Podium Presentation 6: RAPID FIRE RESPONSE

PA29-1
PRENATAL TOBACCO EXPOSURE, MATERNAL NICOTINE DEPENDENCE, AND ADOLESCENT RISK FOR NICOTINE DEPENDENCE

Natacha De Genna1*, Lidush Goldschmidt2, Nancy Day1, Marie Cornelius1,
1University of Pittsburgh School of Medicine, PA, USA, 2University of Pittsburgh Medical Center, PA, USA

BACKGROUND: Prenatal tobacco exposure (PTE) and maternal nicotine dependence (ND) separately predict nicotine dependence in offspring. Only one study has considered the effects of both exposures, based on retrospective reports of the adolescents’ biological mothers’ ever smoking during pregnancy. The goals of this study are to determine if there is (a) a threshold effect for PTE on adolescent ND, using a prospecive measure of PTE, and (b) an additive effect of PTE and maternal ND on risk for adolescent ND. METHODS: Pregnant women (13-42 years old) were recruited in their 4th or 5th trimester and asked about substance use during the first trimester (N = 784). Sixteen years post-partum, mothers and offspring reported on current levels of cigarette use. ND was assessed in both using a modified Fagerström questionnaire. RESULTS: Twenty-six percent of the adolescents were current smokers and 81% of the adolescent smokers were ND. Adolescents whose mothers smoked at least 10 cigarettes daily during the first trimester were more likely to be ND 16 years post-partum (Odds Ratio = 2.73). Based on this threshold, 4 groups were created: PTE only (exposed to 10 or more cigarettes per day), ND only (mother is ND), PTE + ND (adolescent with both exposures) and less exposures (PTE less than 10 cigarettes per day and mother not ND). A multivariate analysis compared rates of adolescent ND in the 3 exposure groups (PTE only, ND only, PTE + ND) to the reference group (less exposures), controlling for maternal education, race, and child age. Adolescents in the ND only group (Adjusted Odds Ratio = 2.41, 95% Confidence Interval = 1.36-4.29) and the PTE + ND group (Adjusted Odds Ratio = 1.99, 95% Confidence Interval = 1.13-3.51) were significantly more likely to be ND by age 16 than the offspring from the less exposed group. CONCLUSIONS: There was a threshold effect for PTE of half a pack a day, with adolescents exposed at that level significantly more likely to be ND. Although there was an additive effect of PTE + maternal ND on adolescent ND, PTE did not predict adolescent ND in the absence of maternal ND.

Funding: Supported by NIH grants DA037209, AA06390, AA08284, DA03874, DA09275

Corresponding Author: Natacha De Genna, PhD, University of Pittsburgh School of Medicine, degennan@pitt.edu

PA29-2
THE CONTRIBUTION OF SMOKING TO THE REDUCED LIFE EXPECTANCY OF PERSONS WITH SERIOUS MENTAL ILLNESS

Jamie Tam*, Kenneth Warner, Rafael Meza, University of Michigan, MI, USA

BACKGROUND: Persons with serious mental illness experience substantially reduced life expectancy. Their higher smoking rates relative to the general population are a likely contributor to this excess mortality. However the extent to which smoking affects life expectancy for this population, independently of other mental illness, is unknown. OBJECTIVE: Estimate the contribution of smoking to the reduced life expectancy and excess mortality of persons with serious psychological distress. METHODS: We used data from the 1997-2009 National Health Interview Surveys to examine a cohort of 328,110 adults in the U.S. Cox models were stratified by age group and gender to estimate all-cause mortality hazard ratios for current smoking, former smoking, and serious psychological distress (SPD), a validated measure for screening serious mental illness in the general population. Hazard ratios and mortality rates for never smokers were then used to construct lifetables and estimate life expectancy based on smoking and mental health status. We also calculated the smoking-attributable fraction of deaths among persons with SPD. RESULTS: Current smokers with SPD lose 14.9 years of life relative to never smokers without SPD. Among never smokers, having SPD reduces life expectancy by 5.3 years. Thus, smoking accounts for nearly two-thirds of the difference in life expectancy between smokers with SPD and never smokers without SPD. For individuals with SPD, being a current smoker reduces life expectancy by approximately 9.6 years. Those with SPD who have quit smoking have 5.8 more years of life compared to their smoking counterparts. Approximately 36% and 30% of all deaths among males and females with SPD can be attributed to smoking. CONCLUSIONS: This is the first study to quantify the specific contribution of smoking to premature mortality among persons with mental illness in the U.S. We find that the life expectancy difference between current smokers with SPD and never smokers without SPD is primarily due to smoking. Aiding individuals with serious mental illness to avoid smoking will translate into sizeable gains in life expectancy.

Funding: None

Corresponding Author: Jamie Tam, MPH, University of Michigan, jamietam@umich.edu

PA29-3
IDENTIFYING INTERVENTION COMPONENTS TO IMPROVE ADHERENCE TO SMOKING CESSATION MEDICATIONS

Jessica Cook, Timothy Baker, Daniel Bolt, Stevens Smith, Michael Fiore, Megan Piper, University of Wisconsin-Madison, WI, USA

Improving adherence to smoking cessation medications could boost cessation rates. Evidence suggests smokers are poorly adherent to cessation medications, especially outside efficacy studies. This experiment tested 3 intervention components to boost medication adherence (to both nicotine patch and nicotine gum) and 2 components to increase abstinence. Participants were smokers (N=544; 59% women; mean cigarettes per day=18.6 [SD=8.8]) attending an outpatient primary care visit who, when asked, expressed interest in quitting as part of a study conducted at their clinic. This 2x2x2 factorial experiment tested the effects of 5 intervention components: 1) medication adherence counseling (MAC) vs. none; 2) automated medication adherence calls vs. none; 3) electronic medication monitoring with feedback and counseling vs. electronic medication monitoring alone; 4) 26 vs. 8 weeks of nicotine patch + nicotine gum; and 5) maintenance phone counseling vs. none. A dispenser electronically recorded nicotine gum use. Participants were categorized as adherent in their gum use (using ≥4 pieces a day) on a mean of 27.2% of assigned days (SD=30). Only one intervention component produced a main effect on nicotine gum use (averaged over the first 6 weeks of use). Electronic medication monitoring with feedback and counseling led to greater gum use than a day without monitoring alone—a mean of 3.2 pieces a day (SD=2.2) vs. 2.4 (SD=1.6; p<.001). There was also a 4-way interaction (electronic monitoring with counseling x MAC x adherence calls x maintenance counseling); among those receiving maintenance counseling, receiving all three adherence interventions led to the highest gum use (3.8 pieces a day), while receiving no adherence interventions led to the lowest gum use (2.0 pieces a day). Higher mean levels of nicotine gum use in the first 6 weeks were associated with a greater likelihood of achieving 7-day point-prevalence abstinence at 6 months after the target quit day (r=.19, p<.001). These findings support the importance of increasing adherence to smoking cessation medication and suggest one promising intervention electronic medication monitoring with feedback and counseling.

Funding: This research was supported by grant 9P50CA143188 from the National Cancer Institute to the University of Wisconsin-Center for Tobacco Research and Intervention; by grant 1K05CA139871 from NIH; and by the Wisconsin Partnership Program.

Corresponding Author: Tanya Schlam, PhD, University of Wisconsin-Madison, trschlam@ctri.medicine.wisc.edu

PA29-4
THE EFFECT OF GAINING HEALTH INSURANCE COVERAGE ON SMOKING CESSATION ASSISTANCE AND QUIT RATES IN COMMUNITY HEALTH CENTERS

Steffani Bailey1*, Megan Hoopes2, Miguel Marin0, John Heintzman1, Jean O’Malley1, Brigit Hatch1, Heather Angier2, Stephen Fortmann3, Jennifer DeVoe1,5,1 Oregon Health & Science University, OR, USA, 2Community Health Center of Northeast Oregon, OR, USA, 3ODICHIN, Inc., OR, USA, 4Kaiser Permanente Center for Health Research, OR, USA

BACKGROUND: Community health center (CHC) patients have high rates of cigarette smoking. Health insurance coverage for smoking cessation assistance may help to decrease smoking rates among this vulnerable population. Using electronic health record (EHR) data, we examined whether gaining Medicaid coverage after a period of being uninsured resulted in higher rates of smoking cessation medica-
tions ordered and increased quit rates among patients who smoke, compared to smokers who remained uninsured. METHODS: We conducted a longitudinal, observational study of a cohort of uninsured adult Oregon CHC patients who smoked and who gained Oregon Medicaid coverage between 2008 and 2011 after being uninsured for at least 6 months. These patients were propensity score matched to a cohort of smokers who were continuously uninsured throughout the 24-month follow-up period (N=9,371). Between-group differences were tested using generalized estimating equation models. We estimated adjusted odds ratios of having a smoking cessation medication ordered and quitting smoking over 24 months of follow-up. RESULTS: The cohorts were similar on most baseline demographic variables after propensity score matching. Smokers at baseline who gained Medicaid had higher rates of medication ordered (27.3% vs 11.8% of uninsured, p<.001) and quit status (16.6% vs. 12.9% of uninsured, p<.001). The odds of having medication ordered for newly insured patients were almost triple that of their uninsured counterparts (OR=2.87, 95% CI: 2.56-3.22) and the newly insured had 40% increased odds of quitting in the study period (OR=1.40, 95% CI: 1.24-1.58). The odds of quitting among those with medication ordered was 54% higher for those who gained Medicaid (OR=1.34, 95% CI: 1.04, 1.71). CONCLUSIONS: This study demonstrates that providing health insurance coverage to vulnerable populations may significantly impact smoking cessation outcomes, even for patients receiving ongoing care at CHCs. These findings suggest that expanding Medicaid coverage could lead to a substantial decrease in smoking rates among vulnerable populations, thus reducing smoking-related disease and death.

Funding: This study was supported by grants R01HL107647 from the National Heart, Lung, and Blood Institute, K23DA037453 from the National Institute on Drug Abuse, and K08HS021522 from the Agency for Healthcare Research and Quality.

Corresponding Author: Steffani Bailey, PhD, Oregon Health & Science University, bailstef@ohsu.edu

PA29-6
THE ASSOCIATION OF EXPOSURE TO POINT-OF-SALE TOBACCO MARKETING WITH QUIT ATTEMPT AND QUIT SUCCESS: RESULTS FROM A PROSPECTIVE STUDY OF SMOKERS IN THE UNITED STATES

Mohammad Siahpash1*, Raees Shaikh2, Danielle Smith1, Andrew Hyland2, Kenneth Cummings3, Asia Sikora Kessler1, Michael Dodd4, Les Carlsson6, Jane Meza1, Melanie Wakefield1, University of Nebraska Medical Center, NE, USA, Oklahoma Tobacco Research Center, OK, USA, Roswell Park Cancer Institute, NY, USA, The Cancer Council Victoria, NE, USA, Medical University of South Carolina, NY, USA, University of Nebraska Lincoln, NE, USA

The aim was to assess the association of exposure to point-of-sale (POS) tobacco marketing with quit attempt and quit success in a prospective study of smokers in the United States. Data were collected via telephone-interview on exposure to POS tobacco marketing, sociodemographic and smoking-related variables from 999 smokers in Omaha, Nebraska in the United States. Exposure to POS tobacco marketing was measured by asking respondents three questions about noticing pack displays, advertisements, and promotions in their respective neighborhoods stores. These three variables were combined into a scale of exposure to POS tobacco marketing. About 68% of the respondents participated in a 6-month follow-up phone interview and provided data on quit attempts and smoking cessation. At 6-month follow-up, 99.9% of respondents reported to have made a quit attempt, and 21.8% of those who made a quit attempt succeeded in quitting. Exposure to POS marketing at baseline was not associated with the probability of having made a quit attempt as reported at 6-month follow-up (p=0.129). However, higher exposure to POS marketing was associated with a lower probability of quit success among smokers who reported to have attempted to quit smoking at 6-month follow-up (p=0.066). Exposure to POS tobacco marketing is associated with lower chances of successfully quitting smoking. Policies that reduce the amount of exposure to POS marketing might result in higher smoking cessation rates.

Funding: Research reported in this publication was supported by NIH grant R01CA166156 and FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Corresponding Author: Mohammad Siahpash, PhD, University of Nebraska Medical Center, mshahpash@unmc.edu

PA29-5
CONCURRENT TOBACCO USE AMONG YOUTH: PSYCHOSOCIAL RISK FACTORS AND HARM PERCEPTIONS

Maria Cooper*, MelLisa Creamer, Brittany Crock, Christina Ly, Melissa Harrell, University of Texas School of Public Health, TX, USA

INTRODUCTION: With the increasing diversity of tobacco and nicotine products available, the use of multiple tobacco products is concerning. The purpose of this study is to assess the psychosocial risk factors assessed in the Texas Adolescent Tobacco and Marketing Surveillance system: social norms, acceptability, peer use, perceived harm and perceived addictiveness, for tobacco use across 3 classifications of adolescent users: non-users of tobacco, single product users and concurrent users. METHODS: The National Youth Tobacco Survey was conducted from 2014 to 2015. An oversample of 10th graders created a sample of 9,799 youth. Wave 1 of data collection began in October 2014 and was completed in June 2015. Multivariate logistic and linear regression were conducted controlling for sex, grade, family income, and race/ethnicity. Post-hoc pairwise comparisons with Bonferroni correction were done to test for differences among the 3 user groups. RESULTS: For all tobacco products, single product users and concurrent users reported higher friend use and peer use and higher social acceptability than non-users. Concurrent users differed from single product users most notably in that they reported higher friend use and increased social acceptability. For all tobacco products, a higher proportion of single product users and concurrent users reported each product was not at all harmful compared to non-users, and a higher proportion of single product users reported each product was not at all addictive compared to non-users. Few differences were seen between concurrent users and single product users in their perceptions of harm and addictiveness of products. CONCLUSION: These results highlight the association between peer use and social acceptability with multiple product tobacco use among adolescents. Perceived harm and addictiveness should be a focus in preventive efforts among both single and concurrent users. Further research should delve into the potential differences in risk factors and harm perceptions between the various groups of adolescent tobacco users to guide effective regulatory and preventive public health initiatives.

Funding: This work was supported by grant number 1 P50 CA180906-02 from the National Cancer Institute at the National Institutes of Health and the Food and Drug Administration, Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration.

Corresponding Author: Maria Cooper, PhD, University of Texas School of Public Health, Maria.R.Cooper@uth.tmc.edu
**PA29-7**

**CAN BRAIN GAMES HELP SMOKERS QUIT? RESULTS OF A RANDOMIZED CLINICAL TRIAL**

James Louheed, Cheyenne Allenby*, E. Paul Willeto, Ben Albeda, Mary Falcone, Janet Audrain-McGovern, Caryn Lerman, University of Pennsylvania, PA, USA

Mild cognitive impairments emerge during nicotine withdrawal and present a challenge to successful smoking cessation. Cognitive function may be enhanced through neuroplasticity caused by cognitive exercise training. This first randomized clinical trial of cognitive training for tobacco dependence evaluated a cognitive training (CT) program to improve smoking cessation rates in adult treatment-seeking smokers (n=213). Participants received nicotine patch therapy and were randomized to receive standardized CT or standardized relaxation control training. Cognitive function was assessed pre- and post-training and smoking status was biochemically verified at the end of treatment and 6-month follow-up. 43 participants underwent pre- and post-training fMRI. Quit rates did not differ by treatment arm at either time-point and there was no effect on withdrawal symptoms or smoking urge. Reaction time improved on tasks assessing emotion recognition and verbal interference in the CT group, compared to the control group. When including only successful quitters, improvements in recognition memory, verbal interference accuracy, and attention error rate were also observed in the CT group, while commission errors on the continuous performance task decreased in the control group. In the fMRI substudy, whole brain, voxel-wise treatment effects for both an attention and working memory task were characterized by reduced deactivation in task negative brain regions in the CT group. However, behavioral performance did not differ by treatment arm and fMRI signal did not differ by smoking outcome. In conclusion, adjunctive cognitive training did not increase the likelihood of successful quitting, compared to an active control condition. Modest improvements observed on some cognitive assessments did not transfer to smoking behavior change.

Funding: This research was supported by a grant from the National Cancer Institute and National Institutes on Drug Abuse (R35CA19746101; R01DA030819 to C.L.), and the Commonwealth of Pennsylvania Department of Health. The Pennsylvania Department of Health disclaims responsibility for any analyses, interpretations, or conclusions.

Corresponding Author: Cheyenne Allenby, University of Pennsylvania, allenby@mail.med.upenn.edu

---

**PA29-8**

**A PROACTIVE SMOKING CESSION INTERVENTION FOR LOW-INCOME SMOKERS: THE ROLE OF SMOKING-RELATED STIGMA**

Steven Fu1, Diana Burgess1, David Nelson1, Barbara Clothier1, Widome Racheli2, Elisheva Danani1,1 VA HSR&D Center for Chronic Disease Outcomes Research, MN, USA, 2University of Minnesota, MN, USA

BACKGROUND: Campaigns to de-normalize smoking have led to increased perceptions of smoking-related stigma among smokers in the US. The stigmatization of smoking has been paralleled by a reduction in overall smoking prevalence, although rates of smoking in low-income populations remain high. By examining how perceptions of stigma influence the effectiveness of cessation interventions, we can better tailor interventions to low-income smokers. METHODS: Data were obtained from low-income smokers participating in a randomized controlled trial evaluating the effectiveness of a proactive cessation intervention on abstinence. 2406 adult smokers enrolled in Minnesota Health Care Programs were randomized to proactive outreach (n=1200) or usual care (n=1206). The intervention consisted of mailings, telephone calls, and access to free nicotine replacement therapy and telephone counseling. Based on perceived smoking-related stigma at baseline, groups with lower stigma (n=1227) and higher stigma (n=1093) were randomized to treatment arm and fMRI signal did not differ by smoking outcome. In conclusion, adjunctive cognitive training did not increase the likelihood of successful quitting, compared to an active control condition. Modest improvements observed on some cognitive assessments did not transfer to smoking behavior change.

Funding: This work was supported by the National Cancer Institute at the National Institutes of Health (grant number R01CA132950). The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Cancer Institute or the National Institutes of Health.

Corresponding Author: Deborah Ossip, PhD, University of Rochester Medical Center, deborah_ossip@urmc.rochester.edu

---

**PA29-9**

**TOBACCO CESSION AND SECONDHAND SMOKE REDUCTION IN ECONOMICALLY DISADVANTAGED DOMINIC REPUBLIC COMMUNITIES**

Deborah Ossip1, Zahira Quinones2, Sergio Diaz2, Kelly Thevenet-Morrison3, Xeuya Cal1, Scott McIntosh1, Ann Dozier2, Nancy Chin1, Jose Javier Sanchez2, Arisayasda Bautista1, Universidad de Rochester Medical Center, NY, USA, 2Pontificia Universidad Católica Madre y Maestra, Dominican Republic, 3Centro de Atención Primaria Juan XXIII, Dominican Republic

OBJECTIVE: To examine the effects of community-partnered intervention for tobacco cessation and secondhand smoke exposure (SHSE) in the Dominican Republic (DR).

BACKGROUND: Low-middle income countries such as the DR are expected to bear the brunt of the global tobacco epidemic in this century. The DR had no national tobacco control activities prior to our trials. METHODS: Seven economically disadvantaged communities were randomized to intervention (I) or control (C) using a lagged treatment design with all communities receiving intervention after a 1 year comparison. Intervention included community partneried activities to increase awareness of SHSE, implement smokefree homes, and provide cessation resources. Surveys were conducted at baseline, one- and two-year follow up by local data collectors trained by a DR-US team and included: 1) random household surveillance (N=approximately 1200/survey), 2) cross-sectional community surveys (N=approximately 1200/survey), and 3) cohort surveys of adult tobacco use (N=429). Surveys assessed smokefree home policy, SHSE, and tobacco cessation. RESULTS: Using GLIMMIX modeling to account for clustering, % smokefree homes significantly increased from baseline (BL) to follow-up 1 (F1), with maintenance at F2 for both groups, and no difference between I and C. SHSE (“Sometimes/Often” in a normal day) significantly increased in I but not C from BL-F1, with a nonsignificant increase in C from F1-F2. Quit rates were 14.92% (F1) and 16.78% (F2), with no differences between I and C. Higher baseline confidence in quitting was significantly associated with quitting. CONCLUSIONS: As in our prior trial, smokefree homes increased across all communities and was maintained at F2. Similarly, quit rates did not differ and were maintained. Though this may indicate no intervention effect, in communities where no other tobacco control activities occurred community engagement around tobacco control research, per se, independent of specific interventions, may be sufficient to produce change. Increased reporting of SHSE with intervention may reflect increased awareness of SHS exposure. Confidence remains a robust predictor of outcome.

Funding: This work was supported by the National Cancer Institute at the National Institutes of Health (grant number R01CA141527-01), National Institutes of Health. This material is the result of work supported with resources and the use of facilities at the Minneapolis VA Center for Chronic Disease Outcomes Research.

Corresponding Author: Patrick Hammett, MA, University of Minnesota, hamm0311@umn.edu
POS5-1
SMOKING IN THE PRESENCE OF ALTERNATIVE DISTRACTORS: ASSOCIATION WITH ELEVATED DIETARY RESTRAINT AND EXPECTANCIES

Michelle Kovacs, Amanda Palmer*, Thomas Brandon, Moffitt Cancer Center and University of South Florida, FL, USA

Prior research found that female smokers with elevated dietary restraint smoked more after a disinhibiting food event (Kovacs, Correa, & Brandon, 2014). The current study aimed to determine if those with elevated dietary restraint smoked merely to distract themselves from eating, or if the appetite-weight-control aspects of smoking played a role. 128 Female participants attended a laboratory session and were randomized to receive a milkshake prime (Prime condition) or not (No-Prime condition). All participants then received ad-lib access to several tempting foods, cigarettes, and a computer tablet with internet access. We utilized hierarchical regression analyses with condition, dietary restraint and the interaction between these two factors as predictors. Condition was predictive of both total cigarette smoked and latency to first bite of food, in step one (with condition entered as the sole predictor) and step two (both condition and dietary restraint entered as predictors) of the models (p’s ranged from .01 -.06). Specifically, those in the Prime condition smoked more and ate faster. Regardless of condition, several measures of expectancies predicted cigarette consumption (p’s < .05), and higher level of dietary restraint predicted shorter latency to smoke (p < .017). Importantly, latency to use the tablet was not predicted by level of dietary restraint or expectancies. Additionally, lower levels of trait mindfulness were associated with elevated dietary restraint and expectancies about cigarettes’ weight control properties. Consistently, lower levels of mindfulness were associated with elevated cigarette craving at baseline. Although dietary restraint and expectancies did not interact with condition to predict levels of smoking, the overall findings suggest that dietary restrainers attempt to prevent food consumption by turning to cigarettes, and that they choose to utilize cigarettes above and beyond preference for other salient distracting stimuli. Therefore, smoking appears to be more than just a distractor from eating, and is associated with strong beliefs about weight and appetite control. These findings can inform interventions aimed at the high-risk population of young adult female smokers. Interventions should be adapted for those who smoke for weight and appetite control purposes, and mindfulness-based strategies may prove especially useful.

Funding: University of South Florida and Moffitt Cancer Center

Corresponding Author: Amanda Palmer, BA, Moffitt Cancer Center and University of South Florida, amanda.malmeer@moffitt.org

POS5-2
ADULT INTEREST IN TOBACCO PRODUCTS CLAIMING REDUCED HARM: FINDINGS FROM WAVE 1 OF THE PATH STUDY

Jennifer Pearson*, Amanda Johnson2, Sarah Johnson3, Cassandra Stanton4, Michelle Kovacs*, Andrea Villanti*, Raymond Niaura1, Allison Glasser1, Baoguang Wang2, David Abrams2, Michael Cummings6, Andrew Hyland1, 1Truth Initiative, DC, USA, 2Schroeder Institute for Tobacco Research and Policy Studies at Truth Initiative, DC, USA, 3Food and Drug Administration, MD, USA, 4Westat, MD, USA, 5Food and Drug Administration, DC, USA, 6Medical University of South Carolina, SC, USA, 7Roswell Park Cancer Institute, NY, USA

This study examines interest in using a tobacco product claiming reduced harm (TPCRH) in a large, nationally representative sample of U.S. never, former, and current tobacco product users. Design: Cross sectional Wave 1 data from the adult interview of the Population Assessment of Tobacco and Health (PATH) Study. Setting: Audio-Computer Assisted Self-Interviews of U.S. adults conducted in 2013-2014. Participants: 32,320 civilian, non-institutionalized adults in the U.S., ages 18 years and older. Measurements: Interest in using a TPCRH, sociodemographics, tobacco use status and history, and scales measuring internalizing/externalizing symptoms and substance use. Findings: Overall, 16.7% of U.S. adults reported interest in a TPCRH. Interest in using a TPCRH was highest in current established (consumed more than 100 lifetime units of a product and currently uses some or every day) and current experimental tobacco (no lifetime unit threshold and currently uses some or every day) product users, including more than half of cigarette smokers and e-cigarette users. Interest in using a TPCRH was lower in former smokers (10.1%) and non-smokers (7.1%). Among established cigarette smokers, interest in using a TPCRH was strongest in females, with those high nicotine dependence, more anxiety/depression, and current use of e-cigarettes and snus. Among non-cigarette smokers, African American race, younger age, lower educational attainment, and substance use were associated with the highest adjusted prevalence of interest in using a TPCRH. Conclusions: Interest in a TPCRH was low and most prevalent among current smokers. A small percentage of non-smoking young adults, African Americans, substance users, and those with lower educational attainment endorsed interest in using a TPCRH. Findings may have implications for regulation, policy and educational campaigns.

Funding: This work has been funded in whole or in part with Federal funds from the National Institute on Drug Abuse, National Institutes of Health, and the Food and Drug Administration, Department of Health and Human Services, under Contract No. HHSN271201100027C.

Corresponding Author: Jennifer Pearson, PhD, MPH, Schroeder Institute for Tobacco Research and Policy Studies at Truth Initiative, jpearson@truthinitiative.org

POS5-3
EXCISE TAX REVENUES AND CIGARETTE CONSUMPTION UNDER CURRENT AND MINIMUM-PRICE REGIMES

Mary Ellen Wewers, Michal Berman, The Ohio State University, OH, USA

BACKGROUND: Cigarette consumption is negatively related to price. Smokers use price minimization strategies to maintain tobacco use patterns despite price increases. One strategy that we call border shopping is to purchase cheaper products across a state border. This strategy is available because of current state variations in the price of a pack. Border shopping reduces the expected public health effect of excise taxes and reduces tax revenue. An increasingly discussed intervention is a minimum price law that simultaneously raises the price of cigarettes and increases uniformity of the price across jurisdictions, eliminating the incentive to border shop. PURPOSE: To motivate an intervention on the existing tobacco pricing regime, and to evaluate one possible intervention, a minimum price law, in regards to its effect on cigarette consumption. METHODS: We do a secondary analysis of state-level per capita cigarette sales from the Tax Burden on Tobacco from 1996 to 2013 that controls for common explanations of sales variation found in the literature. Our model is fit and used to make counterfactual statements relevant to the study purpose. We analyze the fitted model by first estimating state level lost excise taxes attributable to border price differences. In a second analysis, we compare the current regime to one in which the cigarette pack price is set at $10.11 nationwide. The analysis results in bounded estimates of dollars lost and sales changes under the counterfactual scenarios. RESULTS: Our model suggests a price elasticity comparable to those found in the literature (-4.51, 95%CI [-5.62,-3.45]), that border-state price differences explain variation in state sales (b=-.06, 95%CI [-.09,-.03]), and the border state price effect is heterogeneous across states (SD=.07). Analysis of the model reveals that the highest tax states, New York and Illinois, lost a combined $343 million (95% CI [-512M, -172M]) in 2013 to sales out-of-state. Nationally, the net was a loss of $288 million (95% CI [-518M, -63M]) in 2013. Further analysis reveals that under the minimum price scenario, the 2013 sales estimate of 13.7 billion packs of cigarettes drops by 4.8 billion packs (95% CI [3.9B, 5.7B]), a 35 percentage point drop in sales. CONCLUSIONS: The current pricing regime is costly, particularly to states with high excise taxes, and presumably strong tobacco control goals. The revenues are transferred to lower tax states, which may have weaker goals. A minimum price regime would reduce the incentive to border shop and could reduce cigarette sales by a third or more.

Funding: Grant no. P50CA180908

Corresponding Author: Nathan Doogan, PhD, The Ohio State University, doogan.1@osu.edu
POS5-5
ACCUMBENS NICOTINIC ACETYLCHOLINE RECEPTORS MODULATE CUE-INDUCED NICOTINE SEEKING AND SYNAPTIC PLASTICITY
Cassandra Gipson-Reichardt1, Armani del Franco1, Gregory Powell1, Broc Pagni1, Juliana Goenaga1, Michael Scalfed1. Arizona State University, AZ, USA; 2Medical University of South Carolina, SC, USA

Cigarette smoking is a leading cause of preventable death, and addiction to nicotine (NIC) produces long-term changes in brain synaptic physiology that could contribute to the vulnerability to relapse. Existing smoking cessation treatments are insufficient as relapse rates remain high. Understanding the neurobiology is important in identifying and informing novel pharmacotherapeutic interventions to promote smoking cessation. In the nucleus accumbens core (NAcore), glutamatergic signaling and synaptic plasticity have been shown to be involved in cue-induced nicotine seeking, and gluta mate release and plasticity are modulated by nicotinic acetylcholine receptors (nAChRs). We therefore investigated the effects of two nAChR antagonists, methyllycaconitine (MLA) or dyphyro-β-erythroidine (DHβE), infused in the NAcore on cue-inducedNIC seeking and cue-related rapid synaptic plasticity. Male Sprague Dawley rats were trained to self-administer NIC (0.02 mg/kg/infusion). Infusions were paired with a light + tone compound stimulus. Once rats acquired stable NIC self-administration they were placed into extinction training for 14 days. Following intracranial infusion into the NAcore of either MLA (10 μg or 11 nmol), DHβE (30 μg or 84 nmol), or aCSF (vehicle), rats were placed into cue-induced reinstatement for 15 min. Rats were then transcardially perfused, and tissue was prepared for diostic labeling and spine morphology. Both MLA and DHβE inhibited cue-induced NIC seeking compared to vehicle treated animals, as evidenced by a significant reduction in active lever presses for cues previously paired with nicotine. Our results show that both NAcore nAChRs mediate cue-induced NIC seeking. Additionally, morphological analysis indicates that only MLA inhibits relapse-associated synaptic plasticity, suggesting a potential role of α7 but not α4/2. The location of these receptors as well as their ability to differentially modulate synaptic activity within the NAcore remains unclear, thus future research will explore the impact of acetylcholine signaling on neurotransmission and synaptic plasticity.

Funding: R00 DA036569

Corresponding Author: Cassandra Gipson-Reichardt, PhD, Arizona State University, cgipsonr@asu.edu

POS5-7
E-CIGARETTE USE AMONG US ADULTS MAY HAVE PLATEAUED, BUT MANY USERS ARE NONSMOKERS
Robert McMillen1,2, Mark Gottlieb1, Karen Wilson1, Regina Whitmore1, Jonathan Winickoff1, Jonathan Klein1. Mississippi State University, MS, USA; 2Northeastern Univ. School of Law, MA, USA; 3Children’s Hospital Colorado. University of Colorado, CO, USA; 4American Academy of Pediatrics, IL, USA; 5MGH Division of General Academic Pediatrics, MA, USA

BACKGROUND: The prevalence of e-cigarette use increased steadily from 2010 through 2013, however some sales projections now find market growth slowing. DESIGN/METHODS: Respondents were recruited from cross-sectional nationally representative dual frame samples in 2010 through 2015. US adults were asked about e-cigarette use and cigarette smoking, as well as about many other social climate indicators. RESULTS: Overall, current e-cigarette use was rare in 2010 (0.3%), but increased each subsequent year from 2010 to 2013 (See Table 1). Although current use increased slightly in 2014 (7.3%), this change was not statistically significant. Overall use did not change in 2015 (7.5%). This pattern was consistent across never smokers, former smokers, and current smokers. Furthermore, the prevalence of current use did not increase across region, race, age, sex, or education from 2013 to 2015. Importantly, while increases in current use appear to have stalled, never and former smokers continue to represent a large portion of e-cigarette users. Even though the prevalence of current use is much lower among never smokers (2.4%) and former smokers (8.3%) than current smokers (26.5%) (p <0.05), 18.6% of current users are never smokers and 20.0% are former smokers who “e-lapsed” from non-smoking status to e-cigarette use. CONCLUSION: Current e-cigarette use increased steadily from 2010 to 2013, for both smokers and nonsmokers, and has reached a plateau among US adults. These findings are consistent with recent projections from Nielsen and the Wall Street Journal that sales of e-cigarettes have fallen sharply in 2015. A cause for concern is that 38% of e-cigarette users are neither dual-users nor former smokers who chose these products to help them quit smoking cigarettes. These otherwise non-tobacco users (never smokers and e-lapsed former smokers) are exposed to nicotine and are at increased risk for cigarette smoking as well as any health consequences caused by e-cigarette use. Regulatory action is needed to ensure that these products do not attract users who would otherwise not be smoking.

Table 1. Current E-Cigarette Use

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.3%</td>
<td>0.8%</td>
<td>2.6%</td>
<td>6.8%</td>
<td>7.3%</td>
<td>7.5%</td>
<td></td>
</tr>
<tr>
<td>(0.5)</td>
<td>(1.1)</td>
<td>(3.2)</td>
<td>(5.9)</td>
<td>(6.4)</td>
<td>(6.2)</td>
<td></td>
</tr>
</tbody>
</table>

Funding: Support for this article has been provided in part by the Truth Initiative and the Flight Attendant Medical Research Institute. The information, views, and opinions contained herein are those of the authors and do not necessarily reflect the views and opinions of the Truth Initiative or the Flight Attendant Medical Research Institute.

Corresponding Author: Robert McMillen, PhD, Mississippi State University, rcm19@msstate.edu

POS5-10
ADULTS USE VAPE-PENS AND ELECTRONIC CIGARETTES TO VAPORIZER CANNABIS
Noah Lipsie1, Margo Josephson1, Meghan Morean2,1. Oberlin College, OH, USA; *Yale School of Medicine, OH, USA

Vaporizing cannabis is gaining popularity in the United States. In addition to vape-pens, which specifically are designed to vaporize cannabis, many e-cigarettes can be modified to provide an equally efficient way to vape cannabis. However, current use rates of these products among adults are unknown, and motivations for vaping cannabis have not been established. Thus, we evaluated lifetime rates of using e-cigarettes/vape-pens to vape cannabis, preferred means of vaping cannabis (i.e., liquid hash oil, Delta-9-tetrahydrocannabinol-infused wax), and beliefs about vaporizing cannabis among 524 adult e-cigarette users (past-month) who completed an anonymous MTURK survey in Fall 2015 (50.6% female; 71.4% White; mean age 34.09 [SD = 9.64] years). We also used binary logistic regression to examine whether sex, age, race, education level, annual income, state-level legal status of marijuana, and/or beliefs about vaporizing cannabis predicted lifetime use of vape-pens or e-cigarettes to vaporize cannabis. 15.8% of the sample reported using a vape-pen or e-cigarette to vaporize cannabis, and vapers reported preferring hash oil (45.3%), THC-infused wax (38.9%), and/or dried cannabis leaves/buds (35.8%). Relative to smoking cannabis, vapers reported that vaping cannabis tastes better (34.7%), is healthier (36.8%), is easier to conceal/hide (38.9%), does not smell as strong as marijuana smoke (36.8%), and it is more convenient (i.e., you do not need a lighter of any other paraphernalia; 29.5%). Males (OR = 2.00); Asians (relative to Whites, OR = 3.86); and those who believed that vaporizing cannabis was more convenient (OR = 3.98), easier to conceal/hide (OR = 2.63), and produced a vapor that smelled less strongly than marijuana smoke (OR = 2.19) were more likely to have vaporized cannabis (p-values < .05). In sum, rates of using vape-pens or e-cigarettes to vaporize cannabis were considerable among adult e-cigarette users. Furthermore, the current findings provide preliminary scientific evidence for assertions commonly made in the popular media that adults are vaporizing cannabis because it is easier to conceal and more convenient than combustible marijuana.

Funding: No funding

Corresponding Author: Meghan Morean, PhD, Yale School of Medicine; Oberlin College, meghan.morean@yale.edu

POS5-11
PSYCHOMETRICS OF THE SHORT FORM VAPING CONSEQUENCES QUESTIONNAIRE
Alexa L’Insalata1, Meghan Morean2,1. Oberlin College, OH, USA; *Yale School of Medicine, OH, USA

E-cigarettes are gaining popularity in the United States. However, psychometrically sound measures of e-cigarette use behavior are lacking. In the current study we evaluated the psychometric properties of the Short Form Vaping Consequences Questionnaire (SVCQ), a version of the Short Form Smoking Consequences Questionnaire.
Questionnaire (SSCQ; Myers et al., 2003) that we modified to assess negative consequences, positive reinforcement, negative reinforcement, and weight/appetite control associated with vaping. 522 adult e-cigarette users (past-month) completed an anonymous MTurk survey in Fall 2015 (50.4% female; 71.5% White; mean age 34.10 [SD = 9.66] years). Psychometric analyses included confirmatory factor analysis (CFA); measurement invariance by sex, smoking status, and comparing smoking and vaping consequences (for the subset of individuals who both vaped and smoked); internal consistency, and concurrent validity. CFA confirmed that the four-factor models for the SVCG and SSCQ fit the data (CFI [vaping: smoking]= .95; .96; RMSEA = .05; .05; SRMR = .06; .05). The SVCG was scalar measurement invariant by sex and current smoking status. The four SVCG subscales were internally consistent (mean α = .89). Univariate general linear models indicated that, above and beyond sex, race, age, cigarettes smoked per day, and e-cigarette use per day (included in the dependence model only), vaping consequences predicted: 1) the number of times participants reported vaping per day (positive reinforcement η² = .01; negative reinforcement η² = .02, appetite/weight η² = .02) and 2) E-cigarette dependence (positive reinforcement η² = .02; negative reinforcement η² = .08, appetite/weight η² = .01, all p-values < .01). Furthermore, vaping and smoking consequences were scalar invariant, permitting direct comparisons among dual e-cigarette and cigarette users. Dual users reported stronger positive reinforcement associated with vaping than smoking but stronger negative consequences, negative reinforcement, and appetite/weight control associated with cigarette smoking. In sum, the SVCG evidences solid psychometric properties for use with adult e-cigarette users.

