance for Smoking Abstinence Questionnaire (IDQ-S) (Sirota et al., 2010) which is a 20 item measure with three subscales: Withdrawal Intolerance (12 items), Lack of Cognitive Coping (5 items), and Pain Intolerance (3 items) on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree; range for total score = 20–100, sample item: "I can't stand how I feel when I need a cigarette."). The internal consistency reliabilities for the current sample of PLWH (total score  $\alpha = 0.80$ , withdrawal intolerance subscale  $\alpha = 0.88$ , lack of cognitive coping subscale  $\alpha = 0.95$ , pain intolerance subscale  $\alpha = 0.81$ ) were similar to or higher than the internal consistency reliability among a community sample of adults with current smoking (Sirota et al., 2010).

### 2.4. Statistical analysis

PLWH with current cigarette smoking were compared to PLWH with no current cigarette smoking (i.e., self-identified as having former or never smoking) on demographics, HIV characteristics, and self-control using chi-square tests and t-tests when appropriate. Within the sample of PLWH with current cigarette smoking, Spearman's rank-order

correlation coefficient was used to test associations of self-control with smoking variables. Analyses were performed using the Statistical Package for the Social Sciences-24.0 (SPSS).

### 3. Results

#### 3.1. Sample characteristics

Among the 445 individuals who were approached in the CPL waiting room, 147 declined to participate or did not meet the inclusion criteria. Among the 298 participants who completed oral consent procedures, 13 participants were missing data on key variables for the analyses (e.g., cigarette smoking status) and were excluded from the analyses. The final analytic sample for this study consisted of 285 participants (55.4% male, 72.2% heterosexual, 52.7% Black race).

See Table 1 for demographic, HIV, and smoking characteristics for the full sample and by cigarette smoking status. The sample was split between PLWH with current cigarette smoking (49.1%) and PLWH with no current cigarette smoking (50.9%; 31.2% former cigarette use and 19.7% no lifetime cigarette use). There were no demographic or HIV characteristic differences for PLWH with current cigarette smoking versus PLWH with no current cigarette smoking. PLWH with current cigarette smoking had higher CO levels than PLWH with no current cigarette smoking. Among PLWH with current cigarette smoking, nearly two-thirds reported daily smoking and, on average, reported a moderate level of cigarette dependence and moderately high motivation, confidence, and desire to quit smoking cigarettes.

#### 3.2. Self-control and cigarette smoking

##### 3.2.1. Self-control among PLWH by current cigarette use status

PLWH with current cigarette smoking reported lower self-control than PLWH with no current cigarette smoking ( $t = -4.15$ ,  $df = 211$ ,  $p < 0.001$ ) (Table 1).

##### 3.2.2. Self-control and smoking-related variables among PLWH with current cigarette smoking

Among PLWH with current cigarette smoking, lower self-control was associated with greater cigarette dependence and lower confidence in quitting smoking cigarettes. In addition, lower self-control was associated with greater intolerance for smoking abstinence overall and withdrawal intolerance. There were no significant associations between self-control and cigarettes smoked per day, motivation to quit smoking cigarettes, desire to quit smoking cigarettes, pain intolerance, or lack of cognitive control (Table 2).

### 4. Discussion

This study is the first to our knowledge to examine the relationship of self-control to smoking status and smoking-related behaviors in a sample of PLWH. First, in the full sample of PLWH, PLWH with current cigarette smoking reported lower self-control than PLWH with no current cigarette smoking. Second, among PLWH with current cigarette smoking, lower self-control was related to greater cigarette dependence, lower confidence in quitting, and greater intolerance for smoking abstinence overall and related to withdrawal intolerance. The relationships between self-control and cigarettes smoked per day, motivation to quit, desire to quit, and intolerance for smoking abstinence related to cognitive control and withdrawal-related pain intolerance were not significant. The current study extends previous work among community and population-based samples demonstrating relationships between lower self-control and both cigarette use and nicotine dependence (Kassel et al., 1994; Beenackers et al., 2018; Wilson & MacLean, 2013) to PLWH, a group that experiences significant cigarette-related disparities and is also connected to medical health care systems where smoking cessation services can be integrated. These findings additionally suggest

**Table 1**

Demographics, HIV clinical characteristics, cigarette smoking behaviors, and self-control for a sample of adults living with HIV/AIDS ( $n = 285$ ) overall and by current cigarette smoking status.