Funding: No Funding

Corresponding Author: Meghan Morean, PhD, Yale School of Medicine, Oberlin College, meghan.morean@yale.edu

POS5-12
E-JUICE OR FRUIT JUICE? A NOVEL, FORCED-CHOICE PRODUCT PARADIGM BASED ON HEALTH, CALORIE/WEIGHT CONCERNS, AND PRICE
Amelia Wedel1, Meghan Morean1,2, O’Bertin College, OH, USA, 1Yale School of Medicine, OH, USA

Research suggests that adolescents are motivated to use e-cigarettes based on the availability of a wide range of flavors. However, research on flavored e-cigarette use among adults is lacking. In the current study, we examined flavor preferences and motivations for using flavored e-cigarettes using a novel forced-choice paradigm. 489 adult e-cigarette users (past-month) completed an anonymous MTurk survey in Fall 2015 (50.9% male; mean age 33.89 [SD = 9.57] years). Participants were forced to choose between vaping tobacco, fruit, candy/dessert, and alcohol flavored e-cigarettes or consuming the corresponding real product. For example, adults had to choose either tobacco-flavored vapor or smoking a cigarette. Participants subsequently reported why they preferred either vapor or the real product (answer choices included: overall health, calorie/weight concerns, and price). We examined baseline rates of preferring vapor or the real product for each flavor/product, as well as motivations for each selection. For each flavor/product, we then used chi-square analyses to examine what motivation(s) participants cited for preferring vapor over the real product. Vapers motivated by health concerns preferred vapor to the real product for tobacco (89.5%), candy/dessert (63.3%), and alcohol (65.9%), but not for fruit (47.7%). Vapers motivated by weight concerns preferred vaping candy/dessert (68.9%) and alcohol (65.9%) but preferred consuming real fruit (50.0%). Vapers motivated by price preferred vaping fruit (61.5%), dessert (68.5%), and alcohol (65.2%), but not tobacco. In sum, vapers generally preferred vapor over the real product when motivated by price, health, or weight concerns. A notable exception was when the real product was considered inherently healthy; both individuals concerned with overall health and with weight preferred consuming real fruit. Of note, our results suggest that e-cigarette users may consider vaping to be a viable substitute for some real products based on perceived health benefits, calorie content, or price. For example, vapers motivated by caloric concerns selected vaping dessert flavored e-juice over eating calorie-dense candy/desserts.

Funding: No Funding

Corresponding Author: Meghan Morean, PhD, Yale School of Medicine, Oberlin College, meghan.morean@yale.edu

POS5-13
EXAMINING THE EFFECT OF MEDIA EXPOSURE ON INTENTION TO USE E-CIGARETTES IN YOUTH
Andrea Stroup1*, Steve Branstetter, Penn State University, PA, USA

INTRODUCTION: Experimentation and curiosity about e-cigarettes increased in youth over the years. In youth, little is known about the moderating effects of media exposure on the relationships between perceptions of harmfullness, benefits, and barriers of e-cigarettes and intention to use. Constructs of the Health Belief Model (HBM) may be applied to these relationships to determine intention to use e-cigarettes. METHODS: Data from the 2014 National Youth Tobacco Survey were analyzed. To apply the HBM constructs on intention to use e-cigarettes, multiple regression analyses were used to evaluate the effect of cues to action, perceived threat, perceived barriers, and perceived benefits of e-cigarette use intentions to use in adolescents. Models for both smokers and non-smokers were compared. RESULTS: For non-smokers, the HBM constructs collectively accounted for 15.2% of the variance in scores for intention to use (adj. R²=0.152, F= 186.4(15), p<0.05). For smokers, the HBM constructs explained 15% of the variance in intention to use (adj. R²=0.180, F= 4.1(15), p<0.05). The cues to action by barriers interaction and cues to action by threat interaction both showed significant effects on intention to use in both groups. The HBM was a better fitting model for non-smokers than smokers in predicting intention to use e-cigarettes in youth. CONCLUSION: Cigarette smokers were not highly influenced by their perceptions of e-cigarette use and were not affected by e-cigarette advertisements. In contrast, non-smokers based their decisions to use e-cigarettes on their perceptions of use and the amount of exposure to e-cigarette advertisements. Media exposure was associated with more positive perceptions and reduced perceived harmfulness. It is suggested that regulatory action be taken to limit the amount of e-cigarette advertisements and to control the content of those ads that youth may be exposed to.

Funding: No Funding

Corresponding Author: Andrea Stroup, MPH, Penn State University, ams5818@psu.edu

POS5-14
BEHAVIORAL AND NEUROPHYSIOLOGICAL EFFECTS OF ACUTE SMOKING ABSTINENCE ON DRUG AND NON-DRUG REINFORCEMENT DURING A COGNITIVE TASK
Nicolas Schlienz1,2*, Martin De Vita1, Dimitra Landis1, Jamie Sol1, Connor Martin1, Larry Hawk Jr1, University at Buffalo, The State University of New York, NY, USA, 2The Johns Hopkins University School of Medicine, MD, USA

BACKGROUND: Abstinence from smoking is theorized to increase the value of drug reinforcers and decrease the value of non-drug reinforcers; a largely separate literature focuses on abstinence-induced disruptions of cognition. In an effort to integrate the reinforcement and cognitive literatures on the impact of acute abstinence from smoking, we evaluated the separate and combined effects of overnight abstinence and drug-iron-drug reinforcement on cognitive task performance and neurophysiology. METHODS: 36 adult smokers attended two laboratory visits; one following overnight abstinence and the other when smoking ad libitum. During both visits, participants completed an Eriksen flanker task during blocks in which they could earn cigarettes, money, or no reinforcement. In addition to speeded accuracy, we examined event-related brain potentials, focusing on the error-related negativity (ERN). RESULTS: Abstinence reduced speeded accuracy and attenuated ERN amplitude, particularly among participants tested with a more stringent performance criterion. Compared to no reinforcement, both cigarette and money reinforcement improved accuracy and the ERN (ps < .10). As predicted, abstinence increased the impact of cigarette reinforcement compared to no reinforcement on speeded accuracy, but not the ERN. There was no evidence that non-drug reinforcement was attenuated during abstinence. CONCLUSIONS: Replicating prior work, abstinence reduced cognitive performance and a neurophysiological index of performance monitoring, the ERN. Extending prior operant work from simple tasks to a cognitively demanding task, we obtained partial support for the hypothesis that abstinence enhances drug reinforcement. Together with other recent studies, our data suggest that the impact of abstinence on non-drug reinforcement is modest or limited to a subset of reinforcers.

Funding: The State University of New York at Buffalo’s Mark Diamond Research Fund and Research Institute on Addictions

Corresponding Author: Nicolas Schlienz, PhD, University at Buffalo, The State University of New York; The Johns Hopkins University School of Medicine, nick.schlienz@gmail.com
A Pilot Study Exploring Modifying Factors Related to Pregnant Women’s Behavior and Perception of Electronic Smoking Products

Irene Lopez-Llorente*, Megan Scipione, University of Tampa, FL, USA

BACKGROUND: Electronic cigarettes and other electronic smoking devices are becoming ubiquitous in the United States. Primary information delivered to the public is related to the device serving as a cessation aid. Evidence points to potential carcinogens, environmental secondhand pollutants and nicotine overdose in young children resulting in increasing calls to the poison control centers. METH-ODS: IRB approved paper surveys in English and Spanish were administered by three public health students at a public health department during pregnancy check-up visits (n=60). Informed consents were obtained and the study was explained either in Spanish or in English. The participants consisted of White, Black and Hispanic ethnicity. Survey participation was voluntary and a gift card of $5 to Walmart was provided for participation. Identifying variables representing the health belief model will help to inform programs. ANALYSIS: The 24 question surveys were then entered into excel and then into SPSS for data analysis by two public health students. A codebook was developed from the survey instrument. Descriptive statistics were conducted to understand both smokers and nonsmokers perception and behaviors surrounding these novel products. RESULTS: Of the sixty participants, twenty had tried an electronic product and 75% had used the product within the prior three weeks. Forty-three percent of all participants were Spanish speaking and over half were pregnant with their second or third child. Friends were the primary influencers to vape. Primary reasons for usage was for where cigarettes were banned, an effective quit aid and considered a healthier option. Seventeen percent of the total sample size perceived vaping products as less harmful than cigarettes, while 40% were unsure. Users experienced various physiological symptoms. DISCUSSION: Information on the health effects related to electronic vaping products is void in media outlets therefore affecting how products are perceived. Health education campaigns geared toward the negative health effects known about electronic vaping products should be geared toward sub-populations such as pregnant women.

Funding: No funding

Corresponding Author: Mary Martinezek, PhD, RRT, MCHES, University of Tampa, MMartinezek@ut.edu

First Experiences of Nicotine Product Use Among Texas Youth

Dale Mantry*, Kathleen Case, Brittni Crook, Onyema Chido-Amajoyi, Steven Kelder, Melissa Harrell, UTHealth, School of Public Health Austin Regional Campus, TX, USA

BACKGROUND: The little research that has examined the risk factors contributing to smoking initiation during adolescence has found that reactions to first use of cigarettes include neutral symptoms such as dizziness, negative symptoms such as nausea and coughing, and pleasant symptoms such as a relaxation and buzz. To date, few studies have examined differences in symptoms across product type (to-bacco versus e-cigarette products). PURPOSE: This study addresses important gaps in the literature by examining neutral, positive and negative symptoms experienced during first use of nicotine products including cigarettes, cigars, smokeless tobacco, hookah, and e-cigarettes. Secondly, this research explores symptoms during initial nicotine exposure by user status (ever versus current user). METH-ODS: Data for this study were from Wave 1 of the Texas Adolescent Tobacco and Marketing Surveillance system (TATAMS), a cross-sectional sample of students in 6th, 8th, and 10th grades (n=3924). Tests of proportions and Chi-Square analyses were conducted to determine differences in the prevalence of symptoms at first use by products and user status. RESULTS: There were significant differences in the prevalence of neutral, positive, and negative symptoms at first use by product type; e-cigarettes had the lowest prevalence of neutral and negative symptoms at first use as compared to all other products. Cigar products had the highest prevalence of positive symptoms, followed by hookah. For differences by user status, the prevalence of neutral and positive symptoms of at first use were significantly higher for current conventional cigarette users as compared to ever users (p<.01). For e-cigarettes, the prevalence of positive symptoms at first use was significant higher for current users than ever users (p<.001). For smokeless, the prevalence of neutral and positive symptoms at first use were significantly higher for current users than ever users (p<.05). For cigar products, the prevalence of positive symptoms at first use was significantly higher for current users than ever users (p<.001). There were no significant differences in the prevalence of first use symptoms among current versus ever hookah users. CONCLUSION: There was a higher prevalence of positive symptoms (e.g., relaxation, buzz) among current users of cigarettes, e-cigarettes, smokeless tobacco, and cigar products opposed to ever users. There was also a higher prevalence of neutral symptoms among current users of cigarettes and smokeless tobacco compared to ever users of these products.

Funding: Research reported in this publication was supported by grant number [1 P50 CA180906-01] from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Corresponding Author: Dale Mantry, MPA, UTHealth, School of Public Health Austin Regional Campus, Dale.S.Mantey@uth.tmc.edu

Which Tobacco Product Warning Imagery is Most Effective? A Longitudinal Assessment of Smokers in Australia, Canada, and Mexico

Kamala Swayampakala1, David Hammond2, Hua-Hie Yong3, Ron Borland3, James Thrasher1, University of South Carolina, SC, USA, 2University of Waterloo, ON, Canada, 3Cancer Council Victoria, Australia

BACKGROUND: This study examined temporal changes in smokers’ responses to pictorial health warning (PHW) with different types of imagery (i.e., symbolic representations of risk; personal suffering from smoking; graphic depictions of bodily harm) on cigarette packs under natural conditions of exposure. METHODS: Adult smokers from online panels in Australia (Au; n=4,006), Canada (CA; n=4,002) and Mexico (MX; n=4,006) were surveyed quarterly after new PHWs were implemented in each country. Participants were shown specific PHWs on packs in their country and asked about: negative emotions (i.e., fear; disgust; worry about smoking risks); PHW believability; attention to the PHW in the prior month; interpersonal communication about the PHW in the prior month; and motivation to quit because of the PHW. Temporal changes and differences by imagery type were analyzed using country-specific generalized estimating equations models. RESULTS: Across countries, assessment of the main effects of time on PHW responses indicated no changes over time except for increasing attention to PHWs in CA (OR=1.17, p<0.001) and MX (OR=1.33, p<0.001), and decreasing interpersonal communication in CA (OR=0.85, p<0.001) and AU (OR=0.84, p=0.002). Symbolic PHWs were rated significantly lower than suffering PHWs for all outcomes in CA (the only country with symbolic PHWs). Graphic PHWs were rated higher than suffering PHWs for negative emotions (all countries), interpersonal communication (CA), and quit motivation (AU). Suffering PHWs were rated higher than graphic PHWs for credibility (all countries), attention (CA & MX), interpersonal communication (AU & MX), and quit motivation (MX). Statistically significant interactions indicated that graphic PHWs showed greater increase than suffering PHWs for ratings of negative emotion (AU) and believability (AU & CA); graphic PHWs showed greater decline than suffering PHWs for interpersonal communication in CA, whereas the reverse was true in AU. CONCLUSIONS: PHWs with diverse graphic and suffering imagery appear effective in inhibiting wear out for different key pathways of PHW effects.

Funding: Data collection and analyses for this project were supported by a grant from the U.S. National Cancer Institute (R01 CA167067).

Corresponding Author: Dian Anshari, MS, University of South Carolina, dian-anshari@gmail.com

Menthol Cigarette Sales in Canada—Key Trends

Robert Nugent*, Andres Busse, Denis Choinière, Gohar Razi, Gabrielle Tremblay, Tobacco Control Directorate, Health Canada, ON, Canada

INTRODUCTION: In the 2000s, small flavoured cigars, similar in size to ciga-rettes, became increasingly popular among Canadian youth. In 2009, the Parlia-ment of Canada amended the Tobacco Act to prohibit the use of flavours and other additives in cigarettes, little cigars and blunt wraps. The objective of the prohibition was to reduce the attractiveness of these products. Menthol, however, has...
was not included in the amendment, and menthol cigarettes remained available for sale in Canada after 2009. This presentation examines key trends in menthol cigarette sales in Canada since 2001, with a specific emphasis on trends after the 2009 amendment to the Tobacco Act. BACKGROUND: Between 2001 and 2009, the Canadian cigar market saw confectionary-flavoured products drive a 300% increase in cigar sales. The 2009 amendment to the Tobacco Act had a significant impact on sales of cigars in Canada. Cigar sales declined by 30% in the two years following the amendment. In contrast to the cigar market, the market for menthol cigarettes had been shrinking in Canada. Prior to the adoption of the amendment, Health Canada officials stated publicly that among the reasons for the menthol exemption was that menthol cigarette sales had fallen by more than 25% since 2001. OBJECTIVES: 1) Review aggregate data on menthol cigarette sales in Canada to determine if the downward trend in menthol consumption observed by Health Canada in 2008 continued after the 2009 amendment to the Tobacco Act. 2) Review brand specific data on menthol cigarette sales to identify recent product trends. METHODOLOGY: Canada’s Tobacco Reporting Regulations require tobacco manufacturers and importers to report information on their products, including brand-level sales volume. Using this data, we examined the recent sales history of menthol cigarettes in Canada, with a specific emphasis on sales trends after the 2009 amendment to the Tobacco Act.

RESULTS:
• Beginning in 2009, reported unit sales of menthol cigarettes in Canada increased for 5 consecutive years and in 2014 were 13% higher than 2009 levels. In 2014, menthol cigarette sales represented 4.7% of total cigarette sales in Canada, which is the highest market percentage observed for menthol cigarettes since the coming-into-force of the Tobacco Reporting Regulations in 2000.
• In absolute terms, reported annual sales of menthol cigarettes increased by 155 million units between 2009 and 2014.
• Recently, reported unit sales of menthol cigarettes appear to be more resilient when compared to reported unit sales of all cigarettes. Between 2011 and 2014, menthol cigarette sales increased annually by an average of approximately 3%, while sales of all cigarettes declined by an average of 2% annually.
• An examination of brand-level data for menthol cigarettes reveals an important overlap in sales of menthol cigarettes and slim cigarettes. In 2014, while menthol cigarettes represented 4.7% of total cigarette sales, 43% of slim cigarette sales were menthol cigarettes. This percentage had increased from 34% since 2007.

DISCUSSION: Menthol cigarette sales grew at nearly twice the rate (13%) as cigarette sales as a whole (7%) between 2009 and 2014. This may have been related to the 2009 amendment to the Tobacco Act, which banned the use flavours other than menthol in cigarettes, little cigars and blunt wraps. One possible explanation for the increase in sales of menthol cigarettes is that flavour restrictions in little cigars resulted in some smokers switching to menthol cigarettes as an alternative flavoured tobacco product. Additionally, as the marketing and packaging of slim cigarettes has historically involved gendered packaging and messaging, the overlap between the slim and menthol markets in Canada may indicate that the tobacco industry views menthol as a product to be marketed to women. If this is confirmed, using one of the approved methods (NRT or prescription meds) by smokers for their last quit attempt, on quit success and whether effectiveness differs by regulatory environment (restrictive versus liberal). METHODS: Data were drawn from the International Tobacco Control (ITC) Four-Country surveys, from the UK, USA, Canada (two waves each, n=318 and 380, respectively), the UK (three waves, n=439) and Australia (four waves, n=662), collected between 2010 and 2015. Smokers at baseline wave who reported making a quit attempt at follow-up were included. The primary outcome was self-reported abstinence for at least 30 days regardless of smoking status at follow-up assessment. Data across waves were combined and analysed using generalised estimating equations, adjusting for potential confounders and factors affecting quit success. RESULTS: Between 2010 and 2015, 805 quit attempts were made between waves by 757 smokers in the US and the UK with a liberal environment for ECs and 1,235 quit attempts by 1042 smokers in Canada and Australia with a restrictive environment for ECs. Compared to unassisted quitting, smokers from a liberal environment using ECs for a quit attempt were more likely (OR=1.95, 95% CI=1.19-3.21, p<0.01) whereas those from a restrictive environment were less likely (OR=0.36, 95% CI=0.18-0.71, p=0.01), to report sustained abstinence for at least 30 days. CONCLUSIONS: Use of ECs in the real world during a quit attempt is only effective for sustaining smoking abstinence in a liberal EC environment suggesting that the benefits of ECs for smoking cessation are highly dependent on the regulatory environment.

Funding: Supported by multiple grants including R01 CA 100362 and P50 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center) and also in part from grant P01 CA138389 and an ITC pilot study grant (Medical University of South Carolina, Charleston, South Carolina), all funded by the National Cancer Institute of the United States, Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57897, 79551), National Health and Medical Research Council of Australia (265903, 450110, APP1005922), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578); Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

Corresponding Author: Hua Yong, PhD, Cancer Council Victoria, hua.yong@can-cervic.org.au

POS5-20
REAL-WORLD EFFECTIVENESS OF E-CIGARETTES FOR SMOKING CESSATION IS DEPENDENT ON THE REGULATORY ENVIRONMENT FOR E-CIGARETTES: FINDINGS FROM THE ITC-FOUR COUNTRY STUDY

Hua-Hie Yong1*, Sara Hitchman2, Shannon Gravely2, Ron Borland1, Ann McNeill4, K. Michael Cummings6, Geoffrey Fong2, Cancer Council Victoria, Australia, 7Kings College London, United Kingdom, 1University of Waterloo, ON, Canada, 2UK Centre for Tobacco and Alcohol Studies, United Kingdom, 3Medical University of South Carolina, SC, USA

BACKGROUND: E-cigarette (EC) use globally has increased rapidly in recent years in some claiming that it can help smokers quit. However, little is known about its effectiveness for smoking cessation especially in different regulatory environments. Nicotine-containing ECs are banned in countries like Canada and Australia (restrictive environment) but are allowed in countries like the US and the UK (liberal environment). AIM: Examine real-world effectiveness of using ECs for quitting compared with quitting unassisted (without EC, NRT or prescription med) or using one of the approved methods (NRT or prescription med) by smokers for their last quit attempt, on quit success and whether effectiveness differs by regulatory environment (restrictive versus liberal). METHODS: Data were drawn from the International Tobacco Control (ITC) Four-Country surveys, from the UK, USA, Canada (two waves each, n=318 and 380, respectively), the UK (three waves, n=439) and Australia (four waves, n=662), collected between 2010 and 2015. Smokers at baseline wave who reported making a quit attempt at follow-up were included. The primary outcome was self-reported abstinence for at least 30 days regardless of smoking status at follow-up assessment. Data across waves were combined and analysed using generalised estimating equations, adjusting for potential confounders and factors affecting quit success. RESULTS: Between 2010 and 2015, 805 quit attempts were made between waves by 757 smokers in the US and the UK with a liberal environment for ECs and 1,235 quit attempts by 1042 smokers in Canada and Australia with a restrictive environment for ECs. Compared to unassisted quitting, smokers from a liberal environment using ECs for a quit attempt were more likely (OR=1.95, 95% CI=1.19-3.21, p<0.01) whereas those from a restrictive environment were less likely (OR=0.36, 95% CI=0.18-0.71, p=0.01), to report sustained abstinence for at least 30 days. CONCLUSIONS: Use of ECs in the real world during a quit attempt is only effective for sustaining smoking abstinence in a liberal EC environment suggesting that the benefits of ECs for smoking cessation are highly dependent on the regulatory environment.

Funding: Supported by multiple grants including R01 CA 100362 and P50 CA111236 (Roswell Park Transdisciplinary Tobacco Use Research Center) and also in part from grant P01 CA138389 and an ITC pilot study grant (Medical University of South Carolina, Charleston, South Carolina), all funded by the National Cancer Institute of the United States, Robert Wood Johnson Foundation (045734), Canadian Institutes of Health Research (57897, 79551), National Health and Medical Research Council of Australia (265903, 450110, APP1005922), Cancer Research UK (C312/A3726), Canadian Tobacco Control Research Initiative (014578); Centre for Behavioural Research and Program Evaluation, National Cancer Institute of Canada/Canadian Cancer Society.

Corresponding Author: Hua Yong, PhD, Cancer Council Victoria, hua.yong@can-cervic.org.au

POS5-21
USING MARKOV CHAINING AND ORDINARY DIFFERENTIAL EQUATION MODELS TO ASSESS THE EFFECTIVENESS OF SMOKING CESSATION INDUCTION INTERVENTIONS FOR SMOKERS WHO ARE NOT READY TO QUIT

Delwyn Catley, University of Missouri-Kansas City, MO, USA

Motivational Interviewing (MI), Brief Advice (BA) and Health Education (HE) are established smoking cessation induction methods for smokers with low desire to quit. Although randomized controlled trials (RCTs) are designed to focus on intervention efficacy (i.e., which treatment yields the highest cessation rate) there is a need to explore the relative effectiveness of these interventions by considering the full range of possible motivational outcomes for all of the participants. Ordinary Differential Equation (ODE) and Markov Chain models models can examine effectiveness by showing the movement of all participants between different states of motivation and cessation. We analyzed data from a large RCT comparing MI to HE and BA among a community sample of smokers with low desire to quit. Participants within each treatment group [MI (n= 87), BA (n = 43) and HE (n= 91)] were
categorized according to 4 stages of readiness to quit (unmotivated, undecided, motivated, former smokers) at three time points (baseline, week 12, and week 26 follow-up). Analyses revealed that although HE had greater efficacy compared to MI and BA (i.e., the highest proportion of former smokers over time) a greater proportion of the motivated smokers in HE became unmotivated to quit. When HE was penalized for its negative effects the effectiveness of HE dropped steeply in weeks 3-12 and then remained below the effectiveness of BA from week 12 onward. The 2-years ODE model projections surprisingly revealed that BA and then MI had the best long-term results overall, including the proportion of participants who become former smokers. These results highlight that ODE and Markov chain models can be employed to determine the relative effectiveness of smoking cessation interventions, yielding potentially important insights regarding the full range of outcomes for all participants.

Funding: No Funding

Corresponding Author: Majid Bani-Yaghoub, PhD, University of Missouri-Kansas City, baniyaghoubm@umkc.edu

POS5-22 IMPLEMENTING TJC INPATIENT TOBACCO MEASURE: THE KAISER PERMANENTE SOUTHERN CALIFORNIA EXPERIENCE AND FIRST YEAR RESULTS

Mohamed Ismail**, Henry Tam1, Paula Kraft1, Gerald Uyesato1, Gregory Shimizu1, Jessica Marshall1, Michael Kanter1, 1Southern California Permanente Medical Group, CA, USA, 2Kaiser Permanente Health Plan, CA, USA, 3Kaiser Foundation Hospitals, CA, USA

In 2015, Kaiser Permanente Southern California adopted The Joint Commission (TJC) tobacco treatment measure set as one of the six sets required to meet accreditation requirements. The three reportable components of the set are TOB-1 (tobacco use screening within three days of admission); TOB-2 (inpatient practical cessation counseling and medications); and TOB-3 (outpatient counseling referral and cessation medications at discharge). Through regular meetings between one regional and 14 local hospital teams, we implemented this measure set as follows: 1) trained our nursing staff to take ownership of tobacco use screening, practical counseling, and the facilitation of outpatient referrals; 2) gave our hospitalists ownership of all prescriptions; 3) built electronic Order Sets and a Best Practice Advisory into KP Healthconnect (our electronic medical record system) for simplified documentation and order entry; 4) had an experienced regional team (who consulted with TJC) abstract data monthly using random samples from KP Healthconnect based on the TJC’s eligibility criteria; and 5) created an electronic report to monitor inpatients’ receipt of the components of TOB-1, 2, and 3. We reported results for each measure as a percentage with the number of tobacco users admitted as the denominator and the number with completed chart documentation of each component as the numerator. Yates-corrected CHI-Squared was used for analysis. The average sample size was 634 for TOB-1, 71 for TOB-2; and 54 for TOB-3. Baseline (January 2015 except for TOB-1 which was June 2015 due to abstraction clarifications from TJC) and final (September 2015) results showed a significant improvement in smoking cessation counseling (from 67.2% to 75.5%) and medication use (from 0% to 35.7%). Funding: National Cancer Institute

Funding: This research was funded by Public Health Service grants R01TW05962, R21TW006545, R01DA035160, and R01DA024876.

Corresponding Author: Adam Alexander, MS, University of Memphis, clnder1@memphis.edu

POS5-23 DIET AND PHYSICAL ACTIVITY DIFFERENCES BETWEEN WATERPIPE SMOKERS AND NON-SMOKERS

Adam Alexander*, Kenneth Ward1, Fawaz Mtazyek1, Wasim Maziak2, Brook Harmon1, 1University of Memphis, TN, USA, 2Florida International University, FL, USA

BACKGROUND: Waterpipe users have increased obesity risk but it is unknown whether health behaviors explain this association. This study examines differences in diet and physical activity between current and never waterpipe smokers, and whether these differences explain higher body mass index (BMI) among current waterpipe smokers. METHODS: Never (n=1687) and current waterpipe smokers (n=249) were selected from a representative, population-based household survey of adults in Aleppo, Syria. BMI was calculated objectively and respondents reported alcohol, vegetable, fruit, and potato chip consumption, participation in sports, and time spent indoors, walking, and in front of a screen. Logistic regression analysis regressed waterpipe smoking status on diet and physical activity variables, and linear regression analysis regressed BMI on waterpipe smoking status, diet, and physical activity. Models were adjusted for sociodemographics and cigarette smoking status. RESULTS: Compared to never smokers, current waterpipe smokers were more likely to consume alcohol (OR=2.24 [1.42–3.54]), practice sports at least ≥3 times a week (OR=2.16 [1.42–3.53]), spend ≥5 hours per day in front of a screen (OR=2.10 [1.34–3.30]) and spend ≥3 hours per day indoors where food was prepared (OR=2.32 [1.11–4.84]). On average, current waterpipe smokers were 1.02 BMI units heavier than never smokers (β=1.02 [0.23-1.81]), and adjusting for diet and physical activity variables did not substantially attenuate this association (β=0.97 [0.18–1.77]). CONCLUSIONS: Although never and current waterpipe smokers differ in diet and physical activity, these differences do not explain higher BMI among current waterpipe smokers. Future research should explore these associations prospectively with larger samples and a more detailed assessment of diet, physical activity, and other lifestyle factors.

Funding: No Funding

Corresponding Author: Mohamed Ismail, MD, MPH, Southern California Permanente Medical Group, mohamed.h.ismail@kp.org
POS5-25
ARE RECENT ATTEMPTS TO QUIT SMOKING ASSOCIATED WITH REDUCED DRINKING IN ENGLAND? A CROSS-SECTIONAL POPULATION SURVEY

Robert West1, Emma Beard1, Alan Brennan2, Colin Drummond3, Duncan Gillespie1, Matt Hickman4, John Holmes3, Eileen Kaner1, Michie Susan1, 1UCL, United Kingdom, 2KCL, United Kingdom, 3University of Sheffield, United Kingdom, 4University of Bristol, United Kingdom

BACKGROUND: Smokers are often advised to restrict their drinking during attempts at smoking cessation to prevent relapse. This study assessed at a population-level whether smokers having recently initiated an attempt to stop smoking are more likely than other smokers to report i) lower alcohol consumption and ii) trying to reduce their alcohol consumption. METHOD: Cross-sectional household surveys between March 2014 and September 2015 of 6,287 last-year smokers who also completed the Alcohol Use Disorders Identification Test (AUDIT-C) Questionnaire. Respondents who reported attempting to quit smoking in the last week were compared with those who did not. Those with AUDIT-C≥5 were also asked if they were currently trying to reduce the amount of alcohol they consume. RESULTS: Smokers who reported a quit attempt within the last week had lower AUDIT-C scores compared with those who did not report an attempt in the last week (Badj=-0.56, 95%CI=-1.08--0.04) and were less likely to be classified as having higher risk (AUDIT-C≥5: ORadj=0.57, 95%CI=0.38–0.85). The lower AUDIT-C scores were a result of lower scores on the frequency of 'binge' drinking item (Badj=-0.25, 95%CI=0.43--0.07). Among smokers with AUDIT-C≥5, those who reported an attempt to stop smoking within the last week compared with those who did not were more likely to report trying to reduce their alcohol consumption (ORadj=2.98, 95%CI=1.45–6.01). CONCLUSION: Smokers who report a quit attempt in the last week compared with those who do not report lower alcohol consumption, including less frequent binge drinking, and appear more likely to report currently attempting to reduce their alcohol consumption.

Funding: We gratefully acknowledge all funding. The National Institute for Health Research (NIHR) School for Public Health Research (SPHR) primarily funded data collection for the Alcohol Toolkit Study (SPHR-SWP-ALC-WP5); Cancer Research UK provided data collection for the Smoking Toolkit Study (C1417/A7972). SPHR is a partnership between the Universities of Sheffield; Bristol; Cambridge; Exeter; UCL; The London School for Hygiene and Tropical Medicine; the LiLaC collaboration between the Universities of Liverpool and Lancaster and FUSE; The Centre for Translational Research in Public Health, a collaboration between Newcastle, Durham, Northumbria, Sunderland and Teesside Universities. We also acknowledge the Department of Health, Pfizer, GlaxoSmithKline, and Johnson & Johnson have all funded data collection previously for the Smoking Toolkit Study. Jamie Browns post is funded by a fellowship from the Society for the Study of Addiction (SSA) and West is funded by Cancer Research UK. Emma Beard, Alan Brennan, Matthew Hickman, John Holmes, Eileen Kaner, and Susan Michie have all received funding from the NIHR SPHR; Colin Drummond was part funded by the NIHR Biomedical Research Centre at South London and Maudsley NHS Foundation Trust and Kings College London, and the NIHR Collaboration for Leadership in Applied Health Research and Care South London. The UKLA and the authors(s) are not necessarily those of the NHS, NIHR, or Department of Health. The research team is part of the UK Centre for Tobacco and Alcohol Studies.

Corresponding Author: Jamie Brown, UCL, jamie.brown@ucl.ac.uk

POS5-27
INCREASED FRONTOSTRIATAL RESPONSES TO REWARD PROCESSING ARE ASSOCIATED WITH CIGARETTE ABSTINENCE ACROSS SMOKING CESSATION TREATMENT IN ADOLESCENT SMOKERS

Kathleen Garrison*, Suchitra Krishnan-Sarin, Sarah Yip, Iris Balodis, Kathleen Carroll, Marc Pontenza, Yale School of Medicine, CT, USA

Tobacco use is initiated and established primarily during adolescence, and most adolescent smokers continue to smoke into adulthood. Many adolescent smokers want to quit but are unable to do so. A better understanding of the neurobiological correlates of treatment outcome may inform more effective interventions. Neural reward systems have been implicated in nicotine addiction, and adolescent smokers have reduced frontostriatal responses to nondrug reward anticipation that are correlated with increased smoking frequency. Therefore, we compared neural responses during reward and loss anticipation phases of a reward process (monetary incentive delay) task in adolescent smokers (n=14) before and after a five-week smoking cessation randomized clinical trial of combined behavioral and nicotine replacement therapy. Each fMRI session consisted of two task runs. fMRI data were analyzed in SPM12 and effect sizes in frontostriatal regions of interest were calculated. Repeated measures analyses of variance were used to test an effect of time post- versus pre-treatment. Post-hoc paired t-tests were used to compare brain activity between time points for each region. Correlations were tested between change in brain activity post- versus pre-treatment and percent days abstinent during treatment. For reward anticipation, there was a significant effect of time (p<0.05), and activity increased across treatment in all regions of interest (p<0.05). Percent days abstinent during treatment positively correlated with increased activity for reward anticipation in the left nucleus accumbens and medial prefrontal cortex (p<0.05). For loss anticipation, there was a significant effect of time (p<0.006), and activity increased across treatment in regions of interest (p<0.05) except for a trend in the left nucleus accumbens (p<0.05). Percent days abstinent during treatment positively correlated with increased activity for loss anticipation in the left nucleus accumbens (p<0.039). In addition, whole-brain comparisons of post- versus pre-treatment brain activity showed increases for reward anticipation in the medial prefrontal cortex, bilateral insula and fusiform, and for loss anticipation in the bilateral insula, fusiform, cuneus and cerebellum (p<0.01-0.05). These findings suggest that positive outcomes in smoking cessation treatment are associated with increased frontostriatal responses to reward and loss anticipation in adolescent smokers. It is possible that increased neural responsiveness to non-drug rewards during abstinence may positively impact smoking behavior during a quit attempt.

Funding: P50 DA009241, K12DA00167, 14CRP18200010, CASAColumbia

Corresponding Author: Kathleen Garrison, PhD, Yale School of Medicine, kathleen.garrison@yale.edu

POS5-29
ARE CURRENT MINNESOTA SMOKERS MORE NICOTINE ADDICTED? TESTING THE HARDENING HYPOTHESIS, 1999-2014

Raymond Boyle*, Erin O’Gara, Joanne D’Silva, ClearWay Minnesota, MN, USA

OBJECTIVES: The hardening hypothesis posits that as overall smoking prevalence decreases, the remaining population of smokers is more nicotine dependent and therefore more likely to experience difficulty in quitting. Minnesota has benefited from a robust tobacco control program, including smoke-free laws, tax increases, access to cessation treatment and statewide counter-marketing campaigns, which has led to significant reductions in smoking. The objective of this study was to examine whether the hardening hypothesis predicted measures of addiction among current Minnesota smokers. METHODS: Minnesota cigarette sales data and data from 5 cross-sectional rounds (1999 to 2014) of the Minnesota Adult Tobacco Survey were examined to test the hardening hypothesis on a population level. RESULTS: Smoking prevalence fell 35%, from 22.1% in 1999 to 14.4% in 2014. During this time period, the proportion of daily smokers was essentially unchanged (78% vs. 76%) but the proportion of heavy smokers (> pack/day) decreased 61% (from 14.5% to 5.7%), and per capita cigarette sales fell 61% (from 81 to 31 packs per person). Since 1999, the percent of ever smokers who have quit (the quit ratio) has steadily increased from 53.9% to 65.9% in 2014. Less than half of smokers (46.3%) tried to quit in 1999, but in subsequent years more than half tried to quit in the previous year (for example 53.4% in 2014). However, the percent of smokers who report smoking within 30 minutes of waking was unchanged: 46.8% (1999) vs 48.2% (2014). CONCLUSIONS: Based on this analysis there is no indication that self-reported measures of addiction have increased, and therefore no evidence of hardening in Minnesota’s smoking population. However, consistent with the Hughes (1999) observation that behavioral factors will supplant addiction in importance, the remaining smokers are over represented by those with less education, lower income, and within some racial and ethnic groups such as American Indians. Public policy will need to address the multi-level factors that are driving disparities in smoking prevalence, including: social, cultural, individual, community, and systems.