	Full sample ( $n = 285$ )	Current Cigarette Smoking ( $n = 140$ )	No Current Cigarette Smoking <sup>1</sup> ( $n = 145$ )	Significance <sup>2</sup>
<b>Demographics</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	
Age (years)	50.61 (11.34)	49.70 (10.54)	51.46 (12.0)	0.19
Gender				0.29
Women	43.9%	48.6%	39.3%	
Men	55.4%	50.7%	60.0%	
Transgender women	0.7%	0.7%	0.7%	
Sexual Orientation				0.08
Heterosexual	72.2%	67.6%	76.6%	
Homosexual	17.8%	18.4%	17.2%	
Bisexual/Other	10.0%	14.0%	6.2%	
Race				0.19
Black	52.7%	56.7%	48.9%	
White	9.8%	11.2%	8.5%	
Other <sup>3</sup>	37.5%	32.1%	42.6%	
Ethnicity <sup>4</sup>				0.16
Latino/a	54.8%	50.0%	59.1%	
Non-Latino/a	45.2%	50.0%	40.9%	
Highest Grade				0.52
Completed	30.6%	33.8%	27.6%	
1st–11th Grade	27.5%	26.6%	28.3%	
High School	41.9%	39.6%	44.1%	
Graduate/GED				
Some College or College				
Graduate				
Marital Status				0.98
Never married	56.7%	56.1%	57.2%	
Married	23.9%	24.5%	23.4%	
Divorced, separated, Widowed, other	19.4%	19.4%	19.4%	
<b>HIV Clinical Characteristics</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	
Years Since HIV Diagnosis	26.36 (23.53)	27.0 (23.6)	26.0 (23.6)	0.72
Self-Report AIDS Diagnosis	45.3%	50.7%	40.0%	0.07
Yes	54.7%	49.3%	60.0%	
No				
Antiretroviral Medication	87.2%	86.9%	87.4%	0.70
Yes, currently	7.0%	6.2%	7.7%	
Yes, in the past	5.8%	6.9%	4.9%	
No				
<b>Smoking Behaviors</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	<b>M (SD) or %</b>	
Cigarette Smoking Status	49.1%	100%	0%	–
Current	31.2%	0%	61.4%	
Smoking	19.6%	0%	38.6%	
Former				
Smoking				
Never Smoking				
Other Tobacco Use (i.e., Cigar, E-Cigarette, Chew, Snuff or Pipe)	–	13.0%	7.2%	0.11
Yes		87.0%	89.9%	
No				
Expired breath CO level (ppm)	–	10.42 (10.18) <sup>5</sup>	2.68 (2.50)	<0.001
Age of smoking onset	–	16.59 (6.16)	–	–
	–		–	–

(continued on next page)

Table 1 (continued)

	Full sample (n = 285)	Current Cigarette Smoking (n = 140)	No Current Cigarette Smoking <sup>1</sup> (n = 145)	Significance <sup>2</sup>
Smoking Days				
Daily		65.2%		
Less than daily		34.8%		
Average Cigarettes per Day		7.69 (7.17)		
Cigarettes per Day <sup>6</sup>				
≥ 10	–	38.6%	–	–
< 10		61.4%		
Cigarette dependence (FTCD, range = 0–10)	–	3.92 (2.61)	–	–
Contemplation Ladder (TAAS, (Hall et al., 1990); range = 1–10)	–	6.01 (1.87)	–	–
Quit Motivation (TAAS, range = 1–10)	–	6.13 (2.63)	–	–
Quit Confidence (TAAS, range = 1–10)	–	5.94 (2.55)	–	–
Quit Desire (TAAS, range = 1–10)	–	6.56 (2.84)	–	–
Intolerance for Smoking Abstinence Questionnaire (IDQ-S)				
IDQ-S total score (range = 20–100)	–	55.01 (12.77)	–	–
IDQ-S Withdrawal intolerance (range = 12–60)	–	32.03 (12.95)	–	–
IDQ-S Lack of cognitive coping (range = 5–25)	–	14.15 (5.74)	–	–
IDQ-S Pain intolerance <sup>7</sup> (range = 3–15)	–	7.28 (3.61)	–	–
<b>Self-Reported Self-Control</b>				
Self-Control Scale (SCS, total score, range = 36–180)	122 (19.43)	117 (17.07)	127 (20.32)	<0.001

Key: CO, carbon monoxide; FTCD, Fagerström Test for Cigarette Dependence; M, mean; ppm, parts per million; SD, standard deviation; TAAS, Thoughts about Abstinence Scale

<sup>1</sup> The “No Current Cigarette Smoking” group included participants who self-reported either never smoking cigarettes or who reported past (but not current) cigarette smoking.

<sup>2</sup> Significance tests compared those with current cigarette smoking to those without current cigarette smoking. Independent samples t-tests were used for continuous variables (e.g., age) and chi-square tests were used for categorical variables (e.g., gender).

<sup>3</sup> Other racial categories reported were: Other (n = 92), Native Hawaiian or Pacific Islander (n = 1), American Indian or Alaskan Native (n = 9), and Asian (n = 10).

<sup>4</sup> 15 participants (8 with current cigarette smoking, 7 without current cigarette smoking) responded with “do not know” or “not sure” when asked about their ethnicity.

<sup>5</sup> The CO level of participants with current daily cigarette smoking (M = 11.30, SD = 6.95) did not significantly differ from the CO level of participants with current nondaily cigarette smoking (M = 8.79, SD = 15.00, t = 1.32, p = 0.19).

<sup>6</sup> Percentage of participants reporting smoking half a pack of cigarettes per day or more (≥10) and reporting less than half a pack of cigarettes per day (<10).

<sup>7</sup> Pain related to cigarette/nicotine withdrawal symptoms.

potential targets for smoking cessation efforts for PLWH (e.g., increasing self-control with the goal of increasing confidence in quitting or intolerance to abstinence).

Increasing self-control may help PLWH trying to quit smoking, through increases in confidence in quitting ability or tolerance for abstinence which are associated with better cessation outcomes, or directly through improved treatment outcomes (Sinha, 2008; Webb et al., 2010; Shmueli & Prochaska, 2009; Heckman et al., 2018; Liu et al., 2013). For example, lower self-control may relate to poorer response to psychological interventions for smoking especially for those that involve reflective content (e.g., goal-setting, skills training) (Stautz, Zupan, Field, & Marteau, 2018). The practice of self-control tasks (e.g., avoiding sweets, using the non-dominant hand) improves both state and trait self-control capacity (Baumeister et al., 2007; Baumeister, Gailliot, DeWall, & Oaten, 2006; Muraven, Baumeister, & Tice, 1999; Muraven, 2010; Gailliot, Plant, Butz, & Baumeister, 2007; Oaten & Cheng, 2007). Further, in community samples, practicing self-control tasks was related to a longer time to smoking lapse in 122 adult cigarette users attempting to quit smoking (Muraven, 2010) and increases in motivation to quit, confidence in quitting, and expected success at quitting smoking in 75 adult cigarette users not motivated to quit smoking (Weinberger, Pang, Ferrer, Kashan, Estey, Segal, & Esan, in press). No study to date has examined whether strengthening self-control capacity among PLWH with current smoking would increase confidence in the ability to quit smoking, the likelihood of making a quit attempt, tolerance of abstinence, or quit outcomes. As a follow-up to the current findings demonstrating a relationship between self-control and smoking behavior for PLWH, future studies should examine whether building self-control capacity would be associated with increases in quit-related confidence or motivation, tolerance of abstinence, quit attempts, and quit outcome success among PLWH.