Funding: Funding was provided through ClearWay Minnesota

Corresponding Author: Erin O’Gara, PhD, ClearWay Minnesota, eogara@clearwaymn.org
PO5-30
PREDICTION OF CIGARETTE USE FROM SIX-MONTH PRIOR ELECTRONIC AND COMBUSTIBLE CIGARETTE USE FOR A U.S. NATIONAL SAMPLE OF 13-25 YEAR OLDS
Robert Hornik*, Laura Gibson, Caryn Lerman, University of Pennsylvania, PA, USA

BACKGROUND: Current debate paints e-cigarette (ECIG) use as either harmful: leading to initiation of or continued use of combustible tobacco cigarettes (CIG) or beneficial: reducing CIG use. Recent published studies of varying quality support both positions. We ask whether ECIG use predicts change in CIG use in a nationally representative U.S. sample of youth and young adults. METHODS: In June 2014, we initiated weekly data collection in a nationally representative phone survey of 13-25 year olds [response rate=20%] with a follow-up survey about 6 months later [recontact response rate=35%]. Questions on both surveys assessed past 30 day ECIG and CIG use. Responses are weighted to the Current Population Survey. We tested whether ECIG use at baseline predicted maintenance of CIG use (among baseline CIG users) or new use of CIG (among baseline non-CIG users). With 12 weeks of recontact data through September 2015 (n=1026), we regressed follow-up CIG use on baseline CIG and ECIG use and their interaction, as well as potential confounders: sex, age, race/ethnicity, ever CIG use, friend CIG use, household CIG use, sensation seeking, grades and parental education. RESULTS: Simple crosstabs show that among baseline CIG non-users, baseline ECIG use was positively related to follow-up CIG use. Among baseline CIG users (only 8% of the sample), baseline ECIG use was not related to follow-up CIG use. This was confirmed in a logistic regression predicting follow-up CIG use, weighted and adjusted for the potential confounders; the CIG/ECIG interaction was significant. Predicted CIG use margins increased with ECIG use versus non-use among baseline CIG non-users (12.2% versus 1.4%) and did not vary statistically with ECIG use among baseline CIG users. Older and younger non-CIG users showed similar patterns. CONCLUSIONS: The analysis showed evidence that ECIG use predicts new CIG use among prior CIG non-users, but was not significantly related to CIG continuation. Data collection will continue through 2017 and provide more power for analysis of possible ‘quitting’ effects. Possible limitations include low cumulative response rates and potential unmeasured confounders.

Funding: National Cancer Institute; Food and Drug Administration

Corresponding Author: Robert Hornik, PhD, University of Pennsylvania, rhornik@asc.upenn.edu

PO5-33
PREDICTORS OF NICOTINE WITHDRAWAL SYMPTOMS: FINDINGS FROM THE FIRST RANDOMIZED SMOKING CESSATION TRIAL IN A LOW-INCOME COUNTRY SETTING
Ziyad Ben Taleb1, Kenneth Ward2, Taghril Asfar3, Rana Jaberi1, Rehah Au1, Wasis Mazia1, Rachel Cassidy, Jennifer Tidey, Suzanne Colby, Brown University, RI, USA

BACKGROUND: Inability to cope with withdrawal symptoms when attempting to quit is a major cause for failure of cessation. However, little is known about factors influencing nicotine withdrawal symptoms in low-income countries. This is the first study to characterize and identify predictors of withdrawal symptoms during smoking cessation trial in a low-income country. METHODS: We analyzed data from 269 smokers who participated in a multi-site, two-group, parallel-arm, double-blind, randomized, placebo-controlled smoking cessation trial conducted in primary healthcare setting in Aleppo, Syria. All participants received behavioral counseling and were randomized to receive either 6 weeks of nicotine or placebo patch and were followed for one year. Generalized estimating equation (GEE) was performed to determine the factors associated with nicotine withdrawal symptoms during the study. RESULTS: Smoking abstainers had lower withdrawal symptoms than non-abstainers (p<0.001). For abstainers, the most severe withdrawal symptoms were hunger, increased eating, and desire for sweets. For non-abstainers, the most severe symptoms were urges to smoke, irritability/frustration/anger and craving a cigarette/nicotine. For the whole sample, lower total withdrawal symptomatology was predicted by higher education (p=0.033), older age at smoking initiation (p=0.044), lower nicotine dependence at baseline (p=0.040), abstinence (p=0.034), lower depression (p<0.001), better adherence to patch (p=0.039), and belief of receiving active nicotine patches (p=0.015). CONCLUSION: Higher nicotine dependence, lower educational attainment, and failure to maintain abstinence predict greater withdrawal severity among participants in smoking cessation intervention in a low-income country setting. Further, expectancies about the effects of pharmacotherapy appear to mediate the experience of nicotine withdrawal.

Funding: This study was supported by a Public Health Service Grant (PHS grant 1R01DA024876). The study sponsors had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication. The authors have no financial relationships relevant to this article to disclose.

Corresponding Author: Ziyad Ben Taleb, MD, DOMH, MPH, Florida International University, zben002@fiu.edu

PO5-34
MEASURING NICOTINE DEPENDENCE AMONG A POPULATION OF LOW-INCOME MENTHOL CIGARETTE SMOKERS IN BALTIMORE CITY
Lauren Zaplacki1, Ryan Kennedy1,2, Melissa Davey-Rothwell1,2, Tuo-Yen Tseng1, Carl Latkin1, Amy Knowlton1, Johns Hopkins Bloomberg School of Public Health, MD, USA, 1Institute for Global Tobacco Control, MD, USA

BACKGROUND: The rate of smoking among low-income African American populations remains disparately high compared to the general population. African American menthol smokers, smoke significantly fewer cigarettes than Non-Hispanic Whites and have a significantly longer time to first cigarette. Because these measures are commonly used to calculate nicotine dependence via the Heaviness of Smoking Index (HSI), HSI scores may not adequately reflect level of nicotine dependence within this population. Nicotine dependence could further be underestimated among an extremely low-income population who may limit intake of total number of cigarettes due to cost. METHODS: Cross sectional community survey of 522 African American menthol smokers in Baltimore. Outcome measures included ever made a quit attempt, currently trying to quit, and confidence in ability to research cigarettes. The results demonstrate the utility of the CPT for evaluating the reinforcement value of cigarettes varying in nicotine content, and indicate a significantly reduced reinforcing efficacy of research cigarettes in adolescents when compared to their usual brand.

Funding: Research supported by NCI grant 1K01CA189300 (Cassidy).

Corresponding Author: Rachel Cassidy, PhD, Brown University School of Public Health, rachel_cassidy@brown.edu
to quit. Nicotine dependence was measured using standard HSI score (0 to 6) and a novel Addiction Scale (AS) score (0 to 36) comprised of 9 questions from the Population Assessment of Tobacco Health study. Within this sample, the AS had good internal consistency (alpha = 0.863). Multivariate logistic regressions were performed controlling for age, sex, education, employment and income. RESULTS: Mean sample age was 48 years, 61% were male, 45% had less than a 12th grade education, 91% were unemployed, and 71% had an annual income less than $10,000. Quit related outcome variables were not significantly associated with HSI score. Ever tried to quit was not associated with AS score, but currently trying to quit and confidence in ability to quit were. For every point increase in AS score, there were 3% lower odds of currently trying to quit (OR=0.940, 95%CI 0.910 to 0.970 p < 0.001). CONCLUSION: The novel addiction scale used in this study may be more appropriate to assess the burden of nicotine dependence among a population of extremely low income, African American menthol smokers. The HSI has less respondent burden; however, its use may not be appropriate for populations that have low incomes.

Funding: Funding for this study was provided by a National Institute on Drug Abuse/US Food and Drug Administration supplement to grant R01DA032217-05. This work was also supported by the T32 CA0093140Cancer Epidemiology, Prevention, and Control training grant through the National Cancer Institute. Research reported in this publication was supported by NIDA/NIH and FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration. Additionally, prior to issuing a press release concerning the outcome of this research, please notify the NIH awarding IC in advance to allow for coordination.

Corresponding Author: Lauren Czaplicki, MPH, Johns Hopkins Bloomberg School of Public Health, lczapli1@jhu.edu

PO5-35

CESSATION OF SMOKING AND WEIGHT GAIN: FINDINGS FROM THE FIRST RANDOMIZED SMOKING CESSATION TRIAL IN A LOW-INCOME COUNTRY SETTING

Ziyad Ben Taleb1,*, Kenneth Ward2, Taghrid Asfar3, Wasim Maziak3, 1Florida International University, FL, USA, 2University of Memphis, TN, USA, 3University of Miami Miller School of Medicine, FL, USA

BACKGROUND: Quitting cigarettes smoking is known to be associated with gain in body weight, which in turn can threaten motivation to attempt or sustain attempts to quit. However, the pattern of weight gained by smokers who receive cessation treatment in a low-income country context has never been described. We aimed to determine the post cessation weight gain and its predictors among smokers who participated in a smoking cessation intervention in a low-income country setting. METHODS: We performed an ancillary analysis of data from 269 smokers who participated in a multi-site, two-group, parallel-arm, double-blind, randomized, placebo-controlled smoking cessation trial in primary care clinics in Aleppo, Syria. We used generalized estimation equation (GEE) modelling to identify predictors of changes in Body Mass Index (BMI) throughout the study (baseline, 6 weeks, 6 months and 12 months follow-ups). RESULTS: Compared with non-abstainers, smoking abstainers gained more weight at six weeks (+2.4kg vs. 1.4kg), six months (+4.0kg vs. -1.0kg) and 12 months (+4.1kg vs. 0.24kg) (all P-values <0.05). For the sample as a whole, having weight concerns at baseline (smoking to control weight) (P-value=0.006), gender (female) (P-value=0.005), higher weight at baseline (P-value<0.001) and abstinence from smoking (P-value<0.001) were associated with higher BMI throughout the study. There was a non-significant trend toward lower weight gain with use of nicotine replacement therapy. CONCLUSION: Similar to findings from developed countries, cessation of smoking is associated with weight gain among smokers who attempt to quit in low-income developing countries like Syria, particularly among females and those who have weight concerns prior to quitting. Those smokers may benefit from tailored cessation interventions with integrated body weight management elements such as physical activities and diet regimens.

Funding: This study was supported by a Public Health Service Grant (PHS grant 1R01DA024876). The study sponsors had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication. The authors have no financial relationships relevant to this article to disclose.

Corresponding Author: Ziyad Ben Taleb, MD, DOMH, MPH, Florida International University, zben002@fiu.edu

PO5-36

COMPARATIVE RISK ASSESSMENT OF ELECTRONIC NICOTINE DELIVERY SYSTEMS (‘E-CIGARETTES’) AND CONVENTIONAL CIGARETTES

Jinsong (Jimmy) Chen1, University of Auckland, National Institute of Health Innovation, New Zealand

INTRODUCTION: The use of electronic cigarettes (ECs) is controversial. Among the issues of concern is safety: some people think ECs are safer alternatives to conventional cigarettes (CCs), while others are concerned about the possible health effects of using ECs. Although many studies have identified hazards in EC emissions, there is only limited information about exposure levels and the likely health risks of using ECs. METHODS: This study aimed to characterise the health risks of using ECs and compare them with the risks of using CCs using the USEPA health risk assessment model. Hazards were identified and profiled (toxicological and exposure) using document review. The risk from exposure to hazards thus identified and the overall health risk of using ECs and CCs were compared, and then benchmarked with international guideline levels for each hazard, to evaluate whether ECs and CCs were predicted to pose a significant health risk to users or not, given comparable exposures. To our knowledge this has not been done before. RESULTS: Exposures to toxicants of concern identified in EC emissions (acetalddehyde, acrolein, formaldehyde, diethylene glycol, propylene glycol, cadmium, nickel, NNN and NNI) are almost all far lower than in CC emissions, indicating EC use is far safer than smoking. As most hazards’ exposure levels in EC emissions are lower than the defined guideline levels, ECs are likely to be safe to use in the long term. CONCLUSIONS & RECOMMENDATIONS: ECs are safer than CCs, and safe overall by international standards. Studies of ECs lack standardisation in the assessment methods for EC product performance, usage patterns and exposures. Future studies should adhere to a standard methodology to enable ready comparison. Regulation of EC manufacture and sales are needed to prevent the sale of low quality ECs. Lastly, health professionals and the general public need more information on ECs as safer alternatives to cigarette smoking.

Funding: No Funding

Corresponding Author: Jinsong (Jimmy) Chen, MD, University of Auckland, National Institute of Health Innovation, jimmychen1230@gmail.com

PO5-37

WHICH TOBACCO HARM REDUCTION APPROACHES RESULT IN SMOKING REDUCTION AND CESSATION? AN UPDATE OF THE COCHRANE EVIDENCE

Nicola Lindson-Hawley1,*, Jamie Hartmann-Boyce1, Rachna Begh2, Jamie Hartmann-Boyce1, Thomas Fanshawe1, ‘Cochrane Tobacco Addiction Group, University of Oxford, United Kingdom, 2University of Oxford, UK

BACKGROUND: Tobacco harm reduction aids aim to reduce harm from continued smoking and promote cessation, in those unable to quit, by reducing tobacco use or using less toxic products. Use of these aids is increasing with some countries now offering clinical harm reduction guidance. METHODS: Using tobacco harm reduction aids in related terms, we searched the Cochrane Controlled Register (August 2015) for randomized controlled trials of interventions to reduce amount smoked, or harm from smoking, amongst smokers not intending to quit. Outcomes were change in cigarette consumption and markers of exposure and health. Here we assess change in tobacco consumption at six months or longer. We followed standard methods as set out by the Cochrane Collaboration and pooled trials using fixed-effect meta-analyses. RESULTS: We found six new trials, giving 25 in total. Eight tested nicotine replacement therapy (NRT) versus placebo, used whilst smoking. Pooled results (n=3273) found NRT significantly increased the likelihood of reducing cigarettes per day by 55% or more (risk ratio [RR] 1.76; 95% confidence interval [CI] 1.46, 2.13) and quitting completely (RR 1.80; 95% CI 1.41, 2.30). However, 2 trials of NRT + behaviourial support and one of NRT for temporary abstinence found no effects. Only one trial each tested reduced tar, nicotine and/or carbon monoxide. Cigarettes. Studies were not pooled due to heterogeneity. None detected a significant difference in reduction, and the one study that measured cessation also did not detect an effect. CONCLUSIONS: Using NRT whilst smoking was the only harm reduction approach found to significantly reduce smoking and help people quit in the long-term. Little research has tested alternative approaches; the lack of an observed effect may therefore be due to a lack of evidence. Research is needed to fill this gap, particularly in light of clinical guidance and the increasing...
use of harm reduction aids. Smokers who cannot quit can be advised to cut down their smoking using NRT, which has a good long-term safety profile.

Funding: This work was carried out by the Cochrane Tobacco Addiction Group, which is fully funded by the UK National Institute for Health Research (NIHR)

Corresponding Author: Nicola Lindson-Hawley, PhD; CPsychol; MSc; BSc Hons, Cochrane Tobacco Addiction Group, University of Oxford, nicola.lindson-hawley@phc.ox.ac.uk

POS5-38
EVIDENCE FOR DESENSITIZATION OF β2 CONTAINING NICOTINIC ACETYLCHOLINE RECEPTORS IN REGULATING BODY WEIGHT IN OBESE MICE

Ghazaul Dezfuli*, Kenneth Kellar1, Kenneth Dretchen1, Yousef Tizabi2, Richard Gillis1, ‘Georgetown University, DC, USA, 2Howard University, DC, USA

Nicotine’s effects on food intake (FI) and body weight (BW) are well documented; however, the relevant nicotinic acetylcholine receptors (nAChRs) mediating these effects are not firmly established. Using both pharmacological tools and knockout mice, we demonstrate an important role for desensitization of β2* nAChRs in the control of energy homeostasis. (Note: The asterisk indicates that the α subunit associated with this β2 subunit has not yet been identified, but is most likely an α4 and/or α6 subunit.) In this study, we set out to: (1) identify the nAChR subtype involved in FI and BW; (2) determine whether FI and BW reduction produced by nicotinic drugs are due to activation or desensitization of nAChRs. To identify the nAChR subtype, we tested the effect of sazetidine-A (SAZ-A), a relatively selective ligand for β2 nAChRs, on FI and BW in 15 week-old obese mice. SAZ-A administered twice daily (3 mg/kg; SC) decreased FI and BW. To assess whether these effects were consistent with desensitization, SAZ-A was administered to non-obese mice using a tunable mini-pump. This method sustained delivery of SAZ-A, which causes continuous desensitization of β2* nAChRs, reduced FI and decreased the gain in BW. Moreover, a similar effect was obtained by administering dihydro-β-erythroidine (DHβE), an antagonist of β2* nAChRs. In contrast to these results in wild-type mice, SAZ-A did not affect FI or BW in β2 knockout mice (β2–/–).

Importantly, we hypothesized that adult β2* mice (both male and female) gained less weight over time and had a leaner phenotype than wild-type controls, a finding that has not been reported previously (possibly because most previous studies used younger mice). Together, these results indicate a β2* nAChR subtype is essential to the effect of SAZ-A on FI and BW. Moreover, these results suggest that β2* nAChRs contribute to regulation of BW in mice. These findings may be of interest to researchers studying targets to treat obesity and/or investigating brain circuitry regulating FI. Lastly, our data suggest that desensitization of β2* nAChRs by drugs such as SAZ-A may serve as an effective therapeutic approach for controlling weight gain.

Funding: NO FUNDING

Corresponding Author: Niaz Sahibzada, PhD, Georgetown University, sahibzan@georgetown.edu

POS5-39
HIGHLIGHTED FINDINGS FROM WAVE 1 OF THE POPULATION ASSESSMENT OF TOBACCO AND HEALTH (PATH) STUDY

Andrew Hyland*,1, Kevin Conway2, Nicolette Borek3, For the PATH Study Team3, 1Roswell Park Cancer Institute, NY, USA, 2NIDA, MD, USA, 3FDA, MD, USA, *NIDA, CTP, Westat, Scientific Partners, USA

The National Institutes of Health, through the National Institute on Drug Abuse, is partnering with the Food and Drug Administration’s Center for Tobacco Products to conduct the Population Assessment of Tobacco and Health (PATH) Study, under a contract with Westat. The PATH Study is an address-based nationally representative, longitudinal cohort study of 45,675 adults and youth in the United States aged 12 years and older. The study uses Audio-Computer Assisted Self-interviews for adults and youth to collect information on tobacco-use patterns across tobacco products on the U.S. market; risk perceptions and attitudes towards tobacco products including emerging tobacco products; and tobacco initiation, cessation, and relapse behaviors. Additionally, the PATH Study collects biospecimens among consenting adults aged 18 years of age and older for future evaluation of biomarkers of exposure and harm related to tobacco use. Expanding upon the interim Wave 1 data presented at SRNT in 2015, we will provide a short overview of the design and methods of the PATH Study and then provide highlighted results from the entire Wave 1 sample. We will report on domains related to the appeal, addictiveness and harm of tobacco products, including youth susceptibility, experimentations and use of products; harms perceptions and exposure to marketing as well as adult use and harm perceptions of tobacco products. Additional behavioral data on selected tobacco products will be discussed. The presentation will conclude with a summary of Wave 2 and Wave 3 data collection progress and the next steps for the PATH Study, information on how researchers can access Wave 1 PATH Study questionnaire data through a Restricted Use File, and questions from the audience.

Funding: This project has been funded in whole with federal funds from the National Institute on Drug Abuse, National Institutes of Health, and the Food and Drug Administration, Department of Health and Human Services under Contract #HHSN271201100027C

POS5-40
NICOTINE WITHDRAWAL INDUCES NEGATIVE CORRELATION IN RESTING CONNECTIVITY BETWEEN INSULA AND EXECUTIVE CONTROL NETWORKS IN SMOKERS

Allison Matous*, John Fedota, Kim Slater, Betty Jo Salmeron, Hong Gu, Thomas Ross, Elliot Stein, National Institute on Drug Abuse - Intramural Research Program, MD, USA

Because the insula is central in detecting and acting upon internal states and external stimuli, understanding how it interacts with other brain regions to modify behavior may help elucidate neural mechanisms of nicotine withdrawal. The insula is a key node of the salience network (SN), the large-scale brain network implicated in switching attention between executive control (ECN) and default mode (DMN) networks. The ECN, which is activated in effortful cognitive processing, is anticorrelated with the DMN, which deactivates during externally-oriented tasks. Nicotine withdrawal alters interactions among these networks such that DMN-insula connectivity is upregulated in abstinent smokers. Yet, the downregulation predicted between insula and ECN in withdrawn smokers has not been demonstrated. Resting-state BOLD data were acquired from 18 smokers at baseline smoking and again following approximately 48 hours of smoking abstinence. Based on previous literature, we derived 3 regions of interest in the insula (dorsal anterior, ventral anterior, and posterior) and conducted seed-based analyses examining the functional connection between each insula seed and each of the 3 networks of interest-SN, ECN, and DMN. The contrast of abstinence minus baseline showed upregulated connectivity between dorsal insula and DMN and downregulated connectivity between ventral insula and ECN during abstinence. Surprisingly, the magnitude of both correlations increased in abstinence. The connectivity between insula and DMN became more positive, while the correlation between insula and ECN became negative. Instead of seeing the predicted switch of strong positive insula-ECN connectivity at baseline for strong positive insula-DMN connectivity in abstinence, results suggest increased, yet directionally opposite, connectivity between insula and both ECN and DMN in abstinence. This pattern suggests in smokers the absence of nicotine enhances connectivity in multiple brain networks. Thus, future treatments may aim to downregulate these connections simultaneously.

Funding: This work was supported by the NIDA-IRP.

Corresponding Author: Allison Matous, BA, National Institute on Drug Abuse Intramural Research Program, allison.matous@nih.gov

POS5-42
E-CIGARETTE USE IN VA SERVICE USERS WITH PSYCHIATRIC AND SUBSTANCE USE DISORDERS

Kathryn Hefner1,2, Robert Rosenheck1,2, Jeremy Merrell1, Marcedes Coffman3, Gerald Valentine4, Mehmet Sofuoglu1,4, VA Connecticut Healthcare System, MIRECC, CT, USA, *Yale University, CT, USA

Individuals with mental illness and substance use disorders smoke at elevated rates and tend to have greater difficulty quitting smoking as compared to the general population. Some believe that e-cigarettes reduce harm associated with smoking, but little is known about e-cigarette use, perceptions, and motivations
for use among individuals with mental and/or substance use disorders. Rates and correlates of e-cigarette use, perceptions, and sources of information about e-cigarettes among smokers using mental health and substance use services (N=188) at the VA Connecticut Healthcare System were assessed via a brief survey. We used the Pearson chi-square test of independence to compare current e-cigarette users and non-users, and logistic regression to examine independent attributable differences, controlling for potentially confounding variables. Nearly a third of the sample (30.9%) used e-cigarettes. E-cigarette users were more likely than non-users to have mental health disorders, less likely to have substance use disorders, started smoking later in life, spent less money on smoking, and were more likely to have tried to quit “cold turkey.” Knowledge of e-cigarettes most often came from TV, radio, or personal contacts. Respondents held generally positive perceptions and motivations regarding e-cigarette use (i.e., socially acceptability, may help reduce/quit smoking, reduces harm to others). Despite positive attributions, rates of “dual use” of e- and traditional cigarettes was high (86.2%), and very few e-cigarette users (6.9%) indicated e-cigarettes actually helped them quit smoking, suggesting little related harm reduction. E-cigarettes are commonly used by smokers with mental health and substance use disorders, a high-risk group that feels positively about e-cigarettes. However, positive regard of e-cigarettes did not appear to translate to ability to reduce or quit cigarette smoking. Safety and effectiveness research on e-cigarettes is urgently needed.

Funding: Research reported in this abstract was supported by the Office of Academic Affairs, Advanced Fellowship Program in Mental Illness Research Education Clinical Centers (MIRECC), Department of Veterans Affairs, and the National Institute on Drug Abuse of the National Institute of Health under Award Number P50DA0368151

Corresponding Author: Kathryn Hefner, PhD, VA Connecticut Healthcare Centers, MIRECC and Yale University, kathryn.hefner@yale.edu

POS5-43

COMBUSTIBLE CIGARETTES COST LESS TO USE THAN E-CIGARETTES: GLOBAL EVIDENCE AND TAX POLICY IMPLICATIONS

Jeffrey Drope1, Michal Stoklosa2, 1American Cancer Society, WI, USA, 2American Cancer Society, GA, USA

BACKGROUND: Some scholars suggest that price differences between combustible cigarettes and e-cigarettes could be effective in moving current combustible smokers to e-cigarettes, which could reduce tobacco-related death and disease. Currently, in most jurisdictions e-cigarettes are not subject to the same excise taxes as combustible cigarettes, potentially providing the category with a price advantage over combustible cigarettes. We use empirical price data to determine if e-cigarettes’ tax advantage has translated into a price advantage. METHODS: Using Euromonitor International data from a sample of 45 countries in 2014, the price of combustible cigarettes, disposable e-cigarettes, and rechargeable cigarettes were converted to US dollars and compared using two-tailed mean comparison tests and two-tailed paired t-tests. We standardized prices to a comparable, equivalent unit volume between products and considered the cost of purchasing a rechargeable e-cigarette in addition to the cost of e-liquid when calculating the total cost of switching between smoking and vaping. RESULTS: Comparable units of combustible cigarette cost less than disposable e-cigarettes in almost every country in the sample (n=34, mean of $5.26 vs. $8.56, p=0.001). While the e-liquids consumed in rechargeable e-cigarettes might cost less per comparable unit than combustible cigarettes (n=45, mean of $2.84 vs. $5.06, p=0.001), the initial cost to purchase a rechargeable e-cigarette (n=28, mean of $23.70) presents a significant cost barrier to switching from smoking to vaping. DISCUSSION: Generally, prices of e-cigarettes are much higher than combustible cigarettes. If policymakers wish to tax e-cigarettes less than combustibles, forceful policy action – almost certainly through effective excise taxation – must raise the price of combustible cigarettes beyond the price of using e-cigarettes.

Funding: No Funding

Corresponding Author: Alex Liber, MSPH, University of Michigan, acliber@umich.edu
study sessions attended. Medication adherence was a significant mediator of the relationship between optimism and smoking abstinence at 2-month follow up (indirect effect medication adherence=0.0324, SE=0.0400; 95% CI [0.0007, 0.0682]); number of counseling sessions attended was not. The relationship between depression and smoking abstinence was not mediated by medication adherence or number of study sessions attended. CONCLUSIONS: Optimism is associated with improved treatment engagement (medication adherence and session attendance). Medication adherence mediated the relationship between optimism and smoking abstinence, indicating that interventions to enhance general optimism could improve smoking outcomes by increasing adherence to prescribed pharmacotherapies. Future research should investigate the feasibility and benefit of enhancing optimism to improve cessation outcomes.

Funding: This work was supported by grant number K23 NR014951 (Cioe) from the National Institute of Nursing Research, grant number T32 DA016184 (Lechner) from the National Institute on Drug Abuse, and grant number R01 AA017181 (Kahler) from the National Institute on Alcohol Abuse at the National Institutes of Health.

Corresponding Author: PATRICIA CIOE, PhD, Brown University, Patricia_Cioe@brown.edu

POS5-46
THE NEUROCOGNITIVE EFFECTS OF THE THROAT GRAB SENSATION ASSOCIATED WITH MENTHOLATED CIGARETTES

George Buzzelli*, Paul Beatty*, Azieb Kidanu*, Raúl Cruz-Cano*, Lizette Nkongho*, Hyoshin Kim**, Craig McDonald1, Pamela Clark1, George Mason University, VA, USA, University of Maryland-College Park, MD, USA, Battelle Memorial Institute, WA, USA

A survey of internal tobacco industry documents suggests that menthol cigarettes are explicitly designed to produce both a cooling sensation, as well as an increased sensation of “throat grab” through stimulation of the trigeminal nerve. Together, these sensations are thought to increase product satisfaction, leading to increased usage and ultimately abuse. It is possible that the throat grab characteristic of mentholated cigarettes in particular produces a cognitively reinforcing effect, similar to nicotine alone. However, the neurocognitive effects of the throat grab sensation associated with menthol cigarettes have not previously been investigated. In the present study, we isolated the neurocognitive effects associated with the throat grab sensation by having 11 cigarette smokers smoke either mentholated cigarettes without anesthetization, or following throat anesthetization using a cepacol spray to remove the throat grab effect. Additionally, participants smoked regular cigarettes either with or without throat anesthetization as a comparison. Immediately prior to, and immediately following cigarette smoking, electroencephalography (EEG) was recorded and changes within the alpha band of the EEG were analyzed. Modulation of frontal high alpha asymmetry was employed as an index of changes in arousal levels. Consistent with previous work, smoking regular cigarettes with or without throat anesthetization led to a comparable increase in high alpha asymmetry and low alpha suppression, indexing increased positive affect and arousal levels, respectively. In contrast, preliminary data suggest that smoking menthol cigarettes without anesthetization actually induced less alpha asymmetry and reduced low alpha suppression, compared to smoking after treatment with cepacol to remove the throat grab effect. These data suggest that the throat grab sensation may actually reduce the cognitive reinforcing effects of menthol cigarettes. However, data collection remains ongoing and future analyses will also incorporate assessment of event-related potentials (ERPs) as well as subjective measures.

Funding: Research reported in this publication was supported by grant number 5R21DA030622 from NIH/National Institute on Drug Abuse.

Corresponding Author: George Buzzelli, George Mason University, gbuzzelli@gmu.edu

POS5-47
TOBACCO SMOKING AND MEDICAL CO-MORBIDITIES AMONG PATIENTS WITH BIPOLAR DISORDER IN A NIGERIAN CLINICAL SETTING: A CASE CONTROL STUDY

Victor Lasebikan*, University of Ibadan, Nigeria, Nigeria

INTRODUCTION: Smoking is highly prevalent in patients with bipolar disorder and is associated with medical and psychiatric morbidities. METHODS: In this case control study, consecutive patients with bipolar disorder (BD), (n = 280) were matched by age and gender and interviewed at State Hospital Ibadan between January and June 2008. Information on demography and tobacco smoking, presence of psychotic symptoms, remission state and self-reports of common health conditions in past year were obtained. Bivariate associations were determined using Chi square statistics and multivariate analysis was used for further exploration of variables that were significant during univariate analysis. All analyses were performed using the SPSS (17.0). RESULTS: Prevalence of persistent smoking in BD group was 37.5% and 9.2% in the control group, p < 0.001. In the BD group, current smoking reduced with increasing age and education, p = 0.003, p = 0.002 respectively. The was higher in men, p = 0.002, among the unmarried, p = 0.03, those with psychotic symptoms, p = 0.002, those not in remission, p = 0.02. Persistent smoking was also significantly associated with malignancies, p = 0.004, cardiovascular diseases, p = 0.04, respiratory diseases, p = 0.01, high BMI, p = 0.03, ENT diseases, p = 0.01, chronic pain, p = 0.03 or any disease condition, p = 0.03, when compared with current abstainers. After adjusting for age and gender, presence of psychotic symptoms OR = 2.87, 95% CI (1.43-5.20), being in remission, OR = 0.47, 95% CI (0.009-0.76), high total PANSS score OR = 2.67, 95% CI (1.55-7.28) and 3 or more episodes in past year, OR = 1.89, 95% CI (1.12-4.08) remained associated with persistent smoking. CONCLUSION: The present study demonstrates higher rate of lifetime and current smoking among individuals with BD and the association with socio-demographic and clinical factors and highlights the significance of these risk factors in effective tobacco preventive and cessation programs for patients with bipolar disorders.

Funding: No Funding

Corresponding Author: Victor Lasebikan, PhD, MD, MPH, University of Ibadan, victorlash@yahoo.com

POS5-48
SOCIOECONOMIC DISPARITIES IN MARKETING OF ELECTRONIC CIGARETTES ON TWITTER

Hongying Dai*, Michael Deem1, Jiangiang Hao1, Children’s Mercy Hospital, MO, USA, “Bellevue University, NE, USA

BACKGROUND: To date, no study has been conducted to analyze e-cigarette commercials posted on Twitter after 2013. The exponential growth of the e-cigarette market over the past two years may have significantly impacted the rate and content of e-cigarette related commercials on social media. We investigate whether e-cigarette promotions on social media have increased in prevalence, whether they target vulnerable populations, and whether they target states with better tobacco product regulation with an aim to circumvent smoking restrictions. METHODS: We collected e-cigarette related tweets from July 23 to October 14, 2015 (n = 757,167) on Twitter. Prevalence, geographic variations, socio-economic factors and state tobacco regulations were investigated. RESULTS: The number of commercial tweets has increased 168-fold (319,041/day in 2015 vs. 1,900/day in 2012) with a high potential reach (830,495,700/day). The percentage of commercial tweets among all e-cigarettes related tweets has gone down (42.46% in 2015 vs. 90% in 2008-2013) due to the increase of organic tweets that expressed personal opinions or experience on e-cigarettes. The percentage of commercial tweets varied dramatically by states, ranging from 0% to 53.7% (MD). The higher prevalence of e-cigarette commercial was associated with states with better tobacco control impact (r=0.54, p<0.0001). CONCLUSION: The higher percentage of commercial tweets was associated with states with higher percentage of Black and African American population (r=0.38, p=0.005). Prevalence of commercial tweets varied significantly by states, ranging from 0.14 (WY) to 53.7 (MD). The higher prevalence of e-cigarette commercial was associated with states with better tobacco control impact (r=0.54, p<0.0001). CONCLUSION: E-cigarette advertising tweets continue to increase exponentially, with a greater focus on states with more minorities and states with better tobacco control. Due to low cost, high reach to a large audience and limited regulations, we predict that commercial tweets on Twitter could continue to increase and bring harm to existing anti-smoking campaigns. Regulations from both the federal and state level are needed to guide the contents of commercial tweets and prevent advertisements targeting young, minorities and nonsmokers. IMPLICATIONS: E-cigarettes com-
mercials target states with larger minority populations, especially African American communities. States with better tobacco control were targeted by a large number of e-cigarette commercials, which could offset years of accomplishment in tobacco control and public health. We observed a 168-fold increase of e-cigarette commercials from 2012 to 2015. Prevalence and percentage of e-cigarettes commercials posted on Twitter had dramatic socioeconomic disparities among states in the USA.

Funding: No Funding

Corresponding Author: Hongying Dai, PhD, Children’s Mercy Hospital, hdai@cmh.edu

POS5-49
TOBACCO TREATMENT: IDENTIFYING DISPARITIES IN TREATMENT INVITATIONS

Kristin Berg*, Stevens Smith, Megan Piper, Michael Fiore, Douglas Jorenby, University of Wisconsin-Madison, WI, USA

The steady progress in reducing tobacco use in the general population is much less evident in many disparity populations. One reason for this is that these populations may lack access to health system-provided evidence-based cessation treatment. To address this issue, a series of studies were designed to engage all smokers presenting to 11 primary care clinics from two Wisconsin health systems in tobacco treatment. Smokers were invited to participate via an electronic health record (EHR) prompt that was activated when a patient screened positive for smoking during their intake assessment by the medical assistant. This study examined whether individual variables, including markers of disparities, influenced invitation rates and access to treatment. Logistic regression was used to predict receipt of an invitation based on: gender, age (<24 years, 25-44, 45-64, >65), racial background (white, African American, other), insurance status (private, Medicare, Medicaid, none), and visit diagnosis (“high-risk” including cardiovascular and pulmonary disease, malignancy and pregnancy versus “low-risk” including all other ICD-9 categories). A total of 95,471 patients were seen, of which 89% (84,888) were screened for smoking. Among the 15,193 identified current smokers (17.9% of screened patients), 10,242 (67%) were invited to participate in the tobacco treatment program. Those who did not receive an invitation were more likely to be younger, represent a racial minority, and to carry a high-risk diagnosis. There were also clinic- and health system-specific differences. These results suggest that despite EHR-facilitated recruiting, incentives for recruitment, and no cost for treatment, significant disparities remain regarding recruitment for clinical tobacco dependence treatment.

Funding: This research was supported by grant 9P50CA143188 from the National Cancer Institute to the University of Wisconsin Center for Tobacco Research and Intervention, and author KMB was supported by a National Research Service Award from the Health Resources and Services Administration [T32HP10010] to the University of Wisconsin Department of Family Medicine and Community Health.

Corresponding Author: Kristin Berg, MD, MS, University of Wisconsin-Madison, kberg@medicine.wisc.edu

POS5-50
A COMPARISON OF PUFF BEHAVIORS DURING CIGARETTE AND LITTLE CIGAR USE

Babita Das*, Raul Cruz-Cano, Pamela Clark, University of Maryland School of Public Health, MD, USA

Federal regulation of cigarettes (flavors, package size, taxation) does not currently apply to cigar products. Despite a recent tripling in U.S. little cigar sales, little is known about the behaviors involved in little cigar use. It is unclear whether distinct smoking patterns during little cigar and cigarette use lead to varying amounts of tobacco smoke exposure. Puff topography can serve as a measure of main-stream smoke exposure during combustible tobacco use. This study compared puff behaviors during cigarette and little cigar use to identify potential differences in amount of smoke exposure. In a two-day open-label crossover trial, 18 daily cigarette smokers used one Cheyenne brand little cigar and one Newport brand cigarette on separate days in a laboratory setting. The order of product exposure was randomized, and participants smoked products that matched their preferred cigarette flavor (menthol/non-menthol). Using a SPA-D (Sodim) smoking topogra-phy device, time spent smoking, number of puffs, puff volumes, puff durations, and interpuff intervals were recorded during both smoking sessions. A General Linear Mixed Model approach with gamma distributions to account for skewed distributions in the outcome variables revealed a significantly greater mean puff volume during cigarette use compared to little cigar use (p<.0001), and a shorter mean interpuff interval during cigarette use compared to little cigar use (p=0.0197). No significant differences were found between mean puff duration during cigarette and little cigar use (p=0.3488). Paired t-tests revealed significantly more time spent smoking little cigars (p=0.0048) and more puffs taken while smoking little cigars (p=0.0620). Results show variability in puff behaviors during cigarette and little cigar use. More research is needed to explore how puff behaviors differ between single-product cigarette and cigar users and dual users. Real world measures of topography such as ecological momentary assessment may help answer questions about how cigarette and cigar use differ in frequency of use, characteristics of a smoking session, and how these factors might contribute to differences in smoke exposure.

Funding: Research reported in this publication was supported by grant number 1P50CA180523-01 [PI: Pamela I. Clark] from the NIH and FDA Center for Tobacco Products (CTP).

Corresponding Author: Babita Das, PhD, University of Maryland School of Public Health, Tobacco Center of Regulatory Science, bdas1@umd.edu

POS5-51
EVERY DAY I THINK ABOUT YOUR MESSAGES: ASSESSING TEXT-MESSAGING INTERACTION WITH LATINO SMOKERS

Francisco Cartujano1*, Jaime Perales1, Mitzi Ramirez1, Kendra Cruz1, Mariana Ramirez-Mantilla1, Scott Werntz2, Lisa Cox1, Edward Ellerbeck1, Delwyn Catley1, Paula Cupertino1, University of Kansas Medical Center, KS, USA, 2Agile Health, IL, USA, 3American Psychological Association, KS, USA

BACKGROUND: Latinos are the fastest growing minority in the U.S. and highest users of text messaging. However, there is little evidence on how Latino smokers interact in a bi-directional smoking cessation text-message program. OBJECTIVE: To describe quantity and content of text-message interaction with Latino smokers enrolled in a cessation program. METHODS: Latino smokers were recruited by promotoras de salud to participate in Latino Kick Buts, a 12-week smoking cessation text-message program, structured in 4 progressive stages that allowed bi-directional exchange of text-messages. The program consisted of pre-scheduled messages, keyword-driven messages using pre-set keywords (e.g., Crave, Stress), and ad-hoc messages answered by trained staff. Interactivity levels were analyzed. RESULTS: During the 12-week period, 478 messages were sent by the 17 participants who enrolled the program; 2 participants never interacted with the program, 7 had a low interaction (<10 messages), 6 had a medium interaction (10-100 messages), and 2 had a high interaction (>100 messages). Interaction using pre-set keywords was minimal (4.8%). Interaction varied across the stages, participants sent at least one message 30.4% of the days during pre-quit, 26.6% in the quit-day, 27.2% in post-quit intensive, and 17.0% in maintenance. Some smokers responded to pre-scheduled messages as if speaking with a live person e.g., “I’m sorry for not replying sooner, I was working…” Eight themes were identified within the 478 text-messages. The most common themes included Wellbeing (26.1%) e.g., “Now I’m feeling so much better…”, Motivation (18.6%) e.g., “I’m capable and I can make it…”, Strategies to Quit (17.0%) e.g., “I go on a walk with my daughter every day”, Social Support Acknowledgment (12.3%) e.g., “I told my boss I’m quitting smoking, he’s really happy…”, and Reasons to Quit (10.3%) e.g., “I fight this for my family and my health.” CONCLUSION: Latino smokers interacted extensively with the Kick Buts program. Latino smokers might benefit from ad-hoc text-message interactions as a source of intra-treatment therapeutic alliance and autonomous support that should be explored in future studies.

Funding: Frontiers NIH

Corresponding Author: Francisco Cartujano, MD, University of Kansas Medical Center, fcartujano@kumc.edu
POS5-52
SMOKING AND FAMILY HARMONY AMONG CHINESE IN A GENERAL POPULATION: EVIDENCE FROM THE FAMILY COHORT

Tai Hing Lam1, Brandford Chan, Betty Yuan, Michael Ni, The University of Hong Kong, Hong Kong

BACKGROUND: The importance of family social capital is increasingly recognised with emerging evidence for family harmony. Previous studies have shown that Chinese adolescents who were more harmonious in their families were more likely to report lower harm from their family. AIM: To examine the cross-sectional association between smoking and family harmony among Chinese adolescents in Hong Kong. KEY METHODS: Under Hong Kong FAMILY Project, a Jockey Club Initiative for a Harmonious Society, 17,896 randomly selected adolescents aged 15 or above were asked in baseline household interviews about their smoking habit (never, former and current smokers). Family harmony was assessed using a validated scale consisting of 5 items: “My family functions well for all members”, “My family’s day-to-day interactions are peaceful”, “Family members accommodate each other”, “I am proud of my family”, and “My family is harmonious”. Each item was rated on a 5-point Likert scale with 1 (strongly agree) and 5 (strongly disagree). The 5 item scores were summed to yield the Family Harmony Score (higher scores indicating greater harmony). The association between smoking and Family Harmony Score was analysed by multivariable linear regression model, adjusting for age, sex, educational attainment and self-reported chronic disease status. RESULTS: 80.4% were never smokers, 14.1% were current smokers and 5.5% were former smokers. Compared to never smokers, current smokers and former smokers reported significantly lower family harmony (b = -0.04, p<0.05 respectively). The family harmony of former smokers was not significantly different from that of current smokers (b = -0.07, 95% CI: -0.25 to 0.15, p=0.25). CONCLUSIONS: Baseline findings from a large, population-based Chinese cohort within a culture which highly values harmony showed that current and former smoking was associated with lower family harmony, and quitting showed some benefit. Future studies examining the bi-directional relationships between changes in smoking habit and in family harmony are needed.

Funding: The Hong Kong Jockey Club Charities Trust was the sole funder of the FAMILY Project from 2007 to 2015.

Corresponding Author: Tai Hing Lam, MBBS, MD(HK), The University of Hong Kong, hmrth@hku.hk

POS5-53
E-CIGARETTE ADVERTISING AND IMPLICIT ATTITUDES AMONG NON-SMOKING YOUNG ADULTS

Pebbles Fagan1, Thaddeus Herzog1, Jennifer Unger1, University of Hawaii Cancer Center, HI, USA; 2University of Southern California, CA, USA

BACKGROUND: E-cigarette marketing, which is currently unregulated, may be partly responsible for the rapid increase in e-cigarette use prevalence among youth and young adults. Potential adverse impact of e-cigarette marketing on youth and young adults has raised a sense of public concern. This study tested whether exposure to e-cigarette advertising affects the subliminal—spontaneous or automatic—attitudes towards e-cigarettes as a more pleasant or safer alternative to cigarettes. Findings have implications for regulations on e-cigrette marketing. METHODS: In a laboratory setting, N = 187 young adults (mean age = 21.9; SD = 4.1), current non-smokers who had never used an e-cigarette, were randomly assigned to one of the three conditions where they viewed ads of everyday objects. The third condition was to test whether a contest with Christmas theme will resonate with participants and increase their proactive engagement.

INTRODUCTION: Cigarette use is most prevalent among young adults; however, the diversity of tobacco products used by this age group continues to grow. The purpose of this study is to describe the population of a Texas-based cohort of college-aged students, to examine differences between cigarette users and non-users, and to identify correlates of cigarette use. METHODS: Participants included young adults (n=3,492) from 12 two-year and 12 four-year universities participating in the Marketing and Promotions Across Colleges in Texas Project (M-PACT). Data from the baseline survey (collected Fall 2014) were used for this analysis. Mixed effects logistic regressions were conducted to determine differences between cigarette users and non-current cigarette users on socio-demographics, other tobacco products and drug use, family and friend use of cigarettes. RESULTS: The average age of students was 20.5 (SD=2.4), 63.2% were female, and 36.3% were White. Cigarettes were the most common tobacco product used (22%) in the past 30 days, but 17% of the sample reported current use of e-cigarettes. Cigarette users were older than non-current cigarette users (p<.0001), more likely to report being current users of other tobacco products (p<.0001), and more likely to have at least one friend use cigarettes (p<.0001). Multivariable analysis indicated that male gender; current use of e-cigarettes, cigars, smokeless tobacco, hookah, and marijuana; binge drinking; maternal use of cigarettes; and having may subliminally influence non-smoking young adults to form positive attitudes about e-cigarettes.

Funding: This research was supported by funding from Food & Drug Administration/National Cancer Institute (3P30CA071789-15S3,3P30CA071789-16S2)

Corresponding Author: Pallav Pokhrel, PhD, MPH, University of Hawaii Cancer Center, ppokhrel@cc.hawaii.edu

POS5-54
QUIT COLD TURKEY CONTEST: AN INNOVATIVE PILOT INITIATIVE

Mohammed Al-hamdani*, The Lung Association of Nova Scotia, NS, Canada

Despite the advances in tobacco control, the smoking rate in Nova Scotia has remained close to 20% for the last 5 years. A large segment of smokers are unmotivated to quit smoking after multiple quit attempts, partly because of their inability to resonate with smoking cessation programs. To address this issue, we conducted a holiday-based quit smoking contest, the “Quit Cold Turkey Contest”, in the Halifax Regional Municipality of Nova Scotia. The purpose of the program was to test whether a contest with Christmas theme would increase the participants’ interest and increase their tendency to make a serious quit attempt. Participants were offered free registration to the program and a chance to receive a turkey for Christmas if they quit for 30 days (November 14- December 13 015). Participants received a welcome package that included a progress tracker sheet and a fridge magnet with instructions to check off every quit day during the contest. Participants also received weekly support emails that focused on cost savings, fighting triggers, information on contacting a tobacco helpline, and resources for additional help. Participants were asked to indicate their progress at the middle and end of the contest. Participants were asked if they had remained quit by email and phone. In-structions on our contest website suggested that the Lung Association of Nova Scotia could conduct a cotinine test to verify smoking abstinence at the end of the contest. 121 participants registered and the one-month quit rate was 25%. Further, 33% of participants reduced the number of cigarettes smoked by 50%. The positive feedback and stories from participating in the contest were overwhelming. The results suggest that a theme-based quit smoking contest could be a viable cost-effective cessation method to connect with participants and increase their proactive engagement.

Funding: No Funding.

Corresponding Author: Mohammed Al-hamdani, MHA, The Lung Association of Nova Scotia, alhamdani.mohammed@gmail.com

POS5-55
DEMOGRAPHIC CHARACTERISTICS AND DIFFERENCES BETWEEN CURRENT AND NON-CURRENT CIGARETTE USERS AMONG TEXAS COLLEGE STUDENTS

MeLisa Creamer1, Stephanie Clendennen1, Dale Manley1, Keryn Pasch2, Alexandra Louka3, Cheryl Perry1, University of Texas School of Public Health, Austin Regional Campus, TX, USA; 2The University of Texas at Austin, TX, USA

INTRODUCTION: Cigarette use is most prevalent among young adults; however, the diversity of tobacco products used by this age group continues to grow. The purpose of this study is to describe the population of a Texas-based cohort of college-aged students, to examine differences between cigarette users and non-users, and to identify correlates of cigarette use. METHODS: Participants included young adults (n=3,492) from 12 two-year and 12 four-year universities participating in the Marketing and Promotions Across Colleges in Texas Project (M-PACT). Data from the baseline survey (collected Fall 2014) were used for this analysis. Mixed effects logistic regressions were conducted to determine differences between cigarette users and non-current cigarette users on socio-demographics, other tobacco products and drug use, family and friend use of cigarettes. RESULTS: The average age of students was 20.5 (SD=2.4), 63.2% were female, and 36.3% were White. Cigarettes were the most common tobacco product used (22%) in the past 30 days, but 17% of the sample reported current use of e-cigarettes. Cigarette users were older than non-current cigarette users (p<.0001), more likely to report being current users of other tobacco products (p<.0001), and more likely to have at least one friend use cigarettes (p<.0001). Multivariable analysis indicated that male gender; current use of e-cigarettes, cigars, smokeless tobacco, hookah, and marijuana; binge drinking; maternal use of cigarettes; and having...
POS5-56
HIGH FREQUENCY REPETITIVE TRANSCRANIAL MAGNETIC STIMULATION FOR THE TREATMENT OF TOBACCO DEPENDENCE: FEASIBILITY AND LIMITED EFFICACY TESTING
Ria Malhotra1*, Elike Popovic1*, Luana Panissidi1*, Christine Sheffer1, Warren Bickel2, Thomas Brandon2, Jamit Pittman3, Antonio Mantovani1, Christopher Franck1, Syed Amir Abdal1, Sophie Davis School of Biomedical Education/CUNY School of Medicine, NY, USA, Virginia Tech Carilion Research Institute, VA, USA, Moffitt Cancer Center, FL, USA, Virginia Tech Carilion School of Medicine, VA, USA

Converging evidence indicates that increasing activity in the left dorsolateral prefrontal cortex (DLPFC) with high frequency repetitive transcranial magnetic stimulation (HF rTMS) decreases delay discounting (DD) rates and reduces cigarette consumption. Lower DD rates are linked with higher quit rates. This project evaluated the feasibility of testing HF rTMS for the treatment of tobacco dependence. This randomized double-blind sham-control study, smokers received 8 sessions of 20 Hz rTMS of the left DLPFC (45 20-pulse trains, inter-train interval 20 seconds, 110% of motor threshold) after a biochemically verified 24-hour quit attempt. All participants read the Forever Free® relapse prevention materials during sessions. Sessions were delivered once per day, 4 sessions per week, and completed within 12 days. Feasibility, DD, and abstinence measures were administered at every session and 2, 4, 8 and 12 weeks after the quit day. Cigarettes per day (cpd) were assessed weekly for 12 weeks. Treatment engagement and acceptability, DD, and total days abstinence were compared with analysis of variance. Perceived comparability with cessation medications was evaluated with chi-square analysis. Days to relapse were compared with Cox proportional hazard modeling. Participants (N = 15; 47% male, mean age = 48 years), smoked a mean of 12 cpd. No differences were found in willingness to engage in and complete treatment, acceptability of treatment and perceived comparability of treatment with cessation medications. The active (n = 7) group discounted $1000 less than the sham (n = 8) group (p = .02). No difference was found in days to relapse, but the sham group relapsed in half as many days as the active group [M = 15 (SD = 21) vs M = 33 (SD = 37) days; p = .43], and the active group reported more days abstinent than the sham group [M = 40 (SD = 34) vs M = 12 (SD = 14) days; p = .05]. Preliminary findings suggest that HF rTMS of the DLPFC as a treatment component in the treatment of tobacco dependence is practicable, feasible, and acceptable to smokers. Limited efficacy testing suggests that rTMS might improve tobacco dependence treatment outcomes. Larger studies are needed to examine efficacy.

Funding: This project was supported by grants from the National Cancer Institute (R21CA178813 and P20CA192993) and the National Institute on Drug Abuse (R25DA035161).

Corresponding Author: Ria Malhotra, Sophie Davis School of Biomedical Education/CUNY School of Medicine, rmalhot0000@citymail.cuny.edu

POS5-58
A COMPARISON OF PRECLINICAL PROFILES OF VARENICLINE AND NICOTINE: NO EVIDENCE FOR BIOLOGICAL PLAUSIBILITY OF NEUROPSYCHIATRIC ADVERSE EVENTS
Bart Ellenbroek, School of Psychology, Victoria University of Wellington, New Zealand

A boxed warning for a risk of neuro-psychiatric adverse events (NP AEs) was added to the label of the smoking cessation aid varenicline (Chantix®) in 2009. Since then results from clinical trials, meta-analyses and observational studies have been critical for the discussion whether the varenicline - NP AEs association is a causal or correlational relationship. Less attention has been paid to one of the key criteria for causality, biological plausibility, except for earlier speculations that varenicline’s effects at certain nAChR subtypes or on dopamine release could underlie NP AEs. However, it was not taken into account that nicotine should have different effects at these targets, since nicotine from NRT is considered to be safe without a risk for NP AEs. The goal of this study was to examine whether differences between the pharmacological profiles of varenicline and nicotine could provide a biological explanation that these effects are associated with NP AEs. Data from preclinical assays with relevance for predicting CNS effects were taken from the literature. These included pharmacological mechanisms known to be associated with NP AEs, i.e. binding profiles at CNS receptors and transporters, functional interactions with nAChR subtypes and effects on neurotransmitter release. In addition, data on effects of varenicline and nicotine in animal behavioral models used in drug discovery to detect improvements in CNS functioning were compared. Drug-induced impairment of animal behavior may reflect a risk for NP AEs, which can be mediated via known as well as via unknown pharmacological mechanisms. Normalization of data relative to control values allowed a meta-analysis type approach to detect differences between varenicline and nicotine in each assay. The results show that varenicline does not have a significantly different profile than nicotine across a wide variety of CNS assays and did thus not provide a pharmacological explanation for NP AEs. The absence of biological plausibility does not support a causal relationship between varenicline use and the risk of NP AEs, consistent with clinical trial and observational data.

Funding: No funding

Corresponding Author: Hans Rollema, PhD, Rollema Biomedical Consulting, hans.rollema@gmail.com

POS5-59
IDENTIFYING THINKING STYLES ABOUT NICOTINE CRAVINGS: A QUALITATIVE ANALYSIS
Joshua Magee1*, Amy McConnell1, Karina Del Valle2, Miami University, OH, USA, 1Washington University in St. Louis, MO, USA

INTRODUCTION: Nicotine cravings are nearly ubiquitous during quit attempts, but the frequency and intensity of cravings are inconsistent predictors of smoking relapse. Several recent transdiagnostic formulations accept the occurrence of cravings as nearly universal and not closely linked to relapse. Instead, they suggest that individuals’ thinking styles about cravings better predict relapse (Kavanagh et al., 2005; Nosen & Woody, 2014). Thus, interpreting a craving in harmful ways may enhance distress, accessibility of the craving, and risk of relapse, whereas ascribing innocuous meanings to the craving may be unlikely to alter the risk of relapse. This study sought to build upon past research by identifying a range of thinking styles about craving that may be linked to risk or protection from smoking relapse. METHODS: Participants were a community sample of currently smoking and recently quit adults (N=18, 67% Black, Mean age=46.2) who completed semi-structured individual qualitative interviews. Interviews explored participants’ most common, helpful, and unhelpful thinking styles about cravings, and queried the links between individuals’ thinking styles about cravings and their subsequent distress and smoking behavior. Interviews were transcribed, coded, and analyzed. RESULTS: Participants commonly reported interpreting cravings as conveying negative meanings about themselves, such as perceived weakness due to one’s inability to tolerate the craving. Many participants viewed cravings as independent entities, focusing on aspects such as cravings’ uncontrollability, or viewing cravings as adversaries acting against one’s wishes. Finally, participants described the consideration and use of strategies to manage their cravings, mentioning specific forms of thought suppression, distraction, and mindfulness defined in the broader literature on the control of unwanted thinking. CONCLUSION: This study identifies thinking styles about nicotine cravings that participants perceived as being linked
to their distress and smoking behavior. These data offer targets for measurement and modification that future work can test for effects on smoking relapse.

Funding: This research was supported by grant number K23DA037320 awarded to Joshua Magee from the National Institute on Drug Abuse.

Corresponding Author: Joshua Magee, PhD, Miami University, mageejc@miamioh.edu

POS5-60
BASELINE MEASUREMENTS OF CO AND PM2.5 LEVELS IN WATERPIPE VENUES IN NORTH CAROLINA BEFORE A NEW VENTILATION REQUIREMENT

Andrew Seidenberg1, Elizabeth Orlan1, Mark Travers2, Erin Sutfin1, 1University of North Carolina at Chapel Hill, NC, USA, 2Roswell Park Cancer Institute, NY, USA, 3Wake Forest School of Medicine, NC, USA

BACKGROUND: North Carolina’s (NC) statewide clean indoor air law permits indoor waterpipe smoking in establishments that do not offer alcohol or food. Following a case of carbon monoxide (CO) poisoning caused by a visit to a waterpipe venue, the Office of the State Fire Marshall issued new regulations for waterpipe venues that require the installation of air ventilation beginning January 1, 2016. The purpose of this study was to conduct baseline air monitoring in a sample of waterpipe venues. METHODS: Air monitoring (PM2.5 and CO) was conducted inside all identified waterpipe venues (n=8) in the Research Triangle Area of NC in September of 2015. A minimum of 30 minutes was spent inside each venue measuring air quality. In addition, monitoring was conducted outside each venue for approximately 5 minutes before entry and after exiting to establish outdoor background levels. RESULTS: Mean outdoor PM2.5 levels ranged from 1 to 40 μg/m3 (median= 7.4 μg/m3). Mean PM2.5 levels inside waterpipe venues ranged from 19 to 991 μg/m3 (median= 264 μg/m3) and were significantly higher than outdoor levels (Mann-Whitney z-statistic=-3.048; p<0.002). Mean CO levels outside of waterpipe venues ranged from 0 to 12 ppm (median=4 ppm). Mean indoor CO levels ranged from 2 ppm to 141 ppm (median=42 ppm), and were significantly higher than outdoor levels (Mann-Whitney z-statistic=-2.731; p=0.006). On average, PM2.5 and CO levels were 64 and 11-times greater inside waterpipe venues, respectively, compared to outside. Further, indoor CO levels were significantly correlated with indoor PM2.5 levels (r=0.92; p=0.0012). However, there were no significant correlations between CO or PM2.5 with mean number of waterpipe visits or daily hours. CONCLUSION: Unsafe levels of CO and PM2.5 were found in waterpipe venues at baseline. With the exception of one venue, all venues had PM2.5 levels exceeding the EPA’s 24-h ambient air quality standard (35 μg/m3), and had CO levels exceeding EPA’s 8-hour air quality standard (9 ppm). Follow-up monitoring will be conducted next year to assess the impact of the new ventilation requirement on air quality.

Funding: AS is supported by the UNC Lineberger Cancer Control Education Program (R25 CA57726). This study received no direct research funding.

Corresponding Author: Andrew Seidenberg, MPH, University of North Carolina at Chapel Hill, aseiiden@live.unc.edu

POS5-61
TEXT-MINING: CHARACTERIZING E-CIGARETTE MARKETING FROM SOCIAL MEDIA BRAND PAGE POSTS

Stephanie Clendenen, Galya Bigman, Anna Wilkinson, University of Texas School of Public Health, TX, USA

INTRODUCTION: E-cigarette advertisers are well aware that 90% of all young adults (ages 18-29) use social media. The presence of e-cigarette companies on social media has increased dramatically in recent years--so much so that in 2014, Oxford Dictionary’s word of the year was Vape. However, little is known about the nature and quality of e-cigarette advertising on social media most favored by young adults. This study utilized text-mining to characterize the nature of e-cigarette advertising and marketing messages from image-based social media brand pages, and to construct an algorithm for predicting e-cigarette brand from brand generated social media posts. METHODS: Data comprise public posts accompanied by an image from Facebook, Instagram, Twitter, Google, Metro, & NJoy e-cigarette brands from February 3, 2012 to April 16, 2015. Data were analyzed utilizing techniques for text-mining and feature extraction (e.g., tokenization) for use as regression predictors. RESULTS: A total of 5,022 brand-generated posts were analyzed. Blu e-cigarettes had the largest social media presence (65%), followed by Logic (16%), NJoy (12%) and Metro (7%). Though Blu had the greatest number of posts, their average post length was significantly smaller than all other brands (Blu M=10.66 words, SD=9.73; Logic M=14.08, SD=9.32; NJoy M=16.81, SD=9.93; Metro M=15.01, SD=13.87). Words most commonly used in posts differed by Brand (Most common words for Blu=beach, lounge, photobooth, sasquatch; NJoy=veape, vapelife, eliquid, pocket, Logic=ecigarettes, e cig, tastelog, ic, tobacco, Metro=ecigarette, cartridge, ecig, electronic). Utilizing text-tokenization, we successfully developed predictive algorithms for the Blu and NJoy brands, but not for Logic and Metro. DISCUSSION: Analyses revealed that the four e-cigarette brands used somewhat different types of messages to appeal to social media users. While terms used by both Blu and NJoy sold two different ‘lifestyles’, words used by Logic and Metro relied on more traditional references and product identification (e.g. ecig, cigarette, tobacco). This difference was apparent in the predictive algorithms developed, where words differentially predicting Blu and NJoy could be discerned, but there was little differentiation between Logic and Metro. Results will be discussed in the context of text-mining techniques, young adult social media and e-cigarette use.

Funding: Research reported in this presentation was supported by grant number [1 P50 CA180906] from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Corresponding Author: Elizabeth Vandewater, PhD, University of Texas School of Public Health, elizabeth.vandewater@uth.tmc.edu

POS5-64
COCHRANE TOBACCO GROUP TWENTIETH ANNIVERSARY PRIORITY SETTING

Jamie Hartmann-Boyle*, Nicola Lindson-Hawley, Cochrane Tobacco Addiction Group, University of Oxford, United Kingdom

BACKGROUND: 2016 marks the 20th anniversary of the Cochrane Tobacco Addiction Review Group (TAG), which produces systematic reviews to evaluate interventions to combat tobacco addiction. The group has been influential in shaping global tobacco control policy and research. To mark its 20th anniversary and to ensure its ongoing relevance to the field, TAG will carry out a priority setting exercise in 2016. This will be instrumental in setting the future direction of the group, particularly in light of multiple new intervention proposals and the current pace of change in population smoking habits. METHODS: The priority setting exercise will be multicomponent and involve public and stakeholder dialogue, drawing on the principles of the James Lind Alliance. A survey on questions that still need to be answered in tobacco control will be distributed to TAG stakeholders, including policy makers, healthcare providers, smokers, former smokers and researchers. Findings will then be fed back to survey respondents with participants asked to prioritise the areas identified, using a simplified Delphi process. This will be followed by a 1-day workshop at the University of Oxford, led by an independent expert facilitator, during which TAG’s portfolio will be reviewed in light of the previously identified questions and future priorities will be set - for new reviews, updating existing reviews, and considering ways in which the portfolio could better meet the needs of a broader user group. This session will summarize the work of the group and key findings from recent reviews, including e-cigarettes for smoking cessation and reduction. The priority setting exercise will then be introduced. The main focus of the session will be a structured discussion to inform the group’s work in the future. Audience opinion on next steps and priorities for the group will be solicited, and opportunities to be further involved in the group’s work will be presented. We anticipate this would be of particular use for interested international participants who may be unable to attend the UK workshop.

Funding: The Cochrane Tobacco Addiction Group are fully funded by the National Institute for Health Research (UK). The 2016 priority setting exercise in particular is funded by the National Institute for Health Research School for Primary Care Research.

Corresponding Author: Jamie Hartmann-Boyle, MA Hons, BA Hons, Cochrane Tobacco Addiction Group, jamie.hartmann-boyle@phc.ox.ac.uk
POS5-65
RESTRUCTURING REWARD IN NICOTINE ADDICTION: A PILOT FMRI STUDY OF MINDFULNESS-ORIENTED RECOVERY ENHANCEMENT

Brett Froeliger1, Amanda Mathew2, Christie Eichberg1, Patrick McConnell1, Matthew Carpenter1, Michael Saladin3, Eric Garland4, Medical University of South Carolina, SC, USA, 2Northwestern University Feinberg School of Medicine, IL, USA, 3University of Utah, UT, USA

Dual system models of addiction posit that chronic exposure to psychostimulant substances disrupts frontally mediated self-control and reorganizes striatal-motivational circuitry function around cue-elicited drug seeking and away from seeking natural rewards. Mindfulness-Oriented Recovery Enhancement (MORE) is grounded in such dual system models by integrating mindfulness training, cognitive reappraisal, and amplification of natural reward processing to disrupt the cycle of craving and maladaptive affect. The goal of this study was to test our model (Garland, Froeliger, et al. 2013) which posits that MORE restructures striatal-mediated reward processing around natural rewards, thereby reducing drug cue-reactivity and smoking behavior. Adult (49 yrs ± 12.2) nicotine dependent (FTND = 6.7 ± 1.7) smokers (cig/day [CPD] = 23.3 10.8 ±) participated in a pilot study of either MORE (10-weekly group –based sessions n=7) or a time-matched control group (n=6; CG). MORE sessions involved training in mindfulness, reappraisal, and responding for immediate auditory (music) or visual (video) sensory rewards, or enhanced FC to drug-cues and potentiated response during positive ER. Similarly, when seeding the task-based rACC conjunction functional ROI in a rsFC analysis, MORE was associated with stronger FC with the orbitofrontal cortex—which was correlated with the magnitude of smoking reduction and increases in positive affect. These findings suggest that MORE may help reduce smoking and restructure the focus of reward processing around non-drug related reinforcers. Findings will be discussed in the context of neuroscience models of mindfulness and addiction.

Funding: R01DA033459 [BF]; P30CA138313 [Hollings Cancer Center Pilot funds to BF]

Corresponding Author: Brett Froeliger, PhD, Medical University of South Carolina, froelige@musc.edu

POS5-66
ELECTRONIC CIGARETTE USE AND INDOOR AIR QUALITY IN A NATURAL SETTING

Eric Soule*, Sarah Maloney, Tony Spindle, Alyssa Rudy, Marzena Hiler, Caroline Cobb, Virginia Commonwealth University, VA, USA

BACKGROUND: Exposure to secondhand smoke (SHS) from combustible cigarettes is known to cause many diseases including cancer. Many municipalities have implemented policies to prevent non-smokers from being exposed to SHS from indoor cigarette use. However, fewer policies have been enacted to prevent non-electronic cigarettes (ECIG) users from secondhand ECIG aerosol exposure and limited research has examined the effect of ECIG use on indoor air quality. METHODS: Using two SidePak devices to measure indoor air quality, concentrations of fine particulate matter 2.5 μm aerodynamic diameter or smaller (PM2.5) were measured at a two day ECIG event held in a large room at a hotel. During 10 approximately 30-minute measurement sessions, PM2.5 concentrations were recorded in the event room the day before the event (n=2), during the two days when the event was ongoing (n=6), and the day after the event (n=2). PM2.5 concentrations were also measured at two hotel restaurants for control data (n=4). RESULTS: Between 59 and 86 active ECIG users were observed in the main event room (room volume=4023 m3) at six time points over the two days of the event. Median PM2.5 concentrations in the event room were 1.92-3.20 μg/m3 the day before the event started and increased to concentrations ranging from 311.68 μg/m3 (IQR: 253.44-411.84 μg/m3) to 818.88 μg/m3 (IQR: 760.64-975.04 μg/m3) during the event. The day after the event, median PM2.5 concentrations were 12.80-15.52 μg/m3. CONCLUSIONS: The PM2.5 concentrations measured in this study in a room of active ECIG users were higher than those previously reported in studies examining hookah and cigarette SHS. While this study does not provide insight into the harm potential of secondhand ECIG aerosol, it does indicate that indoor ECIG use affects indoor air quality. Given the impact of ECIG use on indoor air quality, regulatory bodies should consider policies that would limit indoor ECIG use in public spaces. Future studies should examine the harm potential of secondhand ECIG aerosol in natural settings including the impact of factors such as ECIG device type and liquid characteristics.

Funding: This research was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number P50DA036105 and the Center for Tobacco Products of the U.S. Food and Drug Administration. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration.

Corresponding Author: Eric Soule, PhD, MPH, Virginia Commonwealth University, eksoule@vcu.edu

POS5-67
A COMMUNITY INTERVENTION TO PROMOTE SMOKE-FREE MULTIUNIT HOUSING POLICIES

Andrea Gentzke*, Andrew Hyland*, Marc Kivimie,1 Marc Travers1, Roswell Park Cancer Institute, NY, USA, 2State University of New York at Buffalo, NY, USA

BACKGROUND: For many populations, the home is the primary source of secondhand smoke (SHS) exposure. This may be particularly true for multiunit housing (MUH) residents, as smoke can move throughout the building, entering spaces where it is otherwise prohibited. METHODS: We implemented an educational intervention between Jan. 2013 and Oct.2014 to promote smoke-free MUH policies. Activities included presentations to residents, landlords and property management associations, advertisements in newspapers, postcards, and a presence at other community-based events. At baseline, 1,414 respondents were interviewed providing consent to be re-contacted. At follow-up, 755 (53%) were successfully interviewed across 6 communities. Binary logistic regression within generalized linear mixed modeling assessed difference over time in each outcome by intervention status and other demographic characteristics. RESULTS: Among respondents present at both time points, we observed an increase in voluntary smoke-free home rules (80.5% to 85.8%), building smoking rules (“any” rules: 40.9% to 51.5%; smoke-free buildings: 25.4% to 36.0%), and preferences toward smoke-free policies (58.3% to 68.7%). A decrease in self-reported SHS incursions (42.8% to 37.0%) was also observed. Although the prevalence of each outcome was higher among respondents in intervention communities at both time points, the magnitude of change between baseline and follow-up was greater in control communities. However, after adjusting for demographic differences, the likelihood of change in each outcome over time was not statistically contingent on intervention status. CONCLUSIONS: Positive changes in attitudes and protection from SHS exposure were observed between baseline and follow-up in both intervention and control communities. Results suggested that our intervention communities may have been closer to a saturation point for smoke-free air policy adoption, and that temporal trends may have outweighed the effect of the educational activities. Therefore, in addition to motivating new policy adoption, educational campaigns should focus on compliance with existing policies to ensure protection from SHS exposure for MUH populations with regulations already in place.

Funding: 5R01CA151953-03 R25CA113951

Corresponding Author: Andrea Gentzke, MS, Roswell Park Cancer Institute; State University of New York at Buffalo, andrea.licht@rosswellpark.org

POS5-68
POSSIBLE SEX DIFFERENCES IN THE PATTERN OF SENSORY REINFORCERS ENHANCED BY NICOTINE

Kenneth Perkins*, Joshua Karelitz, University of Pittsburgh, PA, USA

Along with its primary and secondary reinforcing effects, nicotine acutely enhances reinforcement from rewards not directly related to nicotine, particularly those consisting of stimuli that are “sensory” in nature. This study compared reinforced responding for immediate auditory (music) or visual (video) sensory rewards, or for no reward (control), to nicotine via ad lib smoking versus nicotine (overnight abstinence). (We have repeatedly shown these effects from smoking are due to nicotine intake per se.) Our primary aim was to confirm nicotine’s comparable reinforcement enhancing effects in both types of sensory rewards, given their common availability in the natural environment, particularly while smoking. In
a within-subjects design, 48 dependent adult smokers (21 M, 27 F) participated in two virtually identical experimental sessions, following overnight smoking abstinence (>12 hrs; CO:<10 ppm) or no abstinence (i.e. ad lib smoking). Each session involved responding on an operant computer task for small units of the designated rewards. Each reward was made available singly on separate task trials using the same progressive ratio (PR50%) schedule of reinforcement, while the no reward trial controlled for nonspecific responding. Preferred music and video rewards were each selected by participants to ensure their equal initial reinforcing efficacy. Repeated-measures ANOVA confirmed the hypothesized interaction of smoking x reward type, F(2,92)=4.30, p<.02, as the reinforcing effects of music and video rewards (both p<.005), but not the no reward control (as expected), were significantly greater during smoking vs. abstinence. No significant effects on reinforced responding were seen for sex, for sex x smoking, both F(1,46)=1.01, or for sex x reward, F(2,92)=1.60, p<.20, but (unexpectedly) the sex x smoking x reward interaction was significant, F(2,92)=4.54, p<.02. In follow-ups, compared to the no reward trial, smoking increased reinforced responding for music reward more in men than in women, while smoking increased responding for video reward more in men than women. F(1,46)=7.36, p<.01. Consistent with previous research, these effects on responding due to smoking were not related to differences in withdrawal between the abstinence and smoking sessions. These results confirm the reinforcement enhancing effects of both auditory and visual rewards from nicotine via smoking abstinence with the notion that enhanced sensory reinforcement may help contribute to the persistence of smoking behavior. However, our findings also suggest the specific pattern of sensory reinforcers enhanced by nicotine may differ between men and women.

Funding: Supported by grant DA035774 from NIDA.

Corresponding Author: Kenneth Perkins, PhD, University of Pittsburgh, perkinska@upmc.edu

POS5-69
THE EFFECT OF REPEATED ANTI-TOBACCO ADS ON REQUESTS FOR SMOKING CESSATION SERVICES IN NEW YORK CITY, 2006-2014

John Jasek1, Shannon Farley2, Stephanie Coffey2, New York City Department of Health and Mental Hygiene, NY, USA, 1University of Maryland, MD, USA

BACKGROUND: Anti-tobacco TV media have been shown effective in increasing quit attempts and driving smokers to seek support such as quit line counseling services and nicotine replacement therapy. Given the associated cost of producing and airing new TV ads, however, one important yet understudied question is whether ad impact persists after repeat airings. That is, is it necessary to produce new content or do previously developed ads continue to perform well over time? We sought to investigate this question using historical data on New York City-produced ad campaigns and requests for cessation services for the period 2006-2014. METHODS: We conducted a time series analysis comparing intervention periods (ad airing) to baseline periods (no ad airing). The primary outcome was daily cessation contacts comprising NYC resident calls to the New York State Smokers Quitline, cessation-based calls to NYC’s 311 information line, and web-based cessation enrollments. Key explanatory variables included: daily Gross Ratings Points (an industry measure of ad exposure); TV ad iteration (dummy variable); earned media (newspaper coverage linked to ads); and whether a time-limited nicotine replacement therapy giveaway was occurring (as this tends to increase demand). We assessed diminishing ad impact for two repeated campaigns: one testimonial ad (“Marie,” 4 airings) and one portraying graphic health consequences (“Suffering,” 3 airings). Cessation contacts were log transformed to reduce variation and model diagnostics were run to determine the level of autocorrelation and partial autocorrelation with suggested lag terms added: AR(1)(7)(14). All analyses were conducted in SAS (PROC ARIMA). RESULTS: In the adjusted model, each airing of the Marie campaign increased cessation contacts relative to baseline (all p<.001). The impact of the Suffering ad was significant relative to baseline for airings 1 (p<.0001) and 2 (p<.0001) but not for airing 3 (p=.8976). DISCUSSION: Ads that have aired previously can still have productive effects on driving cessation contacts, though this may vary by ad. Given the inherent costs of ad development, further research is needed to identify ad typologies that sustain interest.