A number of limitations must be noted. The sample for this study came from one hospital in one geographic location in the US. Further, the majority of participants identified as heterosexual and as racial/ethnic minorities. Future research should examine self-control and smoking among samples of PLWH from other geographic locations and with other sociodemographic compositions. In addition, this study focused on cigarette use and future research should examine the relationship of self-control to other tobacco products (e.g., e-cigarettes, cigars). It will also be important for future studies to examine differences in self-control among PLWH demographic subgroups and potential demographic moderators of the relationship between self-control and smoking (e.g., sex/gender, race/ethnicity). Data in the study were collected by self-report. There is evidence that behavioral measures (e.g., hand-grip procedure) assess different facets of self-control than self-report measures (Allom, Panetta, Mullan, & Hagger, 2016) and may provide additional useful information (Duckworth & Kern, 2011). Future studies should compare the relationship of different types of self-control measures to smoking behaviors among PLWH and how different types of tasks to increase self-control capacity might impact smoking and quitting behaviors among PLWH (Duckworth & Kern, 2011; Allom et al., 2016). This study was cross-sectional and future longitudinal studies should examine the relationship of self-control to changes in smoking behavior in PLWH with current cigarette smoking (e.g., length of smoking abstinence during a quit attempt) and PLWH without current smoking (e.g., smoking relapse among PLWH who quit in the past).

#### 4.1. Conclusions

PLWH with current cigarette smoking reported lower self-reported self-control than PLWH with no current cigarettes smoking. Among PLWH with current cigarette smoking, lower self-control was related to greater cigarette dependence, lower confidence in quitting, and greater intolerance for smoking abstinence. Future research should examine whether targeting self-control would increase confidence in quitting smoking and tolerance of abstinence as well as improve smoking

Table 2

Correlations among self-control and smoking-related variables among a sample of adults living with HIV/AIDS who reported current cigarette smoking (n = 140).

	SCS	CPD	FTCD	Quit Motivation	Quit Desire	Quit Confidence	IDQ-S 1	IDQ-S 2	IDQ-S 3
Self-Control Scale total (SCS)	–								
Cigarettes per day (CPD)	–0.163	–							
Cigarette dependence (FTCD)	–0.272**	0.546***	–						
Quit motivation	0.087	–0.197*	–0.318***	–					
Quit desire	0.007	–0.154	–0.300***	0.668***	–				
Quit confidence	0.214*	–0.290***	–0.373***	0.738***	0.542***	–			
IDQ-S 1 withdrawal intolerance	–0.264**	0.420***	0.470***	–0.101	–0.071	–0.252**	–		
IDQ-S 2 lack of cognitive coping	0.079	–0.250**	–0.115	–0.154	–0.134	0.004	–0.511***	–	
IDQ-S 3 pain intolerance	–0.167	0.264**	0.244**	0.072	0.012	–0.084	0.485***	–0.580***	–
IDQ-S total	–0.221*	0.388***	0.466***	–0.115	–0.104	–0.249**	0.935***	–0.271**	0.562***

Key: IDQ-S, Intolerance for Smoking Abstinence Questionnaire; FTCD, Fagerström Test for Cigarette Dependence.

Note: Data are Spearman's rank-order correlation coefficient (Spearman's rho)

\*p &lt; 0.05, \*\*p &lt; 0.01, \*\*\*p &lt; 0.001, \*\*\*\*p = 0.001.

cessation outcomes among PLWH.

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## CRediT authorship contribution statement

**Andrea H. Weinberger:** Conceptualization, Methodology, Formal analysis, Writing - original draft, Supervision, Funding acquisition. **Raina D. Pang:** Writing - review & editing. **Elizabeth K. Seng:** Writing - review & editing. **Jacob Levin:** Writing - review & editing. **Hannah Esan:** Investigation, Writing - review & editing. **Kate S. Segal:** Investigation, Writing - review & editing. **Jonathan Shuter:** Supervision, Writing - review & editing.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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