Funding: No Funding.

Corresponding Author: John Jasek, MPA, New York City Department of Health and Mental Hygiene, jasek@health.nyc.gov

POS5-70
CHARACTERIZATION OF PUFF TOPOGRAPHY DURING 8-HOUR AD LIBITUM USE OF MARKTEN E-VAPOR PRODUCTS IN ADULT CONVENTIONAL CIGARETTE SMOKERS, CIGARETTE AND E-VAPOR DUAL USERS, AND EXCLUSIVE E-VAPOR USERS

Jeffery Edmiston1, Andrea Vansnickel, Qiwei Liang, Jianmin Liu, Jacob Wright1, Yuxi Zhao1, Mohamadi Sarkar1, Altria Client Services LLC, VA, USA, 1Eurofins Lancaster Laboratories PSS, VA, USA

INTRODUCTION: Nu Mark LLC currently markets the MarkTen® e-vapor device. Each device consists of a battery and cartridges that contain propylene glycol, glycerol, flavors and 2.5% by weight USP grade tobacco derived nicotine. The purpose of this study was to characterize MarkTen® e-vapor puff topography in adult conventional cigarette smokers [CS], adult cigarette and e-vapor dual users [DU] and adult exclusive e-vapor users [EV]. METHODS: Generally healthy CS (n=14 participants using Classic and n=16 using Menthol), DU (n=13 Classic and n=17 Menthol) and EV (n=14 Classic and n=16 Menthol) were enrolled in the study (53% male). Each participant used their preferred flavor with a validated SODIM Smooking Puff Analyzer-Mobile device for 8 hours in a confined clinical setting. Puff topography was recorded with the SPA-M and analyzed using SODIM SodAfc software. RESULTS: Overall, the mean number of puffs for the 8 hours was 141.4 (+/SD 96.12) with a mean per puff volume of 58.77 ml (+/SD 23.63), per puff duration of 3.13 sec. (+/SD 1.44) and flow rate of 20.5 ml/sec (+/SD 5.75). The ANOVA LS Mean estimates and 95% confidence interval for each of the subpopulations were as follows: total puff counts for CS = 123.15 (88.40, 157.89), DU = 153.93 (101.01, 217.05) and EV = 167.06 (132.34, 201.82); mean per puff volume for CS = 50.73 ml (42.15, 58.50), DU = 55.92 ml (47.73, 64.11) and EV = 69.92 ml (61.75, 78.10); mean per puff duration for CS = 2.37 sec. (1.92, 2.81), DU = 2.86 sec. (2.41, 3.30), and EV = 4.18 sec. (3.74, 4.63); mean flow rates for CS = 22.72 ml/sec (20.81, 24.64), DU = 21.38 ml/sec (19.46, 23.30), and EV = 17.20 ml/sec (15.28, 18.11). No statistically significant differences were observed between subjects using Menthol or Classic flavors. CONCLUSIONS: These results suggest that, on average, EV used MarkTen® e-vapor devices differently than CS or DU, with EV taking longer slower puffs with larger volumes. Use of different MarkTen® e-vapor product flavors did not impact any of the puff topography measurements. We confirm the observations reported in a pilot study where EV demonstrated similar differences compared to CS.

Funding: This project was funded by Altria Client Services LLC.

Corresponding Author: Jeffery Edmiston, PhD, Altria Client Services LLC, jeffery.s.edmiston@altria.com

POS5-71
DIFFERENTIAL SMOKING MOTIVATION BETWEEN CIGARETTE USERS WITH AND WITHOUT CHILDREN

Teresa Leyro1, Sharon Hall1, Rutgers University, NJ, USA, 1University of California-San Francisco, CA, USA

Parental cigarette smoking is associated with a variety of negative effects on children, including deleterious health consequences and an increased likelihood of future nicotine use. Current estimates show that between 15-26% of parents are smokers, and roughly 50% of maternal smokers relapse post-partum. Characterizing this group may inform targeted interventions for smokers with children that help them attain and maintain abstinence. To date, no study has examined whether smokers with and without children differ on any key characteristics. The present exploratory investigation examined whether smokers with children differed from smokers without children in their motivation to smoke, distress tolerance (DT), and anxiety sensitivity (AS); constructs were chosen due to their relation with poorer smoking related and psychiatric outcomes. Participants (N=74; 51 without children, 23 with children) were daily treatment seeking smokers (Age M=28.2, SD=11.6, 58% male) who completed self-report questionnaires including the Reasons for Smoking Scale, the Wisconsin Inventory of Smoking Dependence Motives (WISDM), Anxiety Sensitivity Index, and Distress Intolerance Scale. A MANCOVA covarying for age, gender, daily smoking consumption, dependence, and years smoking examined the relation between parenting status and self-reported smoking motives (AS and DT). Findings revealed that parents showed stronger overall motivation to smoke (e.g. WISDM Total: (F(6, 67) = 5.65, p < .001). Examination of specific motivational domains revealed parents report greater habitual, additive, and negative affect alleviation (all ps < .002) motives, while non-parents reported
greater relaxation, stimulation, and sensorimotor (all ps < 0.012) motives. No differences were found between parents and non-parents in DT (F (6, 67) = 1.929, p = 0.089) or AS (F (6, 67) = 0.859, p = 0.545). Findings suggest parental smokers have a greater overall motivation to smoke and diverge from non-parents on key reasons for smoking. This study provides initial support for investigation of parental smoking patterns, and may inform how to better utilize cessation techniques that target the unique smoking motivations of parental smokers.

Funding: No Funding

Corresponding Author: Mark Versella, MS, Rutgers University, markversella@gmail.com

POS5-72

ADOLESCENT PERCEPTIONS AND BEHAVIORAL INTENTIONS REGARDING CIGARETTE SMOKING: TOBACCO CONTROL GAINS AND GAPS 2001 TO 2015

Karma Mc Kelvey1, Bonnie Halpern-Felsher1, University of California San Francisco, CA, USA. 2Stanford University, CA, USA

BACKGROUND: Perceived risks and benefits of and intentions to initiate smoking predict smoking behavior among adolescents. Over the past 15 years, tobacco control efforts have attempted to change adolescent perceptions and intentions regarding cigarette smoking. Here, we compare data from 2001-2002 and 2015 to examine changes in youth perceptions, social norms, and intentions to use cigarettes over time. METHODS: In 2001-02 (n=385) and 2015 (n=282), 9th graders recruited from schools in the San Francisco Bay Area completed surveys with identical measures of cigarette risk and benefit perceptions, social norms, and intentions to use. RESULTS: On average, teens today (compared to 01/02) believe fewer of their peers have smoked (34% vs 45%, p < 0.00) and that their risk of getting in trouble (86% vs 78%, p < 0.00); having a heart attack (76% vs 69%, p < 0.01); and developing lung cancer (85% vs 79%, p < 0.00) from using cigarettes is greater. Mean expectancy of experiencing benefits from smoking (feeling relaxed: 37% vs 42%; p = 0.05; looking more mature: 17% vs 28%; p < 0.00) and being able to quit if they wanted (35% vs 43%; p < 0.01) decreased over the 14 years. Finally, 97% of the 2015 teens said it was ‘very unlikely’ they would try smoking in the next 6 months versus 78% in 01/02 (p < 0.00). DISCUSSION: Generally, adolescents’ perceptions of cigarette smoking social acceptability, short-term benefits, and behavioral intentions to initiate decreased and their perceived risk for long-term health problems increased over the 14 year period. These changes are in the direction intended by tobacco control advocates and health educators. Still, while adolescents both then and now believed there was an 80% chance of becoming addicted to cigarettes, they simultaneously reported a 35% chance that they could quit if they wanted. These disincentive beliefs should be highlighted in tobacco control messaging and education efforts. Gains have been made yet room for improvement remains, especially given the rapidly changing landscape including the wide adoption of e-cigarettes among adolescents, which threatens to re-normalize smoking and unravel decades’ worth of progress.

Funding: Research reported in this paper was supported by grant number 9KT-0072 from the Tobacco Related Disease Research Program and from grant number 1P50CA180890 from the National Cancer Institute and Food and Drug Administration Center for Tobacco Products. The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration. Dr. Mc Kelvey is supported by R25 CA113710.

Corresponding Author: Karma Mc Kelvey, PhD, MPH, University of California San Francisco, Karma.McKelvey@ucsf.edu

POS5-73

THE IMPACT OF FRAMING ON VISUAL ATTENTION TO CIGARETTE PACKAGE HEALTH WARNINGS

Olivia Maynard1, Benjamin Tolf, Harry Gove1, Manmohi Dale1, Ute Leonards1, Marcus Mumolo1. 1University of Bristol, United Kingdom, 2Medical University of South Carolina, SC, USA

BACKGROUND: Using eye-tracking technology, we have shown that smokers actively avoid cigarette package health warnings. Given the importance of warnings in communicating risk, research should focus on developing methods of increasing attention to warnings. Based on the tenets of Prospect Theory, gain-frame messages, which communicate the benefits of quitting smoking, may be more effective at increasing attention to warnings as compared to loss-frame messages, which communicate the negative consequences of continuing to smoke. METHODS: Non-smokers (n = 37) and daily smokers (n = 38) attended a single eye-tracking session where they viewed loss- and gain-frame health warnings on cigarette packages. The number of fixations to health warnings as compared with branding were counted as a primary outcome measure. RESULTS: Overall, participants made more fixations on branding as compared with health warnings, with bias scores of -10.8 (95% CI = -12.3 to -9.20) to loss-frame and -9.2 (95% CI = -11.00 to -7.39) to gain-frame warnings. This suggests relatively greater attention to gain- as compared with loss-frame warnings, for which there was weak statistical evidence (p = 0.098). There was little evidence for a main effect of smoking status (p = 0.197) or a framing × smoking status interaction (p = 0.211). However, analysis of the location of the first fixation indicated a framing × smoking status interaction (p = 0.050), such that non-smokers made their first fixation equally to loss- and gain-frame messages, whilst daily smokers made more first fixations to gain- than loss-frame messages. CONCLUSION: We find only weak evidence of difference in the number of fixations to gain- vs loss-frame warnings and no evidence of a difference by smoking group. However, analysis of the location of the first saccade suggests that gain-frame messages preferentially attract smokers’ attention, at least briefly. Future research should investigate methods of maintaining smokers’ gaze on health warnings using larger sample sizes and also assess whether this leads to behaviour change.

Funding: Support from the Medical Research Council (MC_UU_12013/6) and Cancer Research UK Tobacco Advisory Group (C51287/A19332) is also gratefully acknowledged.

Corresponding Author: Olivia Maynard, PhD, University of Bristol, olivia.maynard@bristol.ac.uk

POS5-74

TRENDS IN SERIOUS QUIT ATTEMPTS IN THE UNITED STATES, 2009-2014

Mark Sembower, Saul Shiftman, Pinney Associates, Inc., PA, USA

Efforts to reduce cigarette smoking’s toll remain public health and public policy priorities. Promoting quitting among current smokers has the greatest near-term effect on morbidity and mortality, as current smokers are subject to near-term harms. The public health benefits of smoking cessation are the product of two factors: (1) the proportion of smokers making a quit attempt and (2) their success rate, with the number of quitters being a product of the two. As a result, public health programs have focused both on boosting quit attempts and improving their success rate. In this abstract, we examine trends in the proportion of smokers making serious quit attempts over the most recent five years. Analyses were conducted using the 2009-2014 National Health Interview Survey (NHIS) data. The samples consisted of 1,157 (2010) to 36,697 (2014) respondents per year, and were weighted to reflect the US adult population. A serious quit attempt was defined following CDC’s 2011 definition in their analysis of the 2001-2010 NHIS data. Respondents were deemed to have made a serious quit attempt if they were either current smokers who reported that they stopped smoking for more than one day in the past 12 months because they were trying to quit smoking, or reported being former smokers who quit in the past year. Analyses of trends from 2009-2014 showed an overall linear increase (linear trend p<0.04), but also a quadratic trend (p<0.02), reflecting a period of “flat” trends in quitting, followed by an upwards trend. Specifically, the proportion of smokers making a serious quit attempt did not change from 2009-2011 (linear trend p>0.38), but increased significantly beginning in 2011 (linear trend 2011-2014, p<0.01. The meaning of these trends is discussed in the context of factors such as public awareness campaigns (TIPS) and the increased use of e-cigarettes.

Funding: In the past three years, Pinney Associates has provided services for a range of companies, including GlaxoSmithKline Consumer Healthcare on their stop-smoking medications (Nicorette and Nicoderm CQ in the U.S.), for NJOY, Inc., a developer and marketer of electronic nicotine delivery systems, and since February 2015, for Reynolds American, Inc. (RAI) on tobacco harm minimization. Our work for RAI focuses on products, regulations, and policies related to smoking cessation and harm minimization; we do not work on combustible conventional cigarettes. Of our authors, JGG, SS and GC hold patents related to tobacco smoking cessation and harm minimization; we do not work on combustible conventional cigarettes. Some of us (JGG, SS) also are members in a limited liability corporation that owns intellectual property for an as-yet not-commercialized nicotine gum, an option for which has been acquired by Niconovum, a subsidiary of RAI. This research was funded by RAI but the funder had no role in the conceptualization, conduct, or presentation of the work.

Corresponding Author: Joe Gitchell, Pinney Associates, Inc., jgitchell@pinneyassociates.com
POS5-75  NEUROPSYCHIATRIC SAFETY AND EFFICACY OF VARENICLINE AND BUPROPION VS. NICOTINE PATCH AND PLACEBO IN THE PSYCHIATRIC COHORT OF THE EAGLES TRIAL

A. Evins1, Neal Benowitz2, Robert West3, Cristina Russo4, Thomas McRae5, David Lawrence6, Lisa St. Aubin7, John Ascher8, Alok Krishen9, Robert Anthenelli10, Hazel Doughty11, Christopher Stone12, Marcus Munafo13, University of Bristol, United Kingdom, 1Pfizer, NY, USA, 2GSK, NC, USA, 3AREXEL International, NC, USA, 4University of California, San Diego, CA, USA

Smoking prevalence rates are elevated in individuals with psychiatric disorders compared with those in the general population. Comprehensive assessment of neuropsychiatric (NPS) adverse events (AEs) of smoking cessation pharmacotherapies in this population is needed to clarify their benefit-risk ratio and address underutilization. We conducted a randomized, double-blind, placebo- and active (nicotine patch [NRT]) controlled trial of 12 weeks of varenicline or bupropion in smokers with a psychiatric diagnosis for either a lifetime psychiatric disorder (n=390) and with a current or lifetime psychiatric disorder (n=390 with a psychotic disorder, 2910 with a unipolar or bipolar mood disorder, 792 with an anxiety disorder and 24 with borderline personality disorder). The pre-specified primary composite NPS endpoint contained 16 components, including several AEs of depression and anxiety and moderate to severe AEs of psychosis and suicidality. The main efficacy endpoints were biochemically-confirmed continuous abstinence rates (CARs) for weeks 9–12. We present post hoc analyses evaluating the safety and efficacy of varenicline and bupropion compared with NRT and placebo, within psychiatric diagnostic subgroups. Among those with primary psychotic, mood, and anxiety disorders, there was no effect of treatment (p>0.05) and no treatment by diagnosis interaction (p=0.94) in the generalized linear regression analysis on the composite measure of moderate to severe NPS AEs. There was a treatment effect on CAR for weeks 9–12 (p=0.0001) but no treatment by psychiatric diagnosis interaction (p=0.24). The CARs for weeks 9–12 were highest in the varenicline group, ranging between 23% and 30% across the diagnostic conditions for both diagnostic groups and NRT by bupropion in the range of 11–22% and 4–13% for placebo. Neither varenicline nor bupropion significantly increased NPS AEs relative to NRT or placebo in the psychiatric cohort as a whole or within psychotic, mood, or anxiety disorder diagnostic subgroups. Bupropion and NRT were more efficacious than placebo, while varenicline was more efficacious than bupropion, NRT and placebo in helping smokers with psychiatric illness achieve abstinence, regardless of diagnostic group.

Funding: EAGLES was sponsored by Pfizer Inc. and GSK.

Corresponding Author: A. Evins, MD, MPH, Massachusetts General Hospital and Harvard Medical School, a_eden_evins@hms.harvard.edu

POS5-76  A NOVEL SMARTWATCH-BASED SYSTEM FOR PASSIVE DETECTION OF CIGARETTE SMOKING

Hazel Doughty1, Christopher Stone, Marcus Munafó, University of Bristol, United Kingdom

We present a new system for passive detection of cigarette smoking. The system uses the motion sensors in a commercially available smartwatch to detect the signature hand movements of cigarette smoking. A three-stage process is employed. First, the system extracts motion features from the raw motion data. An example of a motion feature is the speed at which the hand is raised to the mouth. The system then looks for collections of motion features characteristic of a puff of a cigarette. Finally, it identifies particular patterns of puffing typical of cigarette smoking. We report the results of initial pilot testing, which indicate the system achieves high levels of performance, with an accuracy of puff detection of 83%, and an accuracy of smoking detection of 100%. The system achieves these high levels of accuracy using only motion data from an accelerometer and gyroscope. Limiting the sensors used has the benefits of reducing power consumption, increasing the range of smartwatches that can support the system, and eliminating the user burden associated with more specialised on-body sensors. In addition to providing accurate, bias free measures of smoking behaviour, the system also enables precision smoking prevention strategies, allowing smoking cessation and relapse prevention interventions to be delivered to individuals as they smoke.

Funding: This project was funded by the Medical Research Council, UK and the University of Bristol (grants MC_UU_12013/6 and MC_UU_12013/7).

Corresponding Author: Andrew Skinner, PhD, University of Bristol, andy.skinner@bristol.ac.uk

POS5-77  USE OF INVESTIGATIONAL TOBACCO PRODUCTS IN CLINICAL STUDIES

Priscilla Callahan-Lyon*, Food and Drug Administration Center for Tobacco Products, MD, USA

Section 910(g) of the Tobacco Control Act allows for the Secretary to exempt tobacco products intended for investigational use from the provisions of Chapter IX of the Food, Drug, and Cosmetic Act under such conditions as the Secretary may by regulation prescribe. Legally marketed tobacco products which will be used in research with no modifications made to the product do not need an exemption from the provisions of Chapter IX. However, FDA can regulate the investigational use of other tobacco products including a legally marketed product that is modified. Currently FDA has not published regulations governing use of investigational tobacco products. An Investigational Tobacco Product is a tobacco product that is intended for investigational use and is 1) a new or modified tobacco product that is not legally marketed or 2) a tobacco product that is required to comply with a tobacco product standard and that does not conform in all respects to the applicable tobacco product standard. In September, 2015, FDA published “Use of Investigational Tobacco Products; Draft Guidance for Industry and Investigators.” The primary focus of FDA’s assessment is human subject protection. FDA does not review protocols that do not involve actual tobacco product use by humans. Appendix A of the guidance is a form FDA created to assist sponsors in submitting information. Currently, use of the form is voluntary though using the form will help ensure that sponsors provide complete information for FDA’s consideration, processing, and review. The poster will provide more details about the form and the information FDA needs to complete assessment of a request to use an Investigational Tobacco Product.

Funding: No Funding

Corresponding Author: Priscilla Callahan-Lyon, MD, FDA Center for Tobacco Products, priscilla.callahan-lyon@fda.hhs.gov

POS5-78  ACUTE EFFECTS OF A LOOSE-LEAF TOBACCO VAPORIZER: PLASMA NICOTINE DELIVERY AND ABSTINENCE SYMPTOM SUPPRESSION

Alexa Lopez*, Sarah Maloney, Hannah Mayberry, Thokozeni Lipato, Alison Brelend, Thomas Eissenberg, Virginia Commonwealth University, VA, USA

The number of novel tobacco products in the U.S. market is rising and few are regulated federally. Some are advertised as “heat, not burn” (HnB) tobacco and little is known about their effects. This study’s purpose is to examine the acute effects of a HnB product and to compare those effects to an electronic cigarette and a traditional combustible cigarette. In this ongoing study, 10 cigarette smokers (8 male; 16.1 cigs/day) participated in three sessions following 12-hr abstinence in which they immediately after bout 1 was 12.9 (8.1) ng/ml for Hnb and 8.9 (9.1) ng/ml for ECIG, significantly lower than the Ob mean of 9.0 (9.1). under Brief Factor 1: scale of 0-30), the mean after bout 1 was 16.4 (10.4) for Hnb and 18.9 (12.5) for ECIG, significantly higher than the Ob mean of 9.0 (9.1). Under these puffing conditions, the Hnb and ECIG reported here delivered less nicotine than OB tobacco cigarettes. Neither the Hnb nor the ECIG suppress tobacco abstinence symptoms effectively, though additional measures await analysis. These findings are critical to empirically-based regulation of these products that may have both promise and peril for both individual and public health.
Funding: Research reported in this publication was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Number P50DA036105 and the Center for Tobacco Products of the U.S. Food and Drug Administration. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration.

Corresponding Author: Alexa Lopez, PhD, Virginia Commonwealth University, aalopez@vcu.edu

**POS5-79**
A PHASE 1 SINGLE- AND MULTIPLE-RISING DOSE STUDY OF THE SAFETY & PK OF EMB-001, WITH EXPLORATORY EFFICACY MEASURES IN TOBACCO USE DISORDER

Michael Detke*,1, Carol Gloff*, Gary Connor1, Julie Straub1, Ann Robbins1, Doug Feltnere1, Nicholas Goeders3, Emberra, MA, USA, Emberra, IN, USA, Emberra, MA, USA, Emberra, IL, USA, Emberra and LSU Health Sciences Center, LA, USA

BACKGROUND: EMB-001 is a combination of two drugs: metyrapone (MET), a cortisol synthesis inhibitor, and oxazepam (OX), a benzodiazepine. EMB-001’s mechanism targets the stress response to help maintain abstinence in the face of stressors and related triggers. EMB-001 reduced nicotine self-administration in rats and, at the highest dose tested, did so to a greater degree than did dexamethasone (Chantix®). METHODS: This was a single- and multiple-rising dose study. Healthy volunteers who smoked at least 10 cigarettes/day for at least a year were enrolled. They were not seeking to quit smoking. Each received a single am dose on Day 1, BID dosing on Days 3-9 and a single am dose on Day 10. Three sequential dose cohorts of 8 subjects (6 drug, 2 placebo) received the following doses of MET and OX, respectively: 270 and 12 mg; 540 and 24 mg; and 720 and 24 mg. Primary outcomes were safety and PK. Exploratory outcomes included cigarettes smoked; breath carbon monoxide, and the Smoking Urges Questionnaire and Minnesota Nicotine Withdrawal Symptoms scale (assessed on day 9 after a 12-hr enforced period of smoking abstinence). RESULTS: The most frequent adverse event was somnolence. Most AEs were mild; all were mild or moderate. There were no SAEs and no discontinuations due to AEs. The most frequent adverse event was somnolence. There were numerical changes that favored EMB-001 on both the Smoking Urges Questionnaire and Minnesota Nicotine Withdrawal Symptoms scale (assessed on day 9 after a 12-hr enforced period of smoking abstinence). CONCLUSIONS: This study used a randomized controlled trial of a self-help smoking relapse prevention intervention (ISRCTN 36980856). OBJECTIVES: Secondary analysis of qualitative data was undertaken to analyse narratives of smoking lapse and relapse situations. The aim was to understand the unique and complex patient experiences of smoking relapse in order to guide the development of future interventions. METHODS: A qualitative grounded theory study. Participants (N=44) were purposefully sampled from the total trial sample of 1,407. Analysis involved in-depth inductive coding of all transcripts until theoretical saturation was reached. RESULTS: We found a multitude of self-reported reasons for smoking relapse, across a wide variety of social situations often associated with previous smoking behaviour. Lapse triggers included social situations, social groups, environmental cues, and associating smoking with stress relief or regaining positive feelings. These findings suggest that smoking relapse is experienced as a complex psychosocial process rather than a discreet event. We employ the concept of a ‘recovered social identity’ (regaining a sense of one’s self as a ‘smoker’) as having potential useful explanatory utility in understanding the subjective experience of smoking relapse. CONCLUSION: Understanding individual experiences of smoking relapse in terms of attempting to recover a sense of social identity positively associated with smoking may assist in the development of future smoking relapse prevention interventions, for example by emphasizing motivational messages that promote and support the new non-smoker identity. IMPLICATIONS FOR PRACTICE: Relapse prevention interventions need to incorporate the concept of social identity and assess ways in which individuals may seek to redefine their sense of identity to move from ‘smoker’ to ‘non-smoker’ in order to guard against relapse to smoking.

Funding: No funding

Corresponding Author: Caitlin Notley, PhD, University of East Anglia, c.notley@uea.ac.uk

**POS5-80**
CONCEPTUALISING SMOKING RELAPSE AS RECOVERED SOCIAL IDENTITY: SECONDARY ANALYSIS OF UK QUALITATIVE DATA FROM A TRIAL OF SMOKING RELAPSE PREVENTION

Caitlin Notley*,1, Annie Blyth1, Vivienne Maskrey1, Richard Holland1, Thomas Brandon1, Fujan Song1, *University of East Anglia, United Kingdom,  †Moffitt Cancer Center, Florida, FL, USA

BACKGROUND: UK Stop Smoking Services are effective at assisting smokers to quit smoking. However, relapse rates are high, and there are currently no effective relapse-prevention interventions shown to significantly reduce relapse rates in the UK population. This qualitative study was embedded in a randomised controlled trial of a self-help smoking relapse prevention intervention (ISRCTN 36980856). OBJECTIVES: Secondary analysis of qualitative data was undertaken to analyse narratives of smoking lapse and relapse situations. The aim was to understand the unique and complex patient experiences of smoking relapse in order to guide the development of future interventions. METHODS: A qualitative grounded theory study. Participants (N=44) were purposefully sampled from the

**POS5-81**
BEYOND SELF REPORT: COMPARING MEASURES OF EXPOSURE TO TRUTH CAMPAIGN ONLINE ADS AND ASSOCIATIONS WITH BRAND AWARENESS

Jennifer Cantrell*, Vinu Ilakkuvan, Elizabeth Hair, Jessica Rath, Donna Vallone, Truth Initiative, DC, USA

INTRODUCTION: Advances in online tracking technology enable exposure to online advertising to be measured objectively, instead of relying solely on self-report. This study aims to assess the associations between objective and self-reported exposure to online ads from the truth® youth anti-smoking campaign with awareness of the truth® brand. METHODS: A longitudinal cohort of 15-21 year olds is being surveyed online approximately every six months to evaluate truth®, and has consented to have cookies placed on their computer to objectively track exposure to online truth® ads. This analysis includes all respondents who had cookies placed on a personal device on which they spend most of their time online (n=2,171). The data captures online truth® ad exposure from approximately July 2014 to March 2015. Multivariate models examined the relationship between online truth® ad exposure (both objective and self-reported) and self-reported brand awareness. RESULTS: Overall, 14.37% of the sample had one or more exposures to truth® online ads according to the objective tracking and 50.76% of the sample self-reported exposure to truth® online ads. The odds of being aware of the truth® brand were 1.90 times higher (p=0.001) for those with objective exposure and 6.87 times higher (p<0.001) for those with self-reported exposure. In a model with both objective and self-reported exposure as predictors, those with objective exposure had 1.77 times higher odds (p=0.003) of brand awareness, and those with self-reported exposure had 6.79 times higher odds (p<0.001). CONCLUSIONS: Findings suggest that objective and self-reported online ad exposure are distinct constructs. Self-reported truth® online ad exposure is more strongly associated with self-reported brand awareness than objective exposure. However, in a multivariate model including both objective and self-reported exposure as independent variables, both remain significantly associated with brand awareness. Further research is needed to understand how objective and self-reported online ad exposure differ and the effect each may have on brand awareness.

Funding: This work was funded by Truth Initiative (formerly American Legacy Foundation).

Corresponding Author: Jennifer Cantrell, DrPH, MPA, Truth Initiative, jcantrell@truthinitiative.org
POS5-82

EFFECTS OF E-CIGARETTE LIQUID FLAVORS AND MODIFIED RISK MESSAGES ON MEASURES OF ABUSE LIABILITY

Andrew Barnes¹, Caroline Cobb², Hannah Rumsey², Rebecca Lester², Rose Bono³, Thomas Eissenberg⁴, Virginia Commonwealth University School of Medicine, USA, VA, Virginia Commonwealth University, VA, USA

While United States adult smoking prevalence stagnates, electronic cigarettes (ECs) gain popularity. Evidence is needed to inform the regulation of EC liquid flavors and modified risk descriptors suggesting lower harm potential. Two studies examine how abuse liability (potential for abuse) of ECs varies by EC liquid flavors and the presence of modified risk messages and compared to own brand combustible tobacco cigarette (OB CTC) abuse liability. We sample regular CTC smokers naïve to ECs. Using two within-subjects designs we assess abuse liability across EC liquid flavor (tobacco vs. menthol; unflavored vs. cherry) and message (reduced harm vs. no message; reduced exposure to carcinogens vs. no message) conditions. The multiple-choice procedure (MCP) and cigarette purchase task (CPT) measure abuse liability. Linear regressions compare the crossover points at which participants chose money over EC or OB puffs after adjusting for OB CTC flavor preference (menthol, tobacco). We accrued 28 subjects across both studies. Our sample is predominantly African American, female, smokes menthol OB CTC, and on average is 46 years old. After adjustment, in the first study (tobacco vs. menthol; reduced harm vs. no message), the crossover point for OB CTC was $1.89. For all EC conditions, crossover points were significantly lower than OB CTC: these ranged from -$0.71 (95% CI $1.31, -$0.10; tobacco flavor/reduced harm message) to -$0.81 (95% CI $1.48, -$0.13; menthol flavor/no message). In the second study (unflavored vs. cherry; reduced exposure to carcinogens vs. no message), similar significant patterns of effects in crossover points were observed, although the magnitudes were larger. Results across the two measures of abuse liability (MCP; CPT) are compared. This study provides preliminary evidence that flavor availability and modified risk messages associated with ECs may affect abuse liability. Importantly, modified risk messages appear positively associated with abuse liability. If confirmed with continued data collection and research, the results suggest how FDA regulations on EC flavors and modified risk messages may affect CTC smokers’ uptake and use of EC products.

Funding: This research was supported by Virginia Commonwealth University Massey Cancer Center and Center for Clinical and translational Research (UL-1TR000058). The content is solely the responsibility of the authors and does not represent the official views of the funders.

Corresponding Author: Andrew Barnes, PhD, Virginia Commonwealth University School of Medicine, abarnes3@vcu.edu

POS5-83

MAGAZINE HYPEP: TRENDS IN TOBACCO ADVERTISING AND READERSHIP CHARACTERISTICS, 2010-2014

Sherine El-Toukhy, Kelvin Choi*, National Institute on Minority Health and Health Disparities, Division of Intramural Research, National Institutes of Health, kelvin.choi@nih.gov

IMPORTANCE: Tobacco advertising promotes tobacco use, a public health concern in the U.S. Print magazines are a main outlet for tobacco advertising. OBJECTIVE: (1) Track trends in total and product-specific number of tobacco advertisements and corresponding expenditures between 2010 and 2014. (2) Examine magazine readership characteristics associated with total and product-specific number of tobacco advertisements in 2014. DESIGN: Tobacco advertising data came from Kantar Media’s Intelligence and magazine readership data came from a 2014 Experian’s Simmons Research nationally representative survey of 4,667 adults. At magazine level, we aggregated total and product-specific number of advertisements and corresponding expenditures by year. We also calculated readership based gender, age, education, race/ethnicity, employment, and income characteristics. RESULTS: There were 5,317 tobacco advertisements with expenditures of $780 million that appeared in 522 magazines over five years. Cigarette advertisements accounted for 2,928 (55%), followed by e-cigarettes (n = 862, 16%), and snus (n = 534, 10%). From 2010 to 2014, advertisements increased by 2.79 ad/year for cigarettes, 1.94 ad/year for e-cigarettes, and 0.78 ad/year for chewing tobacco (all p < 0.05). Across top three advertised products in 2014, tobacco advertising placement was associated with readership characteristics (all p < 0.05). Advertisement rate increased 1.48 and 1.65 times for cigarettes, 3.44 and 3.72 times for e-cigarettes, and 2.15 and 1.91 times for chewing tobacco for every 10% increase in 18-39 and 40-59 year-old readers. Advertisement rate increased 2.09 times for chewing tobacco for every 10% increase in male readers; and 1.37 times for cigarettes and 1.70 times for e-cigarettes for every 10% increase in readers who earn $24,999. CONCLUSION: Print tobacco advertising has increased especially for cigarettes. Advertising placement was based on selected magazine readership characteristics that reflected tobacco use. Regulating magazine tobacco advertising could reduce effects of exposure to tobacco advertising.

Funding: Funding for this research was provided by the National Institutes of Health, National Institute on Minority Health and Health Disparities, Division of Intramural Research.

Corresponding Author: Kelvin Choi, MPH, PhD, National Institute on Minority Health and Health Disparities, Division of Intramural Research, National Institutes of Health, kelvin.choi@nih.gov

POS5-84

ADOLESCENT CIGARETTE SMOKING AND ASTHMA: INFLUENCE OF BULLYING, PSYCHOLOGICAL, AND HEALTH-RELATED FACTORS

Alyssa Rudy¹, Samantha Maidich, Megan Sutter, Makeda Austin, Robin Everhart, Caroline Cobb, Virginia Commonwealth University, VA, USA

BACKGROUND: The association between adolescent cigarette smoking and asthma is not fully understood. Adolescents with asthma (AAs) smoke at higher rates than adolescents without, but research has not elucidated unique risk factors for this group. AAs are at risk for higher peer-related stress (e.g., bullying) and have less access to physical activities; both are related to increased smoking. The current study examined the influence of bullying, psychological, and health-related factors on smoking in the context of adolescent asthma. METHODS: The current sample consisted of 6935 high school students who completed the 2013 Virginia Youth Tobacco Survey. This sample was split by past year asthma diagnosis (yes/no), and identical weighted bivariate associations and logistic regression models predicting past month (current) smoking vs. never smoking were performed in each sub-group. Demographic covariates were evaluated first followed by simultaneous entry of items related to bullying/perceived safety, depression, and physical activity. RESULTS: Asthma diagnosis was reported by 24% of adolescents. Current smoking was 13% for AAs and 11% for those without. Bivariate results indicated significant differences for most covariates by smoking status by sub-group. Logistic models revealed differences in the associations observed between adolescents with and without asthma. Older age and male gender were strongly associated with smoking for those without asthma. The positive association between depression and smoking was more robust for AAs, and greater physical activity was negatively related to smoking only among AAs. Bullying others was strongly correlated with smoking across both sub-groups, but lower perceived safety at school was more strongly related to smoking among those without asthma. DISCUSSION: These findings provide evidence of unique patterns of association between smoking and adolescent asthma. Results highlight the role of depression and physical activity and suggest that smoking among AAs may be less related to age/gender. Intervention development should consider these correlates, and continued investigation into predictors of smoking among AAs is warranted.

Funding: No external funding.

Corresponding Author: Caroline Cobb, PhD, Virginia Commonwealth University, cobbco@vcu.edu

POS5-85

UTILIZATION OF A NOVEL QUIT SMOKING WEBSITE: RESULTS FROM A LARGE CLINICAL TRIAL

Kristin Mull, Jaimee Heffner, Jonathan Bricker, Fred Hutchinson Cancer Research Center, WA, USA

BACKGROUND: Our prior work showed that a web intervention (WebQuIt) using a novel treatment approach- Acceptance and Commitment Therapy (ACT)-had double the quit rate of a comparison web site using standard counseling methods, and greater usage of the site was associated with better cessation outcomes. However, no prior studies have examined how specific ACT-based web site components are utilized and whether people who tend to avoid their cravings utilize the website more, as would be predicted by the theoretical model underlying ACT. The goal of this research is to (1) describe WebQuIt usage metrics to facilitate comparison with other smoking cessation websites and (2) determine whether baseline avoidance
Distress intolerance (DI), the degree to which one is able to withstand discomfort, is linked to impaired ability to achieve initial smoking abstinence. Despite the relevance of early smoking withdrawal symptoms (i.e., those that arise within 4 hours after the last cigarette), no research has examined the relation between DI and early smoking withdrawal. The aim of the current study was to examine the association between trait DI and early smoking withdrawal severity. Participants were 34 treatment-seeking smokers recruited to participate in a clinical trial of smoking cessation. The Distress Intolerance Index (DIi), a trait measure of DIi, was completed at baseline intake, after which participants completed four separate sessions comprising four hours of abstinence and withdrawal regulation training. During each session, withdrawal symptoms were assessed with the Wisconsin Smoking Withdrawal Scale (WSWS) at 30-minute intervals. Kendal’s correlation analyses examined the associations between the DIi and mean withdrawal ratings on each WSWS scale. DIi predicted greater sadness across each withdrawal session (r range = .27 to .38), greater anxiety during the first, third, and fourth sessions (r range = .28 to .45), greater anger during the second, third, and fourth sessions (r range = .35 to .39), and greater concentration difficulty (r = .27 and .29) and craving (r = .28 and .25) during the first and fourth sessions. Smokers higher in DIi appear to experience more severe early withdrawal. These findings may explain, at least in part, why smokers higher in DIi are less likely to attain initial abstinence. Future research should examine the utility of tailoring withdrawal regulation training on the basis of trait DIi, and the relationship between DIi and longer-term withdrawal severity and cessation success.

Funding: No Funding

Corresponding Author: Teresa Leyro, PhD, Rutgers,The State University of New Jersey, teresa.leyro@rutgers.edu

POS5-86 DISTRESS INTOLERANCE PREDICTS EARLY WITHDRAWAL SYMPTOM SEVERITY

Teresa Leyro1*, Min-Jeong Yang1, Peter Hendricksc2, Rutgers, The State University of New Jersey, NJ, USA, 2University of Alabama at Birmingham, AL, USA

Electronic cigarettes (ECs) are becoming more popular. With the United States Food and Drug Administration’s recent proposal to regulate ECs, there is a need for evidence to inform regulations of EC liquid flavors and modified risk descriptors suggesting lower harm. Of particular interest are EC perceptions among combustible tobacco cigarette (CTC) smokers. Data from two studies explore how EC perceptions are affected by experimental manipulations of EC liquid flavors and the presence of modified risk messages. Data come from samples of EC-naïve regular CTC smokers. Using two ongoing within-subjects designs (N=11; N=8), we assessed perceptions across EC liquid flavors (tobacco vs. menthol; unflavored vs. cherry) and message (reduced harm vs. no message; reduced carcinogen exposure vs. no message) conditions. After each experimental manipulation, participants responded to questions using a visual analog scale (0-100). Questions assessed whether participants would be uncomfortable using the session product (ECs or own brand CTC) in public, their concern about becoming dependent on the product, how harmful they thought the product was to health, and the likelihood of addiction from the product. Separate linear mixed effects models estimated the relationship between conditions and post-manipulation perceptions in each study. Across both studies, participants were significantly less concerned about becoming dependent, the session product’s harm to health, and the likelihood of addiction from the product compared to own brand CTC. If confirmed with continued data collection and future work, these results suggest that FDA regulations on EC liquid flavors and modified risk messages may affect CTC smokers’ EC perceptions.

Funding: This research was supported by Virginia Commonwealth Universities Massey Cancer Center and Center for Clinical and Translational Research (UL-1TR000058). The content is solely the responsibility of the authors and does not necessarily represent the official views of the funders.

Corresponding Author: Andrew Barnes, PhD, Virginia Commonwealth University School of Medicine, abarnes3@vcu.edu

POS5-87 EFFECTS OF E-CIGARETTE LIQUID FLAVORS AND MODIFIED RISK MESSAGES ON PERCEPTIONS OF E-CIGARETTES

Andrew Barnes1, Caroline Cobb2, Hannah Rumsey2, Rebecca Lester2, Rose Bonco1†, Thomas Eisenberg1†, Virginia Commonwealth University School of Medicine, VA, USA, 2Virginia Commonwealth University, VA, USA

Few smokers attending a primary care visit leave with evidence-based smoking treatment or a referral to such treatment. In a series of studies, clinic staff from primary care clinics from 2 Wisconsin health systems were prompted by the electronic health record (EHR) to invite all smokers to join a treatment study at their clinic. Invitation rates across 6 clinics ranged from 40-88%. This project surveyed clinic staff (primarily ‘roomers’ and medical assistants) on their experiences referring patients to these studies to better understand the range of invitation rates. All staff received the same training in extending the invitation prior to the study. Clinics were classified as ‘high performing’ if staff invited 88% of identified smokers to be in the study. The 3 high performing clinics invited 82-88% of smokers; the remaining 3 clinics invited 40-77% and were designated low performing. After recruitment ended, staff (18 from high- and 20 from low-performing clinics) completed the survey. Response options ranged from 1 (strongly disagree) to 5 (strongly agree). Staff generally agreed they had adequate training to recruit participants; however staff at high-versus low-performing clinics tended to agree more strongly (M=4.9 vs. 3.8; t=4.1; p<0.01). Similarly, staff at high-versus low-performing clinics agreed more strongly that “using the EHR to make referrals to the study was easy” (M=4.8 vs. 4.4; t=2.2; p<0.05), although both agreed it was easy. Neither group felt the study was disruptive of their clinic workflow (overall M=1.81). Staff at high-versus low-performing clinics agreed more strongly that patients responded positively to their invitation (M=4.3 vs. 3.5; t=2.1; p<0.05). Finally, staff at high versus low-performing clinics were more likely to agree that they advise all their patients who use tobacco to quit at every visit (M=4.3 vs. 3.5; t=2.1; p<0.05). These findings suggest several factors associated with more consistently referring patients to a designated smoking treatment, including feeling adequately trained to make the referral, ease of making the referral, and being in the habit of addressing tobacco use at every patient contact.

Funding: This research was supported by grant R55CA143188 from the National Cancer Institute to the University of Wisconsin-Center for Tobacco Research and Intervention; by grant 1K05CA139871 from NIH; and by the Wisconsin Partnership Program.

Corresponding Author: David Vogt, BSN, University of Wisconsin Oshkosh, vogt999@uwosh.edu

POS5-88 PRIMARY CARE CLINIC STAFF’S PERSPECTIVES ON REFERRING SMOKERS TO A DESIGNATED SMOKING TREATMENT

David Vogt1†, Kristin Berg2, David Fraser1, Tanya Schlam2, 1University of Wisconsin Oshkosh, WI, USA, 2University of Wisconsin Madison, WI, USA

Funding: No Funding

Corresponding Author: Teresa Leyro, PhD, Rutgers,The State University of New Jersey, teresa.leyro@rutgers.edu

Corresponding Author: Andrew Barnes, PhD, Virginia Commonwealth University School of Medicine, abarnes3@vcu.edu

2016 Rapid Response Posters • Saturday, March 5, 2016 • 11:30 a.m.-1:00 p.m.

SRNT
PO5-89
EXPLORING FACILITATORS AND BARRIERS TO SMOKING CESSATION WITH PREGNANT WOMEN WITH SUBSTANCE USE DISORDERS
Alexandra Talks, Kayleigh Fiser, Shauna Acquavita*, University of Cincinnati, OH, USA

Smoking among pregnant women diagnosed with substance use disorders (SUD) is four times higher than among pregnant women without SUD. However, much of the literature on pregnancy and smoking has centered on women without SUD. Using the Health Belief Model as a framework, barriers and facilitators to smoking cessation in pregnant women with SUD were explored via 4 focus groups (N=22). Criteria for study were women who smoked during pregnancy and gave birth within the past year, and were residing at a women’s SUD treatment center when the focus groups were conducted. Participants shared some similar motivators and barriers to smoking cessation as women without SUD; however, issues specific to women with SUD were identified as well. Similar to women without SUD, reasons for smoking cessation included the child’s health. Identified barriers to smoking cessation included similar behaviors such as smoking while pregnant or smoking with cigarettes to cope with stress. Participants identified common health issues associated with smoking that were mainly child-centered including low birthweight, ear infections, SIDS, oxygen to baby, premature labor, and nicotine withdrawal. Identified health effects for mothers were issues with lungs and high blood pressure. Lack of internalization of the negative effects of smoking was a barrier to stopping, indicating a need for health literacy. Women had different degrees of motivation for stopping smoking during pregnancy versus post-partum. Participants said that having children provided them with a sense of purpose and their guilt about smoking became stronger once the child was born. They also reported that smoking provided them with a sense of freedom. Women’s triggers for smoking were interconnected with those of other addictive substances. Furthermore, women struggled with the perception of tobacco as a drug as compared with other addictive substances. Women identified behaviors that both helped and hindered them in their social support network. Exploring facilitators and barriers to smoking cessation among pregnant women with substance use disorders is critical to the health and well-being of this vulnerable population.

Funding: University of Cincinnati Vice President of Research Start Up Funds
Corresponding Author: Shauna Acquavita, PhD, MSW, University of Cincinnati, acquavsa@ucmail.uc.edu

PO5-90
TRENDS IN U.S. YOUTH SUSCEPTIBILITY TO SMOKING BY RACE AND ETHNICITY, 1999-2014
Sherine El-Toukhy, Melanie Sabado, Kelvin Choi*, National Institute on Minority Health and Health Disparities, Division of Intramural Research, National Institutes of Health, MD, USA

PURPOSE: Examine racial/ethnic differences in smoking susceptibility among U.S. youth non-smokers over time. METHOD: We used nationally representative data from the National Youth Tobacco Survey from 1999 to 2014. Analyses were limited to middle- and high-school students who have never tried cigarettes even one or two puffs (N=173,047; age 9–21 years, Mean = 14.19, 95% confidence interval: 14.18 – 14.20). We used time-varying effect modeling (TvEM) to examine nonlinear trends in racial/ethnic disparities in smoking susceptibility among youth non-smokers adjusted for demographics, living with smokers, and exposure to tobacco advertising. TvEM is a new statistical tool that estimates regression coefficients as a function of continuous time without fixed polynomial functions. RESULTS: From 1999 to 2014, proportions of nonsmokers who were susceptible to smoking declined in all racial/ethnic groups. Compared to non-Hispanic Whites, Hispanics were significantly more susceptible to smoking from 1999 to 2014 peaking in 2014 (adjusted odds ratio [AOR] = 1.64). Similarly, non-Hispanic Native Americans were significantly more susceptible to smoking from 1999 to 2008, were equally susceptible to smoking from 2009 to 2012, and then were back to being significantly more susceptible to smoking than non-Hispanic Whites from 2012 to 2014 peaking in 2014 (AOR = 1.53). Conversely, non-Hispanic Blacks did not differ from non-Hispanic Whites in smoking susceptibility except from 2000 to 2006 when non-Hispanic Blacks were significantly less susceptible to smoking bottoming out in 2002 (AOR = 0.86). Non-Hispanic Asians were significantly less susceptible to smoking from 1999 to 2010 (AOR consistent at 0.76 till 2006) after which they did not differ from non-Hispanic Whites. CONCLUSION: Despite an overall decline in smoking susceptibility among U.S. youth nonsmokers, racial/ethnic disparities persisted over time. Successes in closing disparities in youth smoking susceptibility between racial/ethnic minorities (especially Hispanics and non-Hispanic Native Americans) and non-Hispanic Whites were brief. New interventions aiming at closing the racial/ethnic smoking susceptibility gap are needed.

Funding: Funding for this research was provided by the National Institutes of Health, National Institute on Minority Health and Health Disparities, Division of Intramural Research.
Corresponding Author: Kelvin Choi, MPH, PhD, National Institute on Minority Health and Health Disparities, Division of Intramural Research, National Institutes of Health, Kelvin.choi@nih.gov

PO5-91
EMOTIONAL SALIENCE ENHANCES THE MEMORABILITY OF GRAPHIC WARNING LABELS: A LONGITUDINAL STUDY
Victoria Fairchild1, Catherine Aronowitz1, Zhenhao Shi2, Bryn Bissey3, Daniel Langleben1, Perelman School of Medicine, University of Pennsylvania, PA, USA, 1University of Pennsylvania, PA, USA

BACKGROUND: There is an ongoing debate about the graphic warning labels (GWLS) that the FDA proposed to place on the cigarette packages. Composed of a textual warning and an image depicting the negative health consequences of smoking, GWLS have several theoretical advantages over the current text-only labels as a population-level prevention strategy. Their implementation has been delayed by tobacco industry’ legal action, who argued that the strongly emotional images included in the GWLS, encroached on their 1st Amendment rights. Siding with the industry, the court opined that there was not enough evidence to show that GWLS reduced smoking or justly inclusion of the highly emotionally arousing images in the GWLS. Previous studies showed that more emotionally salient GWLS were better remembered, but it is unclear which component of the GWL (text vs. image) contributes to this effect and whether this effect is maintained over time. METHODS: 49 non-treatment-seeking smokers (24 females, 32.04 ±11.11 years old, 14.60 ±8.33 cigarette per day, Mean ±SD) were exposed to GWLS affixed to cigarette packs over a period of 4 weeks. Participants were randomly assigned to be exposed to either High Emotional Reaction (ER) or Low ER GWLS. Recall task was administered after the first exposure and repeated after the 4-week exposure period and tested whether participants could correctly discriminate GWLS they were exposed to from made-up GWLS that contained new text, image or both. There were 9 target GWLS and 3 types of foils consisting of made-up labels: 9 GWLS with viewed text and unseen images; 9 GWLS with viewed images and unseen text and 9 GWLS with both unseen image and text. Perceptions of the harmful effects of smoking were assessed before and after each recall task. RESULTS: Overall recall improved in High ER group after 4-week GWL exposure and declined in Low ER group (F(1, 39)=17.40, p<0.001). At baseline, the High ER group remembered GWLS (images and text) (t=5.23, p<0.001) better than the Low ER group, while the Low ER group recognized text better than the High ER group (t=2.73, p=0.009). After 4-week exposure, the High ER group had better recall of GWLS (images and text) (t=3.64, p<0.002) and images (t=6.87, p<0.001) than the Low ER group. Both groups showed increased perception of smoking as harmful after the 4-week GWL exposure (t=3.78, p<0.001), without difference between groups. CONCLUSIONS: High emotional salience images make graphic cigarette warning labels more memorable, while low emotional salience images have the opposite effect.

Funding: R21DA024419-01, R01DA036028
Corresponding Author: An-Li Wang, PhD, Perelman School of Medicine, University of Pennsylvania, anliwang@mail.med.upenn.edu

PO5-92
DEVELOPMENT AND PSYCHOMETRIC EVALUATION OF A QUESTIONNAIRE TO ASSESS ATTITUDES TOWARDS TOBACCO POLICIES
Margaret Mayer*, Marney White, Yale Tobacco Center of Regulatory Science, Yale School of Public Health, CT, USA

With the introduction of the Family Smoking Prevention and Tobacco Control Act of 2009 and the rising popularity of electronic cigarettes (e-cigarettes), the landscape of tobacco control is rapidly changing. Currently there exists no widely used measure to assess attitudes towards smoking and tobacco policies in the United States. The primary goal of this research project was to develop and validate a...
questionnaire to measure attitudes about tobacco regulation, including compo- 
teaments to evaluate attitudes toward currently unregulated products and flavors/ 
additives. The Yale Smoking Policy Survey (YSPS) builds upon the previously 
developed but dated Smoking Policy Inventory (SPI; Velicer et al., 1994), creat-
ing a relevant and timely tool to assess attitudes towards smoking policies. Items 
pertaining to the topics of each of the original five subscales (Advertising and Pro-
motion, Public Education, Laws and Penalties, Taxes and Fees, Restrictions on 
Smoking) were added, focusing on current and/or controversial issues in tobacco 
policy. Items querying issues that are generally considered settled (e.g., smoking 
in restaurants) were removed from the SPI, and 9 items pertaining to e-cigarettes 
were added. The survey was first piloted in a sample of 262 volunteers, where it 
showed adequate reliability, discriminant validity, and external validity. Revisions 
were made to clarify item wording and additional items were generated. The result-
ing 34-item tool was then reevaluated with a community sample of 343 participants. 
Factor analysis supported 5 subscales, which demonstrate adequate validity and 
reliability coefficients. We conclude that the Yale Smoking Policy Survey is a reli-
able, valid, and versatile tool for assessing attitudes towards tobacco policy. The 
Yale Smoking Policy Survey can be used in cross-sectional or longitudinal studies 
to inform tobacco control research and policy decisions.

Funding: Research reported in this publication was supported by grant number 
P50DA036151 from the National Institute on Drug Abuse and FDA Center for To-
bacco Products (CTP). The content is solely the responsibility of the authors and 

POS5-93

**HOW MUCH FREE NRT SHOULD SMOKERS RECEIVE? MEDICATION ADHERENCE AS A PREDICTOR OF ABSTINENCE AT 6 MONTHS**

Sabrina Voci*, Laurie Zawertailo, Justine Mascarhenas, Sarwar Hussain, Peter Selby, Centre for Addiction and Mental Health, University of Toronto, ON, Canada

 Provision of nicotine replacement therapy (NRT) at no cost to smokers who want to quit has been proposed as a cost-effective strategy to increase population-level cessation rates. However, the most cost-effective amount of NRT to provide is not known. Some studies have failed to find a significant difference in quit outcome between those receiving various amounts of free NRT, with the exception of one trial that found significantly lower quit rates among those randomized to 2 versus 8 weeks. However, the amount of NRT given does not always reflect the amount actually used. We compared 6-month quit outcomes for smokers who received 5 versus 10 weeks of free NRT, taking into account level of adherence. Individuals 18 years or older who smoked at least 10 cigarettes per day and intended to quit within 30 days received free NRT at a smoking cessation workshop in Ontario, Canada. The sample consisted of 2472 participants who received 10 weeks of NRT (patch, gum, or inhaler) from 2007-2008 and 3012 participants who received 5 weeks of NRT (patch, patch + gum, inhaler or lozenge) from 2010-2011. At end-of-treatment follow-up (48.6% response rate, n=2667), 6.1% had used “none” of the NRT, 41.3% used “some”, 27.6% used “most”, and 25.0% used “all” of it. The 7-day day point prevalence abstinence rate at 6-month follow-up (48.6% response rate, n=2594) was higher for 10 versus 5 weeks (27.7% vs. 23.7%, p=0.03). However, differences in quit rate varied by level of adherence. After controlling for baseline differences between cohorts, logistic regression analyses revealed almost double the quit success at 6 months for those who used all (AOR=1.80 [95% CI:1.02-3.18], p=0.04) or most (AOR=1.90 [95% CI:1.13-3.19], p=0.02) of the 10 versus 5 weeks of NRT, but no significant difference for those who used some (AOR=0.99 [95% CI:0.61-1.60], p=0.95) or none (AOR=5.53 [95% CI:0.47-65.68], p=0.18). Findings suggest that those with greater adherence to treatment benefit from longer courses of NRT. A split-shipment of NRT may provide a cost-effective way to improve overall quit success without wasting resources due to unused NRT.

Funding: The STOP Program is funded by the Ontario Ministry of Health.

Corresponding Author: Peter Selby, Centre for Addiction and Mental Health, University of Toronto, peter.selby@camh.ca

POS5-94

**TOBACCO COUPON SAVING AND SMOKING PREVALENCE AMONG ADOLESCENTS IN THE UNITED STATES: HISTORICAL TRENDS AND DISPARITIES.**

Olusegun Owotomo*, Julie Malisowsky, Keryn Pasch, University of Texas at Austin, TX, USA

BACKGROUND: Tobacco marketing, including coupon promotions, continues to reach adolescents despite the presence of regulatory measures. Tobacco cou-
pons reduce the effect of price increases caused by increased taxation of tobacco products. OBJECTIVE: This study aims to (1) examine historical trends in tobacco 
coupon saving behavior by US adolescents, (2) identify disparities among vari-
ows sociodemographic groups in coupon saving, and (3) examine the relationship 
between coupon saving and smoking among US adolescents. We hypothesize 
that there will be significant sociodemographic disparities in rates of coupon sav-
ing, and variations in historical trends in smoking prevalence between adolescents 
who do and do not save tobacco coupons. METHODS: Data on 8th, 10th, and 12th 
grade students from 1997-2013 were obtained from Monitoring the Future, an on-
gline survey of high school students. For each grade, cross-sectional survey. ~15,000 students were sampled annually per grade (total N=500,000). Dependent variables were “Have you ever saved coupons from cigarettes (whether or not you bought them yourself)?” and “Are you currently saving coupons from cigarettes?”. Responses were dichotomous (Yes/ No). Current smoking frequency was dichotomized (Yes/No). Sociodemographic variables were race, SES, and rural/urban. RESULTS: Rates of tobacco coupon savings among 8th, 10th, and 12th grade students have decreased historically. For example, in 1997, 18.5% of 12th graders reported ever saving coupons versus 5.2% in 2013. Rural students have higher rates than urban students; whites have higher rates than blacks; low SES have higher rates than high SES. Coupon sav-
ers had significantly higher rates of smoking compared to non-coupon savers. For example in 2013, smoking prevalence among 12th grade students who had ever 
saved coupons was 69.8% (95% CI: 58.8%-80.9%) vs 13.2% (95% CI: 11.7%-14.7%) among non-coupon savers. Most importantly, smoking rates have not sig-
ificantly changed among those who used coupon savers despite nationwide smoking declines. CONCLUSION: Disparities in coupon savings coupled with high rates of smoking among coupon savers revealed that tobacco coupons remain a serious threat to smoking prevention among youth.

Funding: No funding

Corresponding Author: Olusegun Owotomo, MD, MPH, University of Texas at Aus-
tin, owotomo@utexas.edu

POS5-95

**TOBACCO CONTROL METRICS: SMALL CHANGES CAN SAVE LIVES**

Jessica Marshall*, Michael Kanter, Mohamed Ismail, Kaiser Permanente Southern California, CA, USA

A U.S. Preventive Services Task Force review concluded that in combination or alone, behavioral interventions and pharmacotherapy are effective in helping 
adults quit smoking. In 2014, to increase use of these interventions by smokers, Kaiser Permanente Southern California (KPSC) changed its tobacco cessation 
quality and performance measure (TOB-CSG) from “assessing a patient’s percep-
tion of whether their providers advised them to quit” to “measuring attendance of 
a tobacco cessation program or receipt of cessation medication.” We aimed to 
measure the impact of the new TOB-CSG on total program attendance and ces-
sation prescriptions received over the course of 12 months. Methods were as fol-

do. The denominator was a fixed 2-year period from November 2011 to October 
2013, and consisted of KPSC members who were documented in the electronic 
medical record as smokers. The numerator was a rolling measurement period be-
tween October 2014 and October 2015. Subjects had to meet one of the following 
inclusion criteria to be counted in the numerator: 1) begin any one of the KPSC 
cessation programs, including: phone coaching, live class, or online program or 2) 
receive a cessation medication, including any form of nicotine replacement thera-
py (NRT), bupropion, or varenicline. A smoker could only be counted once even if 
they received multiple interventions. A total of 171,759 smokers were counted in 
the denominator. As of October 2015, a total of 39,666 (23 percent) met one 
inclusion criteria. This included phone coaching: 2,940 (1.7 percent); live class: 3,540 (2.1 percent); online program: 1,953 (1.1 percent); NRT or varenicline: 22,312 (13 percent); and 
bupropion: 19,454 (11.3 percent). by changing a long-standing internal metric, 
Kaiser Permanente Southern California (KPSC) changed its tobacco cessation 
standard from a binary measure to one that counted all the various types of 
smoking cessation interventions, including: phone coaching, live class, or online 
program or 2) receipt of cessation medication. As of October 2015, a total of 39,666 (23 percent) met one inclusion criteria. This included phone coaching: 2,940 (1.7 percent); live class: 3,540 (2.1 percent); online program: 1,953 (1.1 percent); NRT or varenicline: 22,312 (13 percent); and 
bupropion: 19,454 (11.3 percent). By changing a long-standing internal metric, an 
additional 5,995 smokers received proven interventions over 1 year. Unpub-

lshed patient self-report data from KPSC show that 1-year abstinence rates after program attendance are 40 percent (class), 36 percent (phone coaching), and 41 percent (online). Thus, we extrapolate that implementation of this measure has potentially led to an additional 3,275 patients quitting smoking.

Funding: No Funding

Corresponding Author: Jessica Marshall, MPH, CHES, Kaiser Permanente Southern California, jessica.t.marshall@kp.org

POS5-96

PREDICTORS OF SMOKING REDUCTION IN RECOVERING ALCOHOL DEPENDENT MEN

Melodie Igso1, Matthew Worley2, Jaimee Heffner2, Soo Lee3, Belinda Daniel3, Robert Anthenelli2, VA San Diego Healthcare System, CA, USA, 2University of California, San Diego, Health Sciences, CA, USA, 3Fred Hutchinson Cancer Research Center, WA, USA, 4University of California, San Diego, CA, USA

OBJECTIVE: Individuals with alcohol dependence (AD) smoke at rates 2-3 times higher than the general population and have more difficulty quitting smoking. Better understanding of the predictors of smoking reduction in AD can guide us down a path to cessation that helps improve smoking outcomes. We examined predictors of smoking reduction among currently abstinent AD men who participated in a randomized, controlled smoking cessation treatment trial. METHODS: One hundred twenty-nine AD outpatient male smokers participated in a 12-week, double-blind, placebo-controlled pharmacotherapy trial with adjunct brief counseling for smoking cessation, with smoking assessed up to 24 weeks following treatment. At baseline, valid, reliable measures of nicotine and alcohol dependence severity, motivation to quit smoking, depression, impulsiveness, and trauma history were obtained and used in multilevel negative binomial analyses to determine which variables best predicted sustained reductions in smoking through the end of the 36-week study. RESULTS: Statistically-significant predictors of reduction in smoking.

Funding: Grant support from: Veterans Affairs Merit Award # NEUA-003-085; NIAAA Grant #s U01 AA013641 (INIA Stress Consortium) and R01 AA019720; NIDA/VA Cooperative Studies #s 1031 and 1032

Corresponding Author: Robert Anthenelli, MD, University of California, San Diego, Health Sciences, ranthenelli@ucsd.edu

POS5-97

A TOBACCO PROGRAM PREDICTIVE MODEL AND PROACTIVE OUTREACH: CAN LIVE CALLS SAVE LIVES?

Di Meng1, Melanie McLeod2, Jessica Marshall3, Michael Kantor2, Mohamed Ismail3, Kaiser Permanente HIT Transformation and Analytics, CA, USA, 2Kaiser Permanente Program office, Hospitals Quality and Excellence, CA, USA, 3Southern California Permanente Medical Group, CA, USA

Kaiser Permanente Southern California developed a predictive model that could automatically rank tobacco users in terms of their likelihood to enroll in tobacco cessation programs by using numerous variables extracted from KP Healthconnect (our electronic medical record). We aimed to test whether enrollment rates could be augmented for the top 20 percent of tobacco users identified by the model using different outreach methods. The total number of tobacco users was derived from KP Healthconnect. The model identified the top 20 percent most likely to enroll in a program. The design was a mixed, multi-level model. A random sample was selected from this 20 percent as a usual care group (no outreach). The remaining subjects were cluster randomized by medical center into one of four outreach groups: automated telephone call, email, standard mail, and live telephone call. The outcome was defined as enrollment in a smoking cessation program within three months after the outreach using an intention to treat model (members who were not reachable were still considered in the denominator). Between April and June 2015, the model was implemented across 13 medical centers and identified 37,801 tobacco users as the top 20 percent most likely to enroll. Enrollment rates varied by outreach method. Out of 4,978 randomly selected to usual care, 42 (0.8 percent) enrolled in a program. For the remaining 32,053 subjects, the results were: (number receiving the intervention) number enrolled in a program/ percent enrolled): automated call (4,483/ 51.1%); email (9,178/ 98.1%); standard mail (9,270/ 133/ 1.4); and Live calls (9,172/ 324/ 3.5). Members receiving live calls were 4.4 times more likely to enroll than usual care; P-value 0.001 (7.5 times more if only counting subjects who were actually reached). Outreach by email and standard mail had no effect on enrollment rates. Since cessation program attendance leads to increased abstinence rates which in turn leads to increased longevity, it is suggested that live calls to subjects identified by a predictive model can save quality years of life.

Funding: No funding

Corresponding Author: Pratibha Nayak, PhD, Georgia State University, pnayak@gsu.edu

POS5-98

SEXUAL ORIENTATION AND GENDER DIFFERENCES IN USE OF NON-CONVENTIONAL TOBACCO PRODUCTS: RESULTS FROM ONLINE NATIONAL SURVEY 2014 AND 2015

Laura Salazar, Pratibha Nayak, Krishna Kota*, Terry Pechacek, Georgia State University, Atlanta, GA, USA

INTRODUCTION: Although it is well documented that lesbian, gay and bisexual (LGB) populations experience extreme tobacco-use disparities in terms of combustible cigarettes, there is sparse evidence for non-conventional tobacco products such as electronic nicotine delivery systems (ENDS) and other alternative tobacco products. The aim of this study was to assess the rates of use of non-conventional tobacco products, risk perceptions and worldview between LGB and heterosexual (HET) adults and examine gender differences. METHODS: We analyzed pooled data from the 2014 and 2015 Tobacco Products and Risk Perceptions Survey—an annual, cross-sectional survey of a nationally representative sample (n=11,525) of US adults derived from KQ’s Knowledge Panel. We used SAS survey procedures to conduct statistical analyses. RESULTS: LGB men (n=391) reported higher use of ENDS (28.6% ever use; 6.8% current use) compared to HET men (n=5,351) (15.2% ever use; 5.2% current use). Similarly, LGB women (n=279) reported higher use of ENDS (23% ever use; 7.8% current use) compared to HET women (n=5,504) (15.3% ever use; 4.9% current use). Current use of other combustible tobacco products were significantly higher among LGB adults compared to HET adults (9.7% LGB men vs. 8.7% HET men; and 7.2% LGB women vs. 3.5% HET women). Dual use of traditional cigarettes and ENDS was also higher among LGB (5.4% LGB men vs. 3.6% HET men; 7.3% LGB women vs. 3.6% HET women). There were significant differences in risk perceptions (P<0.001: 24.6 % of LGB men considered ENDS to be less harmful compared to 22.9% LGB women, 22.2% HET men, and 18.4% HET women. A higher proportion of LGB population were strongly opposed to government regulation of personal choices (48.6% LGB men, 45.8% LGB women, 40.5 % HET men and 42.4% HET women). CONCLUSIONS: LGB and gender disparities in ENDS use, other non-conventional tobacco products and dual use exists which may have unfavorable public health implications including slowing rates of cessation and increasing rates of tobacco related diseases. Health promotion efforts to avert these potential risks requires additional understanding of the attitudes and risk perceptions of the gender specific LGB population.

Funding: This study was supported by grant number P50DA036128 from the National Institutes of Health, National Institute on Drug Abuse, and Food and Drug Administration, Center for Tobacco Products. The content of this manuscript is solely the responsibility of the authors and does not necessarily represent the official views of the FDA or NIH/NIDA. The authors of this paper report no other financial disclosures.

Corresponding Author: Pratibha Nayak, PhD, Georgia State University, pnayak@gsu.edu

POS5-99

ABSTINENCE SYMPTOM SUPPRESSION AND URINE COTinine ConcentRATION ASSOCIATED WITH FIVE DAYS OF ELECTRONIC CIGARETTE USE IN TOBACCO CIGARETTE SMOKERS

Carolina RamSarah Maloney, Caroline Smith, Thokozeni Lipato, Alison Breland, Thomas Eissenberg, virginia Commonwealth university, vA, uSA

INTRODUCTION: Electronic cigarettes (ECIGs) heat a liquid that often contains nicotine to produce an inhalable aerosol that some purport to substitute for tobacco cigarettes in long-term smokers. This study’s purpose is to determine the extent to which ECIGs suppress tobacco abstinence symptoms in combustible cigarette smokers over a 5-day period. METHODS: In this ongoing study, 6 ciga-
rete smokers participated in 5 Latin-square ordered, 5-day conditions that differed by product: NO_Tob, in which no products were used, ECIG_0, in which participants used a 3.5V, 1000mAh battery with a 1.5 Ohm, dual-coil cartomizer with 0 mg/ml nicotine liquid; ECIG_36, which was the same as ECIG_0 but with 36 mg/ml liquid; N_INHALE, in which participants used a 4mg nicotine inhaler; and OB in which participants used their own brand cigarettes. Participants attended the lab daily to respond to abstinence symptom questionnaires and complete compliance checks; urine samples were collected thrice weekly for cotinine analysis. RESULTS: Main effects of condition and day were observed for several subjective measures. Mean scores (SD) for “Craving” (scale: 0-100) were 89.7(21.8) in NO_Tob; 87.8(26.7) in ECIG_0; 72.0(36.8) in ECIG_36; 70.8(39.7) in N_INHALE; and 42.8(37.0) in OB (p < .05). “Craving” scores increased from days 1-5 with higher craving scores in No_Tob and ECIG_0, compared to OB, on Days 3 and 5 (p<.05). Mean urine cotinine levels were 1173.2(852.2) ng/ml for OB; 783.3(608.9) for ECIG_36; 587.0(668.4) for ECIG_0; 500.3(647.1) for NO_Tob, and 409.1(360.4) for N_INHALE. Higher urine cotinine levels were observed in the OB condition on Day 3 than compared to the ECIG_0 condition, and on Day 5 compared to NO_Tob conditions (p < .05). CONCLUSION: In smokers, abstinence symptom suppression and cotinine exposure associated with ECIG use.

Funding: Research reported in this publication was supported by the National Institute on Drug Abuse of the National Institutes of Health under Award Numbers P50DA036105 and the Center for Tobacco Products of the US Food and Drug Administration. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration.

Corresponding Author: Carolina RamPhD, Virginia Commonwealth University, cpragmao@vcu.edu

**POS5-100**

**PREGNANT WOMEN SHOW GREATER PREFERENCE FOR SWEET VS. TOBACCO-FLOavored E-CIGARETTES AND WATERPIPE TOBACCO**

Laura Stroud*, Lori Scott-Sheldon, Kaiser Tyler, Jennifer Shuman, Jillian Roché, Chrystal Vergara-Lopez, Margaret Bublitz, George Papandonatos, Brown Medical School, RI, USA

BACKGROUND: There has been a proliferation of available flavors for non-cigarette tobacco and nicotine products, yet little is known regarding perceptions and use of flavors in vulnerable populations. The impact of flavors on perceptions and toxicant exposure associated with ECIG use.

Funding: This work was funded by R01 DA036999-02S2 to Laura Stroud, PhD, from the National Institute on Drug Abuse and the FDA Center for Tobacco Products (CTP).

Corresponding Author: Laura Stroud, PhD, Brown Medical School, lstrodu@gmail.com

**POS5-101**

**HOME SMOKING RULES AMONG LOW-INCOME, AMERICAN SMOKERS IN BALTIMORE CITY**

Tuo-Yen Tseng, Lauren Czaplicki*, Melissa Davey-Rothwell, Carl Latkin, Ryan Kennedy, Amy Knowlton, Johns Hopkins University Bloomberg School of Public Health, MD, USA

BACKGROUND: Populations living in poverty suffer from excess health burdens due to disproportionately high rates of smoking and secondhand smoke (SHS) exposure. The US Department of Housing and Urban Development (HUD) requires a rule that would require agencies to implement a 100% smoke-free policy. The implementation of smoke-free policies are often good times to support smoking cessation. The objective of the study was to explore the correlates of current, voluntary home smoking rules that may have implications for the implementation of smoke-free housing policies and possible cessation supports. METHODS: We surveyed 593 current smokers in Baltimore City. The sample was predominantly African American (90%), and low income (73% with an annual income < $10,000). Most participants were daily smokers (.93%) who smoke half a pack (29%) or at least a pack of cigarettes a day (.45%). Participants were asked whether smoking was allowed in the home. Correlates examined included quit attempts, household members' smoking-related health problems, and family approval of smoking. RESULTS: Participants with home smoking bans (.32%) were less likely to report smoking in their homes than those without smoking bans (.26% vs 93%, p < .001). Having a ban was related to living with survivors (p = .04) or people with respiratory/lung problems (other than asthma) (p = .04), and family’s disapproval of their (p = .04) or other peoples’ smoking (p = .02). Living with smokers (p < .001) was associated with allowing smoking in the home. The proportion of participants who reported past (64%) or current (38%) quit attempts did not vary by home smoking ban status. CONCLUSION: In the present study, we observed no correlation between a home smoking ban and quit attempts. Nevertheless, the results suggest that smoking bans were more common in families with collective disapproval of smoking and that the bans were protective of vulnerable household members. The findings suggest the important role of social influence on voluntary home smoking bans and the potential for social network interventions to facilitate the implementation of anticipatedHUD smoke-free policies.

Funding: Research reported in this publication was supported by NIDA/NIH and FDA Center for Tobacco Products (CTP) (Award # SR01DA032217-04S1). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration. Additionally, prior to issuing a press release concerning the outcome of this research, please notify the NIH awarding IC in advance to allow for coordination.

Corresponding Author: Amy Knowlton, ScD, Johns Hopkins University Bloomberg School of Public Health, aknowlton@jhsp.edu

**POS5-102**

**THE ROLES OF SOCIAL NORMS AND SOCIOECONOMIC STATUS IN SMOKING-RELATED STIGMA AMONG SMOKERS IN MEXICO AND URUGUAY**

Paula Lozano*, PhD student, SC, USA

BACKGROUND: Policies and programs that promote the social unacceptability of smoking may also result in smoking-related stigma. The aim of this study is to evaluate how norms against smoking and socioeconomic status (SES) are associated with stigma among smokers and to investigate the role of nicotine addiction may have in these associations. METHODS: We used data from a panel of adult smokers who participated in the 2008-2012 administrations of the International Tobacco Control Policy Evaluation Survey in Mexico (n=6670) and Uruguay (n=3296). Generalized estimating equations were used to account for possible correlation of the outcomes over time within individuals. We evaluated if injunctive smoking norms (i.e., social network and societal disapproval of smoking), descriptive smoking norms (i.e. number of smoking friends) and two markers of
POSS5-103
EXPOSURE TO THE ADVERTISEMENT AND DISPLAY OF TOBACCO PRODUCTS AT POINT OF SALES: AN EYE-TRACKING STUDY
Jieun Hwang*, Yuseon Yang, Seong-yeong Lee, Joun-grung-lee, Korea Health Promotion Foundation, Republic of Korea

INTRODUCTION: Advertisement and display of tobacco products aim to promote sales of the product rather than merely convey information, inducing tobacco purchase of smokers and ex-smokers. Previous studies also found that adolescents exposed to tobacco advertisements are more susceptible to smoking in the future. However, due to the lack of appropriate measures to control tobacco advertisement at point of sales, exposure of adolescents to such advertisements is sustained in Korea. AIM: Purpose of this study is to survey exposure of adolescents to advertisement and display of tobacco products at point of sales in Korea by tracking eye movement, in order to provide an empirical evidence for policy development. METHODS: Eye-tracking device with a miniature infrared television camera was used to record the reflection of the cornea and the pupil. 33 adolescents aged between 14 and 18 were participated in the study, and each participant wearing an eye-tracking device was asked to visit a convenience store. Eye movement of participant was detected simultaneously while shopping and purchasing. RESULTS: Each participant spent an average of 2 minutes for shopping. While eyes on advertisements around counter stayed for 33.5 seconds, an average fixation duration for tobacco advertisements was 13.98 seconds. An average fixation rate for tobacco advertisements was 27.1%, relatively high compared to other products (8.6%) and a cashier (2.6%). An average fixation rate for the counter mat (10.2%) was 2.6 times higher than for the advertising panel at the display shelf. DISCUSSION: Since almost every convenience store in Korea sells tobacco products, and displaying the products as well as advertising materials, anyone visiting a convenience store is exposed to diverse and glamorous tobacco advertising without a doubt. More importantly, customers unconsciously put their eyes on tobacco advertisement around the counter, and spend one third of their total shopping time to see such materials. Considering that continuous and repeated exposure to tobacco advertisement and display may affect smoking initiation of adolescent, appropriate policy actions should be promoted with urgency.

Funding: This study was supported by the Health Promotion Fund, Ministry of Health & Welfare, Republic of Korea.

Corresponding Author: Jumi Oh, Deputy Director (PhD), Korea Health Promotion Foundation, jumioh@gmail.com

POSS5-104
HYPOCRETIN-1 (OREXIN-1) RECEPTOR: A STUDY OF GENE VARIANTS ASSOCIATIONS WITH ANTHROPOMETRIC MEASURES AND SMOKING PHENOTYPES
Glenda Lassi1*, 1Paul Kenny, 1Manav Kapoor, 1Alison Goate, 2Tim Eisen, 2Robert Mather, 1Marcus Munafò, 1MRC Integrative Epidemiology Unit (UEU) at the University of Bristol, United Kingdom, 1Clinical Discovery, ECD, AstraZeneca, United Kingdom, 2cahn School of Medicine at Mount Sinai, NY, USA, 1Neuroscience IMED, AstraZeneca, MA, USA

BACKGROUND: Hypocretin/Orexin is a key neuuropeptide involved in feeding behaviour, sleep, hormone release and drug-seeking behaviours. Indeed, hypocretin, acting at the hypocretin-1 receptor (HCRTR1), plays a key role in regulating the motivation properties of nicotine, the major addictive component of tobacco smoke and other drugs of abuse such as cocaine and alcohol. Moreover, nicotine seems to modulate HCRTR-1 levels in plasma, both in rodents and humans. We explored associations between HCRTR1 gene variants with smoking and metabolic phenotypes. METHODS: Our study involved a two-step hierarchical procedure. In the first step, 29 HCRTR1 SNPs were selected for their association with persistent desire for unsuccessful attempts to cut down on nicotine, cocaine, marijuana and alcohol. These traits were assessed using the SSAGA questionnaire administered to over 8,000 individuals in the Collaborative study on the Genetics of Alcoholism (CoGA) cohort. We then calculated pairwise r2 values to prune SNPs with high linkage disequilibrium (LD) with the other SNPs in the list. In the second step, we explored associations of the independent SNPs with smoking behaviours and metabolic measures using genomewide association data from about 80,000 individuals in the Tobacco and Genetics (TAG) consortium, about 5,000 in the Cotinine Consortium and over 200,000 in the Genetic investigation of ANd Metabolimc Traits (GIANT) consortium. RESULTS: The P values of SNP associations with persistent desire for unsuccessful attempts to cut down for nicotine, cocaine, marijuana and alcohol ranged between 0.007 and 0.02. LD pruning resulted in 8 independent SNPs, which we tested for association with different smoking behaviours (i.e., initiation, age at initiation, heaviness of smoking and cessation) in the TAG and Cotinine Consortium data, and with metabolic measures (body mass index, waist circumference and height) in the GIANT consortium data. We found no clear evidence for association of these 8 SNPs with smoking behaviours. However, rs6703093 was associated with body mass index (P < 3x10-4) and rs10914458 was associated with height (P < 3x10-4). Other SNPs showed weak evidence for an association with the metabolic traits (P < 0.019). CONCLUSION: Although we found no associations between HCRTR1 SNPs and smoking phenotypes beyond the initial association with the traits assessed in the CoGA, we observed relevant associations with body mass index and height.

Funding: AstraZeneca, MRC Integrative Epidemiology Unit

Corresponding Author: Glenda Lassi, MRC Integrative Epidemiology Unit (UEU) at the University of Bristol - Clinical Discovery, ECD, AstraZeneca, glenda.lassi@bristol.ac.uk

POSS5-105
PROJECT EX: THREE-MONTH FOLLOW UP OF SMOKING CESSATION PILOT PROGRAM WITH THAI ADOLESCENTS
Nat sakom Chansattiporn1*, Naowarat Charoenca 2, Arupeet Sidhu 1, Punyarat Lapvongwatanakul 2, Nipawan Kungskulniti 3, Steve Sussman 1, 3Mahidol University, Thailand, "Mahidol University, Thailand

Adolescent tobacco use is a major public health problem around the world, including Thailand. Combustible cigarette smoking currently remains the major source of tobacco use among teens in Thailand. This study provides a three-month follow-up evaluation of the Project EX tobacco use cessation program among Thai adolescents. To our knowledge, this is the first controlled trial of teen tobacco use cessation in Thailand. The intervention was tested involving a quasi-experimental trial with 185 smokers, involving two program and two control condition schools (within each condition, one school in Bangkok Province and one school in Nakhon Pathom Province). Baseline comparability on key variables (e.g., demographics, level of tobacco use) was demonstrated across conditions. Program activities were rated as moderately favorable. At 3-month follow-up, the intent-to-treat (ITT) quit rate was 23% in the program group and 11% in the standard care control group (p < .02). The intervention also had a significant influence on level of last 30-day smoking at follow-up among persons who did not quit. These results are promising for teen tobacco use cessation programming in Thailand.

Funding: No Funding

Corresponding Author: Yumi Oh, Deputy Director (PhD), Korea Health Promotion Foundation, yumioh@gmail.com
POS5-106
EXPLORING THE EFFECT OF A COMMON DIETARY CONSTITUENT ON TOBACCO WITHDRAWAL

Michelle Taylor*, Jennifer Ware, Ellen Coughlan, Jasmine Khouja, Peter Rogers, Marcus Munafò, Angela Attwood, University of Bristol, United Kingdom

BACKGROUND: Previous research has indicated that coffee consumption may have a causal impact on smoking cessation. Cigarette smoke is a strong inducer of the CYP1A2 enzyme, which is responsible for ~95% of the metabolism of caffeine. Therefore, when an individual stops smoking, caffeine metabolism slows, leading to an increase in caffeine consumption. If coffee consumption does not change after stopping smoking, this may result in caffeine toxicity symptoms that could be misinterpreted as symptoms of tobacco withdrawal. We examined the impact of caffeine on nicotine withdrawal following short-term smoking abstinence.

RESULTS: Participants consumed placebo and caffeine on two separate occasions after overnight tobacco and caffeine abstinence. The order of which was counterbalanced, in a double-blind within subjects’ design. Tobacco withdrawal and craving were assessed using the Shiffman Scale (SS) and the Brief Questionnaire of Smoking Urges (QSU-Brief). Observations were made before and after and placebo administration. Paired sample t-tests were used to examine the change in withdrawal and craving from pre- to post-caffeine and placebo administration.

RESULTS: Sixty-two participants completed the study, of which 31 (50%) were female. There was weak evidence for a difference in change (pre- to post-administration) in withdrawal symptoms (SS) between the caffeine (mean change=-3.32) and placebo (mean change=-0.85) groups (t=2.120, P<0.036). There was weak evidence for a difference in change (pre- to post-administration) in tobacco craving (QSU-Brief) between the caffeine (mean change=3.82) and placebo (mean change=1.24) groups (t=1.944, P=0.057). CONCLUSION: Our results do not support the suggestion that caffeine administration after acute abstinence from smoking induces caffeine toxicity. However, alternative explanations for the results observed in this study need to be explored, including the possibility that the caffeine dose was not high enough to produce toxicity following overnight abstinence.

Funding: This study was funded by the Wellcome Trust (grant ref:097086/Z/11/Z).

Corresponding Author: Michelle Taylor, PhD, University of Bristol, michelle.taylor@bristol.ac.uk

POS5-107
CHEMICAL COMPOSITION OF AN E-CIGARETTE AEROSOL: A QUANTITATIVE COMPARISON WITH CIGARETTE SMOKE

Jennifer Margham, Mark Forster, Kevin McAdams*, Christopher Wright, Derek Mariner, Chuan Liu, Christopher Proctor, British American Tobacco, United Kingdom

BACKGROUND: Despite growing use of e-cigarettes, to date there have been few publications examining the chemical composition of e-cigarette aerosols, with most studies focusing on specific compound groups. Here we report the most complete chemical comparison to date (around 150 compounds) of emissions from an e-cigarette and a tobacco cigarette, including FDA HPV compounds, and species previously found in e-cigarette aerosols. METHODS: Test-pieces were Vype e-Pen Blended Tobacco flavour, and the Kentucky Reference Cigarette 3R4F. Vype e-Pen was puffed in two separate 100-puff blocks using a 55/33/30 puffing regime (volume/cm3/duration/s/interval/s), and 3R4F smoke was collected, in separate rooms, using the Health Canada 55/23/0 regime (ventilation blocked). With anticipated low levels of some e-cigarettes constituents, air/method blank analysis was made at the same time, location and method as the e-cigarette measurements. Independent contract labs used ISO17025 accredited methods to quantify the following emissions: carbon/nitrogen oxides, carbonyls/dicarbonyls, alcohols/di-alcohols, phenols, o-heterocyclics, chlorinated dioxins/furans; volatile; substituted and, polynuclear aromatic hydrocarbons; amides, amines, aromatic and aliphatic amines, nicotine & related compounds, nitrosamines, metals and radionuclides. RESULTS: 105 compounds were undetectable in Vype e-Pen emissions. 23 compounds were detected or quantified at comparable levels in Vype e-Pen emissions and air/method blank; hence it was concluded that e-Pen did not generate measurable levels of these. 15 compounds were quantified at higher levels in Vype E-Pen emissions than the blank, but at substantially lower per-puff levels than 3R4F. Similar per-puff emissions of four compounds (propylene glycol, glycerol, menthol and chromium) were found with Vype E-Pen and 3R4F. In conclusion, this study shows substantial chemical differences between emissions from e-cigarettes and tobacco cigarettes. Most cigarette toxicants examined could not be detected in the e-cigarette aerosol. Measuring airmethod blanks is an essential step for identifying experimental artefacts amongst trace-level e-cigarette aerosol constituents.

Funding: The study was funded by British American Tobacco.

Corresponding Author: Kevin McAdams, PhD, British American Tobacco, kevin.mcadam@bat.com

POS5-109
SMOKING CESSATION INTERVENTION PREFERENCES FOR DUAL USERS OF ELECTRONIC AND TOBACCO CIGARETTES

Nicole Menzie1,2, B. A. Pi3,4, John Correa2,5, Paul Harrell2, Lauren Meltzer5, Marina Unrood2,6, Vani Simmons7,8, Thomas Brandon2,9, H. Lee Moffitt Cancer Center, FL, USA, 1University of South Florida, FL, USA, 2University of Santiago de Compostela, FL, USA, 3Eastern Virginia Medical School, VA, USA

Many smokers report using e-cigarettes to help them quit smoking tobacco cigarettes; nevertheless, a large number of e-cigarette users continue to smoke traditional cigarettes. Dual users (currently using both e-cigarettes and combustible cigarettes) may benefit from targeted smoking cessation interventions; however, little is known about treatment preferences and needs of this unique and growing population. This study was designed to explore interest in various smoking cessation interventions among dual users and to identify predictors of this interest in specific intervention modalities. A sample of 200 dual users completed an electronic survey investigating e-cigarette use patterns and preferences. In this survey, we collected preference ratings for nine types of smoking cessation interventions: web-based, self-help booklets, smartphone apps, text message support, telephone counseling, individual counseling, group counseling, nicotine replacement therapy (NRT), and other medications. We also evaluated age, gender, and previous NRT use as predictors of interest in these interventions. The majority of dual users reported making a serious attempt to quit smoking in the past 12 months (74.5%), agreed that they were committed to being smoke-free (73.5%), and were at least moderately confident that they could quit smoking (67%). Sixty-three percent reported being interested in a quit-smoking program designed specifically to help e-cigarette users quit smoking combustible cigarettes. A within-subjects ANOVA revealed that the various intervention modalities elicited different degrees at interest among dual users, (F (5.35, 1043.42) = 30.65, p < .001. Post-hoc analyses indicated the greatest preference for web-based and smartphone interventions and little interest in NRT and other medications. Regression analysis showed that preferred treatment type was associated with both age and gender. These results may guide the development of smoking cessation interventions specifically for dual users.

Funding: This work was supported by Moffitt Cancer Center and the National Cancer Institute of the National Institutes of Health under award numbers R01 CA134347 and R01 CA154596, as well as National Institute on Drug Abuse grant R01 DA037961. This work has also been supported in part by the Biostatistics and Survey Methods Core Facilities at the H. Lee Moffitt Cancer Center & Research Institute, NCI designated Comprehensive Cancer Center(P30CA76292) and Post-doctoral Training Grant, Galician Program for Research, Innovation and Growth 2011-2015 (I2C Plan), modality A, Xunta de Galicia.

Corresponding Author: Nicole Menzie, MA, H. Lee Moffitt Cancer Center; University of South Florida, nicole.menzie@moffitt.org

POS5-110
NEURAL ACTIVITY IN MEDIAL PREFRONTAL CORTEX IN RESPONSE TO GRAPHIC CIGARETTE WARNING LABELS PREDICTS RELAPSE IN SMOKING CESSION TREATMENT

Max Owens1, Joshua Gray1, Marie Rapoport2, Abigail Mistretta1, Brittany Hawkshedge1, James Mackillop3, Lawrence Sweet4, 1University of Georgia, GA, USA, 2McMaster University/ St. Joseph’s Healthcare Hamilton, ON, Canada

Smoking remains the leading preventable cause of morbidity and mortality worldwide. Based on current research, the use of graphic warning labels (GWLs) that include images depicting negative consequences associated with smoking appears to be effective in reducing rates of smoking, though results are not conclusive at
this point. Research has shown that smokers who are exposed to these GWLs are more aware of the risks associated with smoking, report greater motivation to quit smoking, and indicate reduced craving for cigarettes. Additionally, forgoing cigarettes immediately following exposure to these GWLs predicts an increased number of future quit attempts. In smokers, exposure to GWLs produces heightened activity in brain regions central to emotional processing. The current study extends this literature by using functional MRI (fMRI) to investigate neural activity in response to GWLs to predict success during smoking cessation treatment. Specifically, 46 healthy nicotine-dependent smokers completed an fMRI cue exposure paradigm in which they were exposed to both GWLs and written warning labels (WWLs). Subsequently, they were then provided free smoking cessation treatment and their smoking was monitored throughout treatment. In voxelwise comparisons, significantly greater activation was found in the amygdala and right middle frontal gyrus during presentation of GWLs than during the WWLs (q = 0.5). In region of interest analyses, neural activity in the ventral (β = .33, p = .02) and dorsal (β = .29, p = .04) medial frontal gyrus during exposure to GWLs was predictive of the number of days until participants resumed daily smoking following their quit date. These findings suggest that GWLs increase neural responding in regions associated with emotional response and executive functioning more so than WWLs. Furthermore, regions associated with executive functioning and retrospective processing appear to be essential to understanding how an individual’s response to GWLs predicts smoking behavior during treatment. These results suggest executive function and introspection in response to GWLs as potential mechanisms by which GWLs could reduce smoking in the population.

Funding: Study funded by NIDA Grant: R21 DA033269-01 Dr. MacKillop is the holder of the Peter Boris Chair in Addictions Research, which partially supported his role.

Corresponding Author: Max Owens, BS, University of Georgia, owensmax03@gmail.com

POS5-111
TOBACCO INDUSTRY DIRECT MAIL ADVERTISING TO PATIENTS AT A QUIT SMOKING PROGRAM
Mia Zimmermann1*, Diana Lewis1, Donna Richardson1, Michael Steinberg2, 1Rutgers University, School of Public Health, NJ, USA; 2Rutgers University, Robert Wood Johnson Medical School, NJ, USA

BACKGROUND: Tobacco industry direct mail to names on the industry’s extensive databases delivers branded advertisements, cost-saving coupons and even gifts to consumers. Data on the impact of receipt of direct mail on smoking behavior are limited. Of particular interest is its influence on the success of quit attempts, which might be affected by the reminders, rewards and incentives for smoking delivered through direct mail. METHODS: Sixty one subjects who presented at a NJ tobacco dependence program from July 2013-February 2014 to quit smoking or to participate in smoking research were surveyed. RESULTS: Subjects were primarily female, Caucasian, reported having a current mental health condition and/or medical history, had less than a high school degree, were unemployed, sick or disabled, smoked 14 cigarettes per day and were moderately dependent. Sixty percent (35/58) had ever received direct mail from a tobacco company and approximately 30% of all subjects (17/58) had received direct mail in the last 6 months. Of the people who received direct mail in the last six months, many (10/17; 59%) were preparing to quit in the next 6 months and 35% (6/17) had recently quit (>6 months) and were working on not relapsing. All reported having received coupons with direct mail and most said they liked receiving coupons. Fifty nine percent (10/17) want to stop receiving direct mail; 41% (7/17) said they wouldn’t know how to get off the mailing list. DISCUSSION: This is a small pilot study of patients trying to quit smoking who have previously received direct mail. Further research on the impact of direct mail on quitting attempts is needed. In the meantime, smokers trying to quit should be encouraged to remove their names from industry databases and offered assistance in doing so. Tobacco dependence treatment should include strategies for managing the receipt of direct mail during quit attempts.

This study was funded by pilot grant P30CA072720 from Rutgers University, The Cancer Institute of New Jersey.

Funding: Rutgers University, The Cancer Institute of New Jersey

Corresponding Author: Mia Zimmermann, MPH, Rutgers University, School of Public Health, mia.hanos@sph.rutgers.edu

POS5-112
CONTROLLED AEROSOL RELEASE TO HEAT TOBACCO: PRODUCT OPERATION AND AEROSOL CHEMISTRY ASSESSMENT
Simon Poynton, Peter Davis, Joe Sutton, Sharon Goodall, Sandra Costigan, Ken Scott, James Murphy, Kevin McAdam, Chuan Liu*, Christopher Proctor, British American Tobacco, United Kingdom

Heating instead of burning tobacco has the potential to significantly reduce the levels of combustion-derived toxicants in the final aerosol. A number of ways to deliver controlled aerosol by heating tobacco have been described in patents and there are also commercially available tobacco-heating products (THPs) in some countries around the world, for example, Revo, Ploom and IQOS. These THPs use different heating methods and markedly different heating temperature profiles. This work describes a patented novel tobacco heating product, which is based on heating a heated aerosol stream with a battery-heating coil, much like an electronic cigarette (or e-cig). In operation, the aerosol stream passes through a bed of blended cut tobacco by a puffing flow. A transient and dynamic energy exchange between the aerosol and the tobacco bed occurs which drives off tobacco flavour components into an otherwise e-cig aerosol. The resulting aerosol composition is dominated by the parent e-cig formulation by mass, but with a sensorially elevated tobacco flavour profile, which is distinctively associated with the tobacco blend used. As the aerosol contains tobacco flavour constituents released by thermal elution, we classify the product as a tobacco heating product (THP). The aerosol chemistry data obtained showed that this mechanism of tobacco heating produced similar classes and levels of toxicants as the parent e-cig. Improved analytical capabilities are required to distinguish whether some toxicants found were originated from the tobacco. Tobacco flavours in the aerosol was confirmed by a consumer sensory panel, and again improved analytical method would be needed to detect some sensorially potent yet very low levels of tobacco flavour compounds. Nicotine concentrations within the aerosol were shown to originate from the e-liquid formulation. Microbial activities within the moist tobacco during use were found to be constant for up to 4 weeks. Detailed aerosol chemistry data from this product will be presented against those obtained from an e-cig, and a reference cigarette (3R4F).

Funding: The study was funded by British American Tobacco.

Corresponding Author: Chuan Liu, PhD, British American Tobacco, chuan_liu@bat.com

POS5-113
YOUTH TOBACCO USE PATTERNS AND THEIR PREDICTORS, A CLUSTER ANALYSIS
Julia Chen Chen*, University of Maryland College Park, MD, USA

OBJECTIVE: Population segmentation may facilitate the development of targeted tobacco prevention and treatment programs among adolescents. This study aimed to assess groups of U.S. youths according to their tobacco use patterns and examine the predictors of these groups. PARTICIPANTS: The study used a sample of 20,325 adolescents from 2014 National Youth Tobacco Survey. METHOD: We partitioned the sample using two-step cluster analysis according to current tobacco use behaviors (i.e., cigarettes, cigars, pipe, bidi, Hookah, snus, e-cigarettes, medical, substance use and mental health comorbidities. Results show that many of them also received direct mail, which could affect quit attempts as coupons may influence continued buying of cigarettes during quit attempts, creating another barrier to cessation in this predominantly low income group. While over half people who received direct mail said they wanted to stop receiving it, many said they wouldn’t know how to get off the mailing list. Further research on the effect of direct mail marketing on quit attempts is needed. In the meantime, smokers trying to quit should be encouraged to remove their names from industry databases and offered assistance in doing so. Tobacco dependence treatment should include strategies for managing the receipt of direct mail during quit attempts.

Corresponding Author: Mia Zimmermann, MPH, Rutgers University, School of Public Health, mia.hanos@sph.rutgers.edu

Funding: Rutgers University, The Cancer Institute of New Jersey

This study was funded by pilot grant P30CA072720 from Rutgers University, The Cancer Institute of New Jersey.

Corresponding Author: Mia Zimmermann, MPH, Rutgers University, School of Public Health, mia.hanos@sph.rutgers.edu

Funding: Study funded by NIDA Grant: R21 DA033269-01 Dr. MacKillop is the holder of the Peter Boris Chair in Addictions Research, which partially supported his role.

Corresponding Author: Max Owens, BS, University of Georgia, owensmax03@gmail.com

Funding: Rutgers University, The Cancer Institute of New Jersey

Corresponding Author: Mia Zimmermann, MPH, Rutgers University, School of Public Health, mia.hanos@sph.rutgers.edu
and All around users had the highest increased odds of being nicotine dependent (RRR=99.2, P < .0001). In contrast, E-cigarette purists had the lowest increased odds of being receptive to tobacco marketing (RRR=1.4, P < .001), being nicotine dependent (RRR=3.7, P < .0001), or having no harm perception about tobacco use (RRR=2.7, P < .0001). CONCLUSIONS: In a large sample of U.S. adolescents, the study identified seven distinct patterns of tobacco use. E-cigarettes are widely accepted by adolescent tobacco users and groups mainly use combustible tobacco products presented the highest risks related to tobacco use. It may be valuable to inform policy decision-making and intervention development by target- ing specific risk factors of various tobacco use patterns.

Funding: No Funding

Corresponding Author: Julia Cen Chen, MPP, CHES, University of Maryland College Park, jchenh@umd.edu

POS5-114
DIFFERENTIAL TRANSCRIPTIONAL REGULATION OF CREB TARGET GENES IN THE DORSAL OR VENTRAL HIPPOCAMPUS MEDIATE DISTINCT NICOTINE WITHDRAWAL PHENOTYPES

Miranda Fisher*, Luyi Zhou,1 Gavin Huang,1 University of South Carolina, SC, USA, 1University of Pennsylvania, PA, USA

Addiction to nicotine and the ability to quit smoking are influenced by genetic factors. Therefore, it is important to understand how genes and drugs of abuse mechanistically impact each other. One well-characterized protein responsible for regulating both response to drugs and gene expression is the transcription factor CREB. Work from our lab indicates that hippocampal specific alterations in CREB signaling and concurrent synaptic plasticity may underlie certain nicotine withdrawal phenotypes (Turner et al., 2013a; Turner et al., 2013b). However, the structure of the hippocampus is often described in terms of two separate subregions, each differing in behavioral, anatomical and gene expression profiles. The dorsal, or posterior hippocampus, primarily performs cognitive functions, such as spatial learning and memory tasks. The ventral, or anterior hippocampus, is believed to relate more to emotion, affect and stress-like behaviors. Therefore, this study examined the effects of selective hippocampal CREB deletion in either the dorsal or ventral hippocampus in animals chronically treated with saline, nicotine, or undergoing 24h withdrawal. CREBloxP animals were injected with AAV-CRE or AAV-GFP into the dorsal or ventral hippocampus. Four weeks following viral injection, animals were trained in the novelty-induced hypophagia (NIH) task and implanted with Azet osmotic minipumps containing either saline or nicotine. Following 2 weeks of treatment, the animals were then tested in the NIH test and the Fear Conditioning test. Following testing, hippocampal tissues were microdissected and used for mRNA analysis. Deletion of CREB in the ventral, but not dorsal, hippocampus resulted in amelioration of nicotine withdrawal-induced anxiety-like behavior in the NIH test. In contrast, CREB deletion in the dorsal, but not ventral, hippocampal region resulted in learning and memory deficits in the fear conditioning paradigm. Real-time quantitative PCR analysis showed differential treatment- and region-dependent alterations of several CREB target genes, including ARC, NR1, and BDNF, all of which are important for plasticity within the hippocampus. However, not all CREB target genes were altered; for example, while we observed transcriptional changes in the CREB target gene JNK1 (a protein kinase) in the dorsal hippocampus, no significant effects were observed in the ventral hippocampus. These observations suggest distinct roles of dorsal/ventral hippocampal CREB expression in mediating select nicotine withdrawal phenotypes through regulation of CREB target genes. Further evaluation of the roles of specific CREB target genes that are differentially regulated by nicotine and impact specific domains of nicotine dependence may lead to development of more effective smoking cessation therapeutics.

Funding: DA032681

Corresponding Author: Jill Turner, PhD, University of South Carolina, jturner@scsp.sc.edu

POS5-115
HIGH RATES OF MENTHOL USE IN PREGNANT SMOKERS: A PRELIMINARY REPORT

Laura Stroud1,*, Chrystal Vergara-Lopez1, Allison Gaffey1, Margaret Bublitz1,2, Raymond Niaura3,1 Brown University, RI, USA, 2The Miriam Hospital, RI, USA, 3The Truth Initiative, RI, USA

BACKGROUND: Smoking during pregnancy is one of the most widespread prenatal insults in the world, and has known causal associations with perinatal and neonatal morbidity. Reducing rates of smoking during pregnancy is a major public health goal. Despite links between menthol cigarette use and reduced quit rates, little is known about use of menthol cigarettes in pregnant smokers. Further, although racial/ethnic minorities (particularly black women) show a disproportion- ate use of menthol cigarettes, few studies have investigated racial/ethnic variation in menthol cigarette use during pregnancy. METHOD: We investigated rates of menthol cigarette use in two racially/ethnically diverse cohorts of pregnant smokers recruited between 2006-2010 (Cohort I) and 2012-2015 (Cohort II). Cohort I included 83 pregnant mothers (M=25, SD=5; 51% minorities); Cohort II included 73 pregnant mothers (M=26, SD=5; 60% minorities). Average cigarettes per day, menthol cigarette use, quit status, race/ethnicity and other demographics were assessed by structured interviews over pregnancy. Quit status was verified by saliva cotinine and breath CO in Cohort I. RESULTS: High rates of menthol use were found in both cohorts (84% of pregnant smokers in Cohort I; 89% of pregnant smokers in Cohort II). Rates of menthol cigarette use were similarly high across all race/ethnicity groups in both studies (Cohort I [whites: 75%; blacks: 94%; Hispanic: 89%; Other/multi-race: 100%]; Cohort 2 [whites: 83%; blacks: 91%; Hispanic: 95%; Other/multi-race: 86%];). menthol and non-menthol users also did not differ in socio-economic status or age. In Cohort I, menthol smokers were less likely to quit (20% quit) over pregnancy compared to non-menthol smokers (38% quit) (p<.016). CONCLUSION: We found extraordinarily high rates of menthol cigarette use in pregnant smokers, with little variability by race/ethnicity or socio-economic status in two Northeast cohorts between 2006 and 2015. Given known fetal morbidity from maternal smoking, consideration of effects of tobacco and menthol on the next generation is warranted in evaluating regulation of menthol in cigarettes.

Funding: This work was supported by grants R01 DA19558 and R01 DA031188 to Laura R. Stroud, PhD, from the National Institute on Drug Abuse (NIDA).

Corresponding Author: Laura Stroud, PhD, Brown University/The Miriam Hospital, lstrouddni@gmail.com

POS5-116
SMOKING EFFECT EXPECTANCIES PREDICT SMOKING DURING TREATMENT FOR SMOKERS WITH SUBSTANCE USE DISORDERS

Damaris Rohsenow*, Rosemarie Martin, Cara Murphy, Brown University, RI, USA

Expecting positive effects of smoking may increase the reluctance of individuals with substance use disorder (SUD) to quit smoking. We examined if expected smoking effects predicted smoking behavior during and after voucher-based smoking cessation treatment for smokers with SUD. Adults (N=184) in residential treatment for SUD who smoke 10+ cigarettes per day were recruited for a study designed to motivate smoking cessation with counseling and 19 days of either contingent vouchers (CV) for smoking abstinence or noncontingent vouchers. The Smoking Effects Questionnaire for adult populations assesses positive and negative effects of smoking on 4-point Likert scales of importance. Positive effect subscales include stimulation, positive social effects, reduced negative affect, and weight control. Negative effect subscales include negative physical effects, negative psychosocial effects, and future health concerns. Smoking was assessed within-treatment (number of twice-daily CO abstinence readings) and 1 month post treatment (number of cigarettes smoked per day). Positive smoking expectancies were significantly related to smoking during treatment and at 1 month within CV (p < .05). Within CV, expecting reduction of negative affect and weight control were related to more smoking during treatment; expecting positive social effects were related to more smoking at follow-up (each p < .05). There was less variance to predict without CV. Focusing on alternative ways to obtain positive effects may be important within counseling.

Funding: This research was supported by grants from NIDA (R01 DA13616) and by a Senior Research Career Scientist Award from the Department of Veterans Affairs.

Corresponding Author: Damaris Rohsenow, PhD, Brown University, Damaris_Rohsenow@brown.edu
POS5-117
THE ASSESSMENT OF A RANGE OF NEXT GENERATION TOBACCO AND NICOTINE PRODUCTS USING PRE-CLINICAL IN VITRO TOOLS
Frazer Lowe*, Chuan Liu, Kevin McAdam, Damien Breheny, Emmanuel Minet, Ian Fearon, Marianna Gaca, James Murphy, Christopher Proctor, British American Tobacco, United Kingdom

The concept of the risk continuum was first presented in 2012 to rank the reduced risk potential of a range of tobacco and nicotine products relative to cigarettes. The US Food and Drug Administration (FDA), is currently the only national regulator that has provided draft guidance with which to assess the harm reduction potential of novel tobacco products via their Modified Risk Tobacco Products draft guideline. Building on this guidance, we recently published an integrated assessment framework which proposed the use of pre-clinical, clinical and population studies to assess the reduced risk potential of new products at the individual and population level. There has been significant growth in the number of smokers currently using next generation products, predominantly e-cigarettes but also novel Tobacco Heating Products (THPs) that heat rather than burn tobacco. As these products do not burn tobacco (or in the case of e-cigarettes, do not contain tobacco), the toxicant profile of their aerosols is greatly reduced in comparison to cigarettes and therefore hold promise as reduce risk products. This paper will describe the in vitro assessment of an e-cigarette, a "hybrid" THP and a prototype THP and compare the results relative to conventional cigarettes. The novel products were assessed across a range of in vitro toxicological assays specifically measuring mutagenicity and cytotoxicity and showed greatly reduced responses relative to cigarettes. Following this, products were assessed using human-cellular based in vitro assays that model some of the key events for smoking related diseases such as COPD and CVD. These tests across all assays used indicated reduced responses relative to cigarettes. Using Muclinar reconstituted lung epithelial tissue cultures, we further assessed functional COPD key events in response to whole aerosol exposure from these novel products and observed substantial reductions in responses for the THP, hybrid THP and e-cigarette relative to cigarettes. Based on these in vitro assessments, the next generation tobacco and nicotine products tested demonstrated a potential to be reduced risk versus cigarettes, however a series of clinical and population studies measuring the longer terms effects of these new products on consumers is required to substantiate disease relevant risk reduction.

Funding: This work was fully funded by British American Tobacco.

Corresponding Author: Frazer Lowe, MSc., British American Tobacco, frazer_lowe@bat.com

POS5-118
VALIDATING MOBILE PHONE TEXT MESSAGES FOR SMOKING RISK COMMUNICATION
Georges Khalil*, Brittani Crook*, Karen Calabro, Alexander Prokhorov, Cheryl Perry*, The University of Texas M. D. Anderson Cancer Center, TX, USA, “Michael and Susan Dell Center for Healthy Living, TX, USA, “The University of Texas Health Science Center at Houston, TX, USA

BACKGROUND: Young adulthood is a critical period during which tobacco use increases. Among young adults, one growing strategy for communicating tobacco risks involves the dissemination of text messages via mobile phones, describing the risks of tobacco use. Through formative research, the Texas Tobacco Center of Regulatory Science on Youth and Young Adults (TOCRS YYA) has manually designed a library of mobile-phone text messages categorized based on depth (simple or complex), appeal (rational or emotional), and framing (gain-framed, emphasizing the benefits of cessation, or loss-framed, emphasizing the costs of tobacco use). This study aims to (1) validate the message library and (2) identify new emerging categories. METHODS: 972 messages were coded using an objective and valid computerized text analysis method called Linguistic Inquiry and Word Count (LIWC). LIWC coded for characteristics related to depth (e.g., word length, and word count), appeal (e.g., frequency of words expressing affect, negative emotions, and positive emotions), and framing (e.g., risk-avoidance and drives). Analysis of variance was conducted to examine differences between categories with respect to the characteristics. RESULTS: Compared to simple messages, complex messages exhibited a higher number of words per message and a higher number of words over six letters. Compared to rational messages, emotional messages included a higher frequency of emotional words (overall affect, positive emotions, negative emotions, fear, and anger) and a higher frequency of words exhibiting cognitive processing and quantity. Finally, gain-framed messages were significantly more likely to present words of risk-avoidance and drives. Several text messages (75%) included words related to health (e.g., asthma, cancer, and diabetes), and 77.73% included words related to social connections (e.g., dates, party, and family). DISCUSSION: Overall, this validity study indicates that manual coding of the text messages tends to match objective coding through LIWC. In addition, the library shows promising new categories that can be considered by researchers when developing a text-message intervention.

Funding: Research reported in this presentation was supported by grant number [1P50 CA180906-01] from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Corresponding Author: Georges Khalil, MPH, PhD, The University of Texas M. D. Anderson Cancer Center, gkhalil@mdanderson.org

POS5-119
TIME TO FIRST CIGARETTE AND RECREATIONAL PHYSICAL ACTIVITY ASSOCIATIONS WITH PULMONARY FUNCTION IN A NATIONALLY REPRESENTATIVE ADULT POPULATION OF SMOKERS
Steven Branstetter, Pennsylvania State University, PA, USA

Cigarette smoking is a leading cause of lung function decline in adults. Physical activity (PA) is a known preventative measure for a range of chronic diseases and has been found to ameliorate accelerated airway obstruction. Additionally, smokers who engage in more regular PA may have less addiction severity than smokers who are more sedentary. Lower addiction severity has been associated with improved cessation outcomes, reduced exposure to carcinogens and fewer negative health-related outcomes. Little is known, however, about the relationship between PA and lung functioning based on nicotine addiction severity, and exposure to the total number of cigarettes per day. Gaining a greater understanding of the role PA may have on lung function and addiction severity may help support the expansion of PA in both prevention and cessation interventions. The present study explored the role of nicotine addiction severity, and the level of PA on lung function in a nationally representative population of adult smokers. The current study utilized (2009-12) National Health and Nutrition Examination Survey (NHANES) survey, a nationally representative sample of approximately 400 (48% female) adult smokers aged 40-79 (M= 58; SD = 11). The study specifically examined the effect of nicotine addiction, as measured by time to first cigarette, and age to smoking cessation, with respect to the characteristics. RESULTS: Compared to simple messages, complex messages exhibited a higher number of words per message and a higher number of words over six letters. Compared to rational messages, emotional messages included a higher frequency of emotional words (overall affect, positive emotions, negative emotions, fear, and anger) and a higher frequency of words exhibiting cognitive processing and quantity. Finally, gain-framed messages were significantly more likely to present words of risk-avoidance and drives. Several text messages (75%) included words related to health (e.g., asthma, cancer, and diabetes), and 77.73% included words related to social connections (e.g., dates, party, and family). DISCUSSION: Overall, this validity study indicates that manual coding of the text messages tends to match objective coding through LIWC. In addition, the library shows promising new categories that can be considered by researchers when developing a text-message intervention.

Funding: Research reported in this presentation was supported by grant number [1P50 CA180906-01] from the National Cancer Institute and the FDA Center for Tobacco Products (CTP). The content is solely the responsibility of the authors and does not necessarily represent the official views of the NIH or the Food and Drug Administration.

Corresponding Author: Georges Khalil, MPH, PhD, The University of Texas M. D. Anderson Cancer Center, gkhalil@mdanderson.org

POS5-120
CHRONIC STRESS EXPOSURE DURING ADOLESCENCE RESULTS IN CROSS- AND TRANS-GENERATIONAL CHANGES IN RESPONSE TO NICOTINE ADMINISTRATION IN MICE
Nicole Yohn*, Julie Blendy, Perelman School of Medicine, University of Pennsylvania, PA, USA

Transgenerational effects of short term parental stress exposure on anxiety, depression, and physiological stress response has been documented. However, there has been no research on the effect of long-term parental stress exposure on response to drugs of abuse including nicotine, despite the well-known impact
of stress on addiction. Further, the importance of stress exposure during a critical period for gamete development has not been evaluated. Therefore, we used a chronic stress exposure paradigm in adolescents to determine the effects of nicotine in several generations of offspring. Male and female C57Bl/6 mice underwent chronic unpredictable stress for 2 weeks starting at 4 weeks of age. Following CUS, both male and female mice were mated with naive partners to produce F1 offspring. In addition, mice of both sexes from the F1 generation were mated with naive partners to produce F2 offspring. All generations were administered a series of tests for anxiety-like behavior, stress response, and response to nicotine administration between 10-14 weeks of age. Offspring whose parents were exposed to adolescent stress showed decreased locomotor response to chronic nicotine regardless of sex (F1 generation). However, male and female offspring of F1 males (F2 generation) show an increase in locomotor response to nicotine administration. F1 females whose fathers experienced adolescent stress produce male offspring with decreased locomotor response to nicotine while F1 females whose mothers experienced adolescent stress have male and female offspring with decreased locomotor response to nicotine. Changes in promoter DNA methylation in the amygdala were found in genes encoding corticotropin releasing hormone (Crh) and its receptor (Crhr1) in male F1 offspring whose parents were exposed to stress. Interestingly, residues with differential methylation in Crhr1 have also been implicated as sites for epigenetic regulation via localization with histone modifications (encode, cell-culture, ChIP Seq) and putative binding sites for transcription factor binding (jaspar database alignment search). RNA-seq on F1 male offspring was also performed to determine changes in transcriptional regulation of candidate genes as well as identification of novel targets.

Funding: This work was supported by T32 DA28874 and R01 DA033646.

Corresponding Author: Nicole Yohn, Perelman School of Medicine, University of Pennsylvania, nyohn@mail.med.upenn.edu

POS5-122
A MULTILEVEL INVESTIGATION OF INDIVIDUAL, INTERPERSONAL, AND NEIGHBORHOOD FACTORS ASSOCIATED WITH SMOKING STATUS IN OHIO APPALACHIAN WOMEN

Tiffany Thomson*, Juliana Nemeth, Amy Ferdekich, Bo Lu, Juan Peng, Mary Ellen Wewers, The Ohio State University, OH, USA

PURPOSE: To better understand the role of social contextual factors as they relate to smoking behavior among women residing in an under-served region of Ohio. OBJECTIVES: We use a multilevel modeling approach to determine the association between selected individual, interpersonal, workplace, and neighborhood/community characteristics and smoking status among women in Ohio Appalachian counties. METHODS: We used a two-phase address-based sampling approach to recruit a total of 408 women in Ohio Appalachia to take part in a cross-sectional one-hour in-person health survey. Survey items included those measuring individual, interpersonal, workplace, and neighborhood/community factors. Using a backward selection process, multinomial logistic regression models were used to determine the relationship of factors to smoking status (never, former, current). Current smokers were used as the referent group. RESULTS: In the final model containing all multilevel factors, age (p=<.0008) and depressive symptoms (p=.0157) were individual level factors associated with smoking status. Interpersonal factors remaining in the model included the social influence injunctive norm (p=<.0010), social participation (p=.0047), and community (p=.0033) social networks. Finally, social cohesion, a neighborhood factor, was associated with smoking status (p=.0406). CONCLUSIONS: This study extends the field by focusing on social contextual factors as they relate to smoking status among women residing in Ohio Appalachia. Social factors include those of individuals' time and advice social networks. Results show that social and contextual variables, including those of social networks, are associated with smoking status above and beyond individual level items. Interestingly, increases in social cohesion, a neighborhood factor, was positively associated with current smoking. This is in contrast to studies that have found higher levels of social cohesion to be negatively associated with smoking and other risk factors. Future work should examine if social cohesion works differently in rural versus urban settings.

Funding: This analysis is an extension of a Center for Population Health & Health Disparities NIH P50 Grant # SP50CA105632-06 to conduct research on cervical cancer disparity in Appalachia.

Corresponding Author: Tiffany Thomson, PhD, The Ohio State University, thomson.46@osu.edu

POS5-123
AN EXPERIMENTAL STUDY OF SUBJECTIVE EFFECTS ASSOCIATED WITH LITTLE CIGAR USE AMONG DUAL USERS OF LITTLE CIGARS AND CIGARETTES

Chad Reissig1, Victoria Coleman-Cowger1, Bartosz Koszowski2, Erica Peters3, Wallace Pickworth1, Jennifer Potts1, Zachary Rosenberry1, Lauren Viray1, 1Battelle Memorial Institute, MD, USA, 2Food and Drug Administration, MD, USA

Adolescents are susceptible to tobacco products with flavor and could find flavored little cigars (LCs) to be as appealing or more appealing than cigarettes. LCs are a novel class of tobacco products that are not subject to FDA regulation and do not currently face restrictions on flavoring. Little empirical data exist on subjective effects associated with use of flavored LCs. This study was a randomized experiment that compared subjective effects of three flavors of LCs (cherry, menthol, and unflavored) relative to each other and to own cigarette brand. Participants (N=48; 11 females) were adults (ages 18-55) who smoked ≥ 10 cigarettes per day and at least one LC or cigarillo per week. Participants completed four separate 2-hour experimental sessions in a randomized order. In each session participants smoked two of the same tobacco product (i.e., own brand cigarette; cherry, menthol, or unflavored LC), with smoking of each product separated by a rest period of 15-20 mins. Measures of subjective effects were the Duke Sensory Questionnaire (DSQ), Cigarette Evaluation Scale (CES), and Product Specific Risk Questionnaire (PSRQ), and were collected after smoking of the second product. Multilevel mixed-effects linear regression models compared subjective effects of own cigarette vs. any LC (i.e., collapsed across LC conditions), and the four different conditions (own cigarette vs. unflavored LC vs. menthol LC vs. cherry LC). Race, age, and Fagerstroem's Test of Nicotine Dependence score were covariates. Data indicate that own cigarettes were subjectively more appealing than LCs (all p<.05) on all DSQ, CES, and PSRQ subscale scores. Among LCs, relative to the unflavored
and menthol LCs, cherry LCs were associated with significantly higher scores on all DSQ scale scores; CES scale scores of Satisfaction, Reward, and Sensation but also of Aversion; and PSRQ scores of Overall Positive and Strong, and significantly lower scores on Overall Negative (all p<0.05). Results indicate that flavors in LCs, especially cherry, produce differences in subjective ratings related to appeal that may influence the development of addiction. Future studies can examine whether results generalize to individuals naïve to LC use.

Funding: This research was funded by a contract with the Food and Drug Administration (HHSF223201210186C). The authors declare no conflict of interest.

Corresponding Author: Sarah Evans, PhD, MS, Food and Drug Administration, Sarah.Evans@fda.hhs.gov

**POS5-125 HEALTH RISK PERCEPTIONS AMONG DUAL USERS OF LITTLE CIGARS AND CIGARETTES**

Chad Reissig1, Wallace Pickworth2, Erica Peters2, Victoria Coleman-Cowger2, Zachary Rosenberry2, Food and Drug Administration, MD, USA, 2Battelle Memorial Institute, MD, USA

Over the past 10 years, there has been an increase in the use of cigars, especially little cigars (LCs). Little is known about health risk perceptions for LCs and whether these are influenced by flavor characteristics. To gauge current awareness of health risks associated with use of LCs, we conducted a study assessing risk perception among dual users of cigarettes and LCs or cigars. Participants (N=48; 11 females) were adults (ages 18-55) who smoked ≥ 10 cigarettes per day and at least one LC or cigarillo per week. Participants completed four separate 2-hour experimental sessions in a randomized order. In each session they smoked two of the same tobacco product (i.e., own brand cigarette; cherry, menthol, or unflavored LC), with smoking of each product separated by a rest period of 15-20 min. A Product Specific Risk Questionnaire (PSRQ) was administered after each session which assessed the difference between the LC used in that day’s experimental session and own brand cigarettes. Risk perception was assessed at the end of the study using the General Risk Perception Questionnaire (GRPQ). Data from the PSRQ were analyzed using ordinal logistic regression and proportion tests were used for the GRPQ. From the GRPQ, participants (81%) indicated tobacco products had differing risks (p<0.001). A greater proportion of participants perceived cigarettes (69%) and large cigars (72%) to be ‘very harmful’ as opposed to somewhat or not very harmful (p=0.001). Whereas, a greater proportion of participants perceived e-cigarettes (85%) and hookah (65%) to be either not at all harmful or somewhat harmful as opposed to very harmful (p<0.001 and p<0.01, respectively). Overall risk perceptions of LC was between cigarettes and e-cigarettes. Data from the PSRQ indicated similar responses among the LCs for most items (e.g., addictive, strength, nicotine content) but there was a significant difference in perceptions of chemical content (i.e., more chemicals in cherry LCs than their usual cigarettes). These data suggest that health risk perceptions may differ by type of product and flavoring within a product.

Funding: This research was funded by a contract with the Food and Drug Administration (HHSF223201210186C). The authors declare no conflict of interest.

Corresponding Author: Sarah Evans, PhD, MS, Food and Drug Administration, Sarah.Evans@fda.hhs.gov

**POS5-126 DIFFERENTIAL EFFECTS OF HOOKAH VS. CIGARETTE SMOKING ON ENDOTHelial FUNCTION**

Mary Rezk-Hanna1,2, O’Neil Mason1, Jennifer Choung2, Lynn Doering2, Wendie Robbins2, Robert Elashoff3, Linda Sarna3, Ronald Victor1, 1The Heart Institute/Hypertension Center, Cedars-Sinai Medical Center, USA, 2School of Nursing, University of California, Los Angeles, USA, 3Department of Biomathematics, University of California, Los Angeles, USA

Hookah (water pipe) smoking is a major new understudied epidemic of tobacco abuse particularly affecting youth. Hookah’s rapidly growing popularity is due to unregulated expansion of hookah cafes near college campuses and social media marketing to young adults as a safer avant-garde alternative to cigarettes. Where multiple studies have shown that smoking even a single cigarette acutely impairs endothelial function, the acute effect of hookah smoking on endothelial function is unknown. Because burning charcoal briquettes are used to heat the hookah tobacco product, hookah smoke differs from cigarette smoke by delivering a large acute exposure to carbon monoxide, a known vasodilator, and other charcoal combustion products including fine and ultrafine particles that have been suggested by the air pollution and tobacco literature to constitute putative endothelial toxins. To determine the acute net effect of hookah smoking on endothelial function, in 23 healthy adult hookah smokers who do not smoke cigarettes (age 25±1 years, mean±SE: 8 women, 15 men; body mass index, BMI 23.6±0.6 kg/m2), we measured endothelium-dependent flow-mediated dilation (FMD) by brachial artery ultrasound before and immediately after 30 minutes of ad lib hookah smoking in a custom-built smoking chamber. In contrast to what we had hypothesized, brachial artery FMD did not decrease with hookah smoking but, surprisingly, increased from 6.9±0.5% to 9.7±0.5%, P<0.001: a 50.4±9.1% relative increase. In contrast, in six cigarette smokers, FMD decreased acutely by 30.9±2.8% (P=0.006) after smoking one cigarette, thus confirming previous reports. Shear rate (the stimulus to FMD) was unaffected by either form of smoking. Furthermore, the increases in systolic blood pressure (SBP) and heart rate (HR) were more than 50% smaller with hookah than with a cigarette (DSBP: +7±1 vs. +16±9 mmHg, P=0.05; DHR: +14±2 vs. 23±5 beats/min, P=0.05) but the exhaled carbon monoxide level was almost 3-fold greater after smoking hookah than after smoking a cigarette: 29±2 vs. 10±1 ppm, P<0.01. Thus, whereas brachial artery flow-mediated dilation is acutely impaired by cigarette smoking, it is acutely augmented by hookah smoking. Further studies are indicated to determine if the high carbon monoxide exposure constitutes the major mechanism underpinning the augmented flow-mediated dilation.

Funding: TRDRP Grant (#23DT-0102)

Corresponding Author: Mary Rezk-Hanna, NP, The Heart Institute/Hypertension Center, Cedars-Sinai Medical Center, School of Nursing, University of California, Los Angeles, mrezk@ucla.edu

**POS5-127 ELECTRONIC CIGARETTE USE AMONG HOSPITALIZED SMOKERS**

Natacha De Gennar1, Thomas Ylioja2, Anna Schulze2, Antoine Douaihy1, Esa Davis1, 1University of Pittsburgh School of Medicine, PA, USA, 2University of Pittsburgh School of Social Work, PA, USA, 3University of Pittsburgh Medical Center (UPMC), PA, USA

BACKGROUND: Results from the first studies of smokers admitted to hospital point to an increasing prevalence of electronic cigarette use, especially among younger and more educated patients. Some studies have also reported racial/ethnic differences. The aim of this study was to examine electronic cigarette use in a large sample of smokers recently admitted to a university teaching hospital in Western PA. METHODS: Hospitalized smokers who received intensive inpatient counseling from a tobacco treatment counselor from 01/11/2015-10/31/2015 were asked about electronic cigarette use. Data were extracted from the electronic health record including demographic information, age of smoking initiation, current levels of smoking, presence of other smokers in the household, tobacco use disorder, use of other tobacco products, and use of smoking cessation aids. RESULTS: Of 1,767 hospitalized smokers (71% White), 23% had used an electronic cigarette, with 44% of users reporting electronic cigarette use specifically to quit smoking combustible cigarettes. Race, current age, age of initiation of combustible cigarettes, heaviness of smoking combustible cigarettes, and use of other tobacco products in the past year were all significantly correlated with electronic cigarette use. In multivariable analysis, odds of electronic cigarette use was lower in male smokers (Adjusted Odds Ratio 0.59, 95% Confidence Interval 0.43-0.81) smokers who initiated tobacco use later (Adjusted Odds Ratio = 0.95, 95% Confidence Interval 0.76-1.19), and older smokers (Adjusted Odds Ratio 0.98, 95% Confidence Interval 0.97-0.99). CONCLUSIONS: In this large, recent sample of hospitalized smokers, electronic cigarette users were more likely to be younger and female, consistent with previous studies. Earlier age of initiation of combustible cigarette use predicted electronic cigarette use in this population. There were no significant racial differences for electronic cigarette use.

Funding: Supported by UPMC Health Services Division

Corresponding Author: Natacha De Gennar, PhD, University of Pittsburgh School of Medicine, degennan@pitt.edu
POS5-128
BRAND, MENTHOLATION STATUS, AND STORAGE CONDITIONS INFLUENCE THE BACTERIAL MICROBIOTA OF CIGARETTE TOBACCO
Suhana Chattopadhyay, Prachi Kulkarni, Eoghan Smyth, Joseph Paulson, Raul Cruz-Canal, Mihai Pop, Pamela Clark, Emmanuel Mongodin, Amy Sapkota, Jessica Chopyk*, University of Maryland, MD, USA

Tobacco products, specifically cigarettes, are home to a complex microbial ecosystem, which can be altered by commercial manipulation and storage conditions. However, the microbial dynamics of the tobacco microenvironment have largely been left unexplored, despite their critical implications for public health. To address this knowledge gap, we conducted time series experiments with five different commercially-available brands of cigarettes that were either commercially, experimentally, or user mentholated. The products were incubated under three different temperature and relative humidity conditions to mimic potential storage conditions (i.e., pocket, refrigerator and ambient). Subsamples were taken over the course of two weeks and a multi-enzyme and mechanical lysis protocol was used to extract total genomic DNA. PCR amplification of the V3-V4 hypervariable regions of the 16S rRNA gene was then performed for each sample using the 319F and 806R primers, followed by sequencing on the Illumina MiSeq platform and processing using the Quantitative Insights Into Microbial Ecology (QIIME) software package.

A comparative analysis of the bacterial community profiles from these five products revealed resident bacterial operational taxonomic units (OTUs) that occurred in all samples regardless of duration, storage condition, and mentholation status. These included opportunistic pathogens, such as Pseudomonas oryctobacterium and Pseudomonas putida. Beta diversity analysis revealed bacterial composition differences primarily by brand and mentholation state, with some alterations due to experimental condition. Additionally, in some products, the manufacturer’s lot directly impacted bacterial composition. For instance, certain lots of Newport Menthols were characterized by significant increases in Lactobacillus. The user mentholated products, those where menthol is added prior to use, saw the largest temporal shifts in abundance of the major taxonomic groups corresponding to experimental conditions. These data suggest that manufacturer processes and user behavior may directly impact the microbiota of cigarette products, which may have implications for user health.

Funding: Funding for this project was provided by an award funded by FDA and administered by NIH/National Cancer Institute (P50CA180523) establishing The Tobacco Center of Regulatory Science.

Corresponding Author: Jessica Chopyk, University of Maryland, jchopyk@umd.edu

POS5-130
WHAT INDUSTRY PATENTS TELL US ABOUT EMERGING ELECTRONIC CIGARETTE (E-CIGARETTE) PRODUCT DESIGN
Lauren Czaplicki1, Ryan Kennedy2, Lisa Lagasse1,2, Joanna Cohen1,2, Johns Hopkins Bloomberg School of Public Health, MD, USA, 3Institute for Global Tobacco Control, MD, USA

BACKGROUND: Industry patents have been used to inform the field of tobacco control about product innovations. This study reviewed publically available patents to understand innovations related to e-cigarette design. METHODS: Google Patents was used to identify patents using the following search terms: “electronic cigarette” OR “e-cigarette” AND “e-liquid” OR “e-juice” AND “nicotine.” Patents were downloaded and inventoried based on year filed, country, and inventor. Qualitative content analysis was used to identify major themes of innovation. RESULTS: The search identified 90 relevant patents (87 applications and 3 granted patents). The majority of patent applications were filed in a few countries including the U.S. (n=47), Israel (n=17), and China (n=11). Research labs or private companies filed almost half (n=36), followed by tobacco corporations (n=27), individual inventors (n=17), and e-cigarette companies (n=17). Patent filing dates ranged from March 2008 to November 2015. Between 2008 – 2012 only five patents were filed; filings increased in 2013 (n=24), 2014 (n=40), and 2015 (n=21). Product innovations identified were classified as (1) improved nicotine delivery, (2) sensory enhancement, (3) consumer satisfaction, (4) personalized technology, (5) harm reduction, and (6) product safety. Innovations included advancements made to atomizer/cartomizer heating elements to enhance nicotine delivery; mobile synch technology to record and share user parameters (e.g. number of puffs); safety features to limit number of users or improper use in public places or around children; mechanisms to approximate the sensation (e.g. throat hit) or physical experience of smoking a cigarette; and chemical modifications to increase absorption of nicotine in the oral mucosa and delivery of nicotine into the lungs. CONCLUSION: This analysis highlights that the tobacco industry, e-cigarette companies, and private labs are working to develop innovations that will improve e-cigarette user satisfaction from improved nicotine delivery and sensory experiences. Significant innovation is also taking place to improve product safety. These data can inform future product policy and regulation.

Funding: Funding for this study was provided by the Center of Excellence in Regulatory Science at Innovation (CERSI) at Johns Hopkins University. CERSI is a collaboration between Johns Hopkins University and the US Food and Drug Administration. Funding was also provided by the T32 CA0093140 Cancer Epidemiology, Prevention, and Control training grant through the National Cancer Institute.

Corresponding Author: Lauren Czaplicki, MPH, Johns Hopkins Bloomberg School of Public Health, lczapli1@jhu.edu

POS5-129
THE IMPACT OF SMOKING MENTHOL CIGARETTES ON HEALTH RISK PERCEPTIONS DURING A SIX-WEEK CLINICAL TRIAL
Rachel Denlinger1*, Jennifer Tidey1, Dorothy Hatsukami2, Lauren Pacek3, Eric Donny4, 1Brown University, RI, USA, 2University of Minnesota, MN, USA, 3Duke University, NC, USA, 4University of Pittsburgh, PA, USA

BACKGROUND: Since the FDA has regulatory authority to mandate product standards for cigarettes, understanding how menthol affects smokers’ perceptions of reduced nicotine cigarettes is critical. A recent clinical trial of non-treatment seeking smokers assessed the 6-week effects of cigarettes that varied in nicotine content on smoking behavior and other measures. For this secondary analysis, we examined effects of nicotine content and menthol status on health risk perceptions. METHODS: The Perceived Health Risk Scale (PHRS) was administered at baseline and Week 6. Using 10-point scales, subjects indicated their perceived risk for lung cancer, heart disease, and other smoking-related risks. Mixed-factors ANOVAs examined effects of time, nicotine content and menthol status on PHRS scores. Linear regression models assessed predictors of PHRS scores at Week 6, including baseline scores, menthol use, nicotine content, race, and education. RESULTS: This analysis included 773 subjects, of whom 442 were menthol smokers (57%). There were significant main effects of menthol and time, and interactions between these variables, on perceived risk of addiction and all diseases (p's < .05), indicating that menthol users had lower risk perceptions and participation decreased. Risk perceptions to a greater extent in menthol smokers. There were significant nicotine content x time interactions (p's<.05), indicating that subjects in the low-nicotine conditions experienced decreases in risk perceptions over time. However, there were no significant 3-way interactions on risk perceptions. In addition to baseline PHRS scores and menthol status, education significantly contributed to the variance for risk of several diseases (p's<.05). Race was not a significant predictor. CONCLUSION: Trial participation reduced PHRS mean scores in menthol and non-menthol smokers, with menthol smokers experiencing greater reductions. Use of low-nicotine cigarettes also reduced risk perceptions, but menthol users were not more sensitive to these effects. Additional research is needed to better understand menthol smokers’ health risk perceptions and the effects of nicotine reduction on risk perceptions.

Funding: Supported by U54DA031659

Corresponding Author: Rachel Denlinger, MPH, Brown University, rachel_denlinger@brown.edu

POS5-131
WELL-CHARACTERIZED ELECTRONIC NICOTINE DELIVERY SYSTEM FOR MEDICAL STUDIES
David Graham, NJOY, AZ, USA

A well-characterized electronic nicotine delivery system (ENDS) has been developed under a grant from the National Institute for Drug Abuse for use by medical researchers across the US. The ENDS product is a “vape-style” device and comprises a replaceable pre-filled liquid reservoir (“tank”) and a rechargeable power supply unit. The ENDS was designed for reliability and user convenience. Important features include: breath actuation, a tank and battery of sufficient capacity to satisfy smokers for > 1 day on a single unit, primary packaging of the tank with excellent oxygen and water vapor barrier properties to ensure a long shelf life.
and power control to maintain a constant aerosol output over the lifetime of the tank and battery charge. The e-liquid was formulated to be satisfying to the user and to provide effective nicotine delivery. Device development utilized principles of design control (Code of Federal Regulations Title 21 Part 820), including design input requirements and risk analysis. Analytical testing was conducted in an ISO 2971-certified laboratory. All methods were qualified for our ENDS product. Key parameters of the ENDS liquid include content of nicotine, propylene glycol, vegetable glycerin, nicotine-related impurities, humectant impurities, elemental impurities, and pH. The critical attributes characterized for the aerosol product were total particulate matter, nicotine, propylene glycol, glycерin, carbonyl degradation products, and particle size. Typical properties of the ENDS aerosol in a 3 second puff are 7.5 milligrams total particulate matter, 100 micrograms of nicotine, 0.1 micrograms carbonyl content (acetaldehyde, formicdehyde, and acrolein), and a particle size of 1 micron. These characteristics should provide efficacious nicotine delivery. Four product lots (two active lots with nicotine, two placebo lots) of about 3000 tanks each were assembled under Good Manufacturing Practice. Following production, parts underwent release testing and are currently in stability studies. A Drug Master File on the ENDS product is on file now with FDA. A pharmacokinetics and user satisfaction study is scheduled for the first half of 2016.

Funding: NIDA SBIR Phase 1 grant and NJOY funding

Corresponding Author: Daniel Myers, PhD, NJOY, dmyers@njoy.com

POS5-133
THE IMPACT OF CREATING A MULTI-LAYERED SMOKING CESSATION PROGRAM FOR CANCER PATIENTS ON REACH, UTILIZATION, AND CESSATION

Vance Rabius*, Jason Robinson, Janice Blalock, Maher Karam-Hage, Diane Beneventi, Paul Cinciripini, The University of Texas MD Anderson Cancer Center, TX, USA

Tobacco plays a causal role in at least 18 types of cancer, accounts for almost 1/3 of all cancers, and has deleterious consequences on cancer treatment outcomes. Since 2006, the Tobacco Treatment Program (TTP) has provided cessation assistance to patients and employees at MD Anderson Cancer Center free of charge. TTP provides a program of behavioral counseling and pharmacotherapy for smoking cessation, in combination with psychotherapy and/or psychiatric treatment for conditions directly affecting a cessation attempt (CMP). In 2012, TTP instituted automatic electronic referrals (AER) to TTP of all patients who self-identified as tobacco users or recent quitters in their electronic health record (EHR). We also developed a multi-layered series of options to serve all patients. In Sep 2012, we added two self-help/motivational services: the minimum provision of self-help materials and a follow-up phone call (SH) and a motivational call, self-help materials and follow-up call (MSH). In May 2013 we began offering a phone option (PO), which provides behavioral counseling for smoking cessation. Here we report the impact of this approach and utilization of AER, SH, MSH, and PO services. We also report the cessation outcomes for patients during the second year of our multi-layered program. Adding AERs increased the average number of daily referrals by ~300% (from 11 to 44 per day) and increased CMP utilization by 31% (from 48 to 63 per month). The addition of the PO further increased the number of patients who received assistance from a counselor by 32% (from 63 to 83 per month). In the second year of our multilayered program we provided service to 5,293 patients. We attempted to contact all patients at 3 months following their referral. 7-day point prevalence abstinence (PP7), assuming non-responders are still smoking, are as follows: SH – PP7=10% (84/867); MSH – PP7 = 17% (591/3459); PO – PP7=16% (41/251); CMP – PP7=38% (273/716). AER’s, combined with a multi-layered service offering significantly extended TTP’s reach and patients’ utilization of TTP services. The highest abstinence rate was associated with counseling plus pharmacotherapy.

Funding: The authors are supported in part by the NCI P30 CA16672 Cancer Center Support Grant to MD Anderson. The Tobacco Treatment Program is supported by State of Texas Tobacco Settlement Funds. Paul M. Cinciripini is a site principal investigator and Maher Karam-Hage is a co-investigator on a clinical trial sponsored by Pfizer. They have also received grants and nonfinancial support from Pfizer, including medication for an NIH-funded trial.

Corresponding Author: Vance Rabius, PhD, The University of Texas MD Anderson Cancer Center, varabius@mdanderson.org

POS5-134
RANDOMIZED CONTROLLED TRIAL OF A BRIEF, TABLET COMPUTER INTERVENTION TO MOTIVATE TOBACCO QUITLINE USE AMONG SMOKERS IN SUBSTANCE ABUSE TREATMENT

Richard Brown**, Erika Bloom,1,3 Jacki Hecht1, Haruka Minami, Ana Abrantes1,3, Christopher Kahrle3, Steven Ondersma,1 Lawrence Price1,3, University of Texas at Austin, TX, USA, 2Rhode Island Hospital, RI, USA, 3Brown Medical School, RI, USA, 1Fordham University, NY, USA, 2Butler Hospital, RI, USA, 3Brown University School of Public Health, RI, USA, 4Wayne State University, MI, USA

In this preliminary RCT, a brief, computer-based intervention to motivate tobacco quitline use among cigarette smokers in SUD treatment (TIME-TQ) was compared to a computer-based, time matched control intervention (CON). Of the 60 participants, 31 were women (51.6%), 53 were White (88.3%), mean age was 36.45 (SD=12.96), mean smoking rate was 17.37 (SD=5.84) and mean FTND was 4.93 (SD=1.89). Relative to CON, TIME-TQ showed greater, albeit nonsignificant increases in the likelihood of quitting & confidence to quit (p≤.15). In addition, no between group differences in rates of acceptance to tobacco quitline referral were found. In each condition, 10 out of 30 participants (33.3%) accepted quitline referral after the computer intervention. At 1-month follow-up, 7 participants in TIME-TQ (M=2.14, SD=1.46) and 4 in CON (M=1.25, SD=0.5) reported completing at least 1 quitline counseling call (p=0.81). There was only one participant in the TIME-TQ condition who showed CO-verified, 7-day point prevalence abstinence at 3-month follow-up. Finally, results showed that all five smoking constructs examined (likelihood of quitting smoking in the next 30 days, confidence in ability to
The current study evaluated the degree to which self-report, psychophysiological, and in-the-moment observations (ecological momentary assessment; EMA) of affective change due to smoking, a critical maintaining factor for cigarette smoking, corresponded to one another among adolescent light smokers. As part of a larger longitudinal study investigating social emotional contexts of adolescent smoking, a subset of participants who reported smoking at least one puff of a cigarette in the past two weeks completed both a psychophysiological assessment laboratory study and an EMA substudy (n = 62, 43.5% female; smoked an average of 3.5 cigarettes/day). In the lab-based study, adolescents elected to smoke as much or little of a cigarette as they wanted, and had self-reported negative affect (NA), startle eyeblink response (SER), skin conductance (SC), and heart rate (HR) measured directly before and after smoking. In the EMA protocol, participants completed a week of event-recording smoking wherein they reported NA before and after smoking via hand held computers in real time. Repeated measures ANOVA analyses indicated significant changes from pre- to post-smoking for self-reported NA as measured in the laboratory (p < .05), NA via EMA (p < .001), HR (p < .001), SC response (p < .05), and SC level (p < .01). No significant changes were observed in SER from pre- to post-smoking. Convergence between measures was evaluated via Pearson correlation, to modest results. Despite significant changes from pre- to post-smoking, laboratory self-report change in NA was not related to EMA change in NA, nor any psychophysiological measures. Similarly, change in NA via EMA was not related to changes in psychophysiological responses from pre- to post-smoking. These results have implications for intervention efforts and future research, as these data suggest, at least in a group of adolescent smokers, methods thought to characterize the same construct, relief of NA due to smoking, may be less concordant than perhaps expected.

Funding: This research was supported by the National Cancer Institutes of Health under award number 5P01CA098262. The content is solely the responsibility of the author and does not necessarily represent the views of the National Institutes of Health.

Corresponding Author: Grace Giedgowd, MA, University of Illinois at Chicago, ggiedg2@uic.edu

POS5-138
THE STABILITY OF PHYSIOLOGICAL RESPONSE TO NICOTINE: FROM ADOLESCENCE TO ADULTHOOD
Michael Palmeri*, Grace Giedgowd, Jon Kassell, Robin Mermelstein, University of Illinois-Chicago, IL, USA

The effect of nicotine on autonomic processes has been well characterized in both adolescents and adults in the domains of emotion, attention, and the role that nicotinic cues play in modulating psychophysiological response. These studies, while methodologically rigorous, are cross sectional and provide no information as to how these biological responses may change over time. The current study attempts to describe the pattern of psychophysiological response to nicotine, taken at two different points in time separated by five years. While part of a larger study that longitudinally examines the social and emotional contexts of adolescents as they progress into young adulthood, this study consists of a subset of individuals (n=30, 16 males, with 19 smoking over 100 cigarettes in their lifetime at baseline) that reported smoking cigarettes at least once in the past two weeks prior to enrollment and were thus eligible to participate in a laboratory psychophysiological study that included measures of heart rate (HR), skin conductance (SC) and startle eyeblink response (SER). Pre- and post- smoking (in lab) change scores were calculated for each variable of interest (average HR, SC area under the waveform, and average startle response) at both timepoints, baseline (mean age 15.5 years) and 5 years follow-up (young adulthood). We used repeated measures ANOVAs to determine if the acute physiological change scores to smoking differed over time. At follow-up, participants showed a larger increase in HR when smoking a cigarette compared to scores 5 years earlier (13.29 vs -5.7, p = 0.02). They also showed a larger average change in startle response (0.08 vs -0.04, p = 0.05). Pre/ post changes in integrated skin conductance were not significant. This study is the first of its kind to examine a differential pattern of physiological response due to in-laboratory cigarette consumption within individuals at timepoints separated by 5 years and across the developmental threshold of adolescence to young adulthood. These preliminary findings suggest that physiological response to nicotine is dynamic and may relate to increased use over time.

Funding: This research was supported by the National Cancer Institutes under award number 5P01CA098262. The content is solely the responsibility of the author and does not necessarily represent the views of the National Institutes of Health.

Corresponding Author: Michael Palmeri, MA, University of Illinois-Chicago, MPALME26@UIC.EDU
POS5-139
PERCEPTUAL AND EXPERIENTIAL FACTORS EXPLAINING HOW 4,235 INDIVIDUALS INITIATED AND ESTABLISHED E-CIGARETTE USE IN PLACE OF CIGARETTE SMOKING

Neil McKeagney, Tiffany Hamilton-Barclay, Marina Barnard, Centre for Substance Use Research, United Kingdom

Epidemiological survey data suggests millions of American adults are now choosing to quit smoking, and consequently, with the assistance of electronic cigarettes and vaporizers. An online survey was designed to elicit the personal stories and detailed experiences of individuals who have quit smoking with the assistance of e-cigarettes in order to model the cognitive and experiential processes by which vaping became initiated and established in place of smoking. A multi-national sample of 4,235 individuals who have quit smoking completely (not even a puff in past 30 days) since they started vaping regularly (use every 2-3 days) was recruited. All were smoking tobacco (M = 24.3 cigarettes per day) and had been smoking for an average of 22 years at the point of first vape (FPV). From FPV, individuals dual-used cigarettes and e-cigarettes for 25 days, on average, before becoming an exclusive vaper, and, at the point of recruitment, had not smoked tobacco for 14 months. The majority currently vape every day (95%), use 1-12 mg/ml nicotine e-liquid (79%), a pen or tank-style device (91%), and non-tobacco flavoured e-liquid (86%). These 4,235 former-smoking vapers identified 25 distinct reasons for first trying an e-cigarette; 21 reasons for continuing to use an e-cigarette today; 57 health improvements and 7 health harms personally experienced since quitting smoking and vaping regularly; 18 pleasures/benefits they derive from vaping; and 32 pieces of advice they would give to smokers who are contemplating using an e-cigarette to quit smoking. The nature, frequency, interaction, and time course of the processes by which these 4,235 individuals transitioned from being regular smokers to former-smoking vapers will be presented in detail at the 2016 SRNT Annual Meeting. These findings provide public health and regulatory bodies with valuable insights into the factors that explain how thousands of individuals have already initiated and established vaping in place of cigarette smoking.

Funding: Funding for this study was provided by Nicoventures.

Corresponding Author: Christopher Russell, PhD, Centre for Substance Use Research, chrisrussell@drugmisuseresearch.org

POS5-140
MARKETING PRACTICES IN VAPE SHOPS IN EIGHT CITIES IN THE UNITED STATES, 2015

Dianne Barker1*, Jidong Huang2, Prabhba Nayak2, Christine Mineart3, Theodore Wagener1, Eleanor Leavens4, Scott Leischow5, Faria Omar2, Megan Diaz2, Frank Chaloupka2, Barker Bi-Coastal Health Consultants, Inc., CA, USA, 2University of Illinois at Chicago, IL, USA, 3Georgia State University, GA, USA, 4University of Arizona, Tucson, AZ, 5University of South Carolina, Columbia, SC

BACKGROUND: The number of independently-owned vape shops in the U.S. has increased dramatically in the last few years as the use of customized vaping systems has increased. With the exception of a few states, these retail establishments are not yet subject to traditional tobacco outlet policy regulations. Moreover, relatively little is known about how these shops may differ in their business and marketing practices. METHODS: In 2015, we interviewed vape shop owners/managers in 37 vape shops and observed availability, price, promotion and placement of vaping products and e-liquids across eight US cities: Atlanta, GA, Chicago, IL, Henderson, NV, San Jose, CA, Seattle, WA, Ventura County, LA, Phoenix, AZ, and Oklahoma City, OK. FINDINGS: The majority of vape shops primarily use social media outlets (100% Facebook, 84% Instagram and Yelp, 69% Twitter, 34% YouTube) and community events (33% e-mail marketing, with only 6 shops reporting an advertising budget. Few stores reported using print or broadcast media, with radio the most popular venue (19%). External signage was limited to business hours and those pertaining to sales to minors. Inside of stores, few posted prices on ENDS products, although available e-liquid flavors (ranging from 16 to 404) and prices often were posted on chalkboards. Signage was limited to those promoting the benefits of vaping. Several owners mentioned cross-marketing with other stores and distributors of e-liquids. Only 5 shops sold disposable e-cigarettes, and all remaining shops stated that were “not likely” to ever sell these in the future. CONCLUSIONS: Marketing in vape shops varies considerably from marketing in traditional tobacco outlets. Given the rise in vaping popularity among youth and the growing penetration of the tobacco industry into this marketplace, it is imperative that surveillance systems be developed to help monitor and regulate this environment.

Funding: NIDA TCTORS-R03

Corresponding Author: Dianne Barker, MHS, Barker Bi-Coastal Health Consultants, Inc., dbarker@earthlink.net

POS5-141
EFFECT OF SWITCHING FROM 100MM TO SPECTRUM REGULAR LENGTH CIGARETTES ON CIGARETTE USE PER DAY

Joni Jensen1, Joseph Koopmeiners1, Eric Donny2, Dorothy Hatsukami3, 1University of Minnesota, MN, USA, 2University of Pittsburgh, PA, USA

BACKGROUND: In 2012, 39% of the market share consisted of 100mm length cigarettes. How length of usual brand cigarettes impacts smoking behavior is an important factor to consider in studies using Spectrum research cigarettes because they are only available in regular length. METHOD: A previously published multi-site project randomly assigned 839 smokers to one of 6 doses of Spectrum research cigarettes or their usual brand for a 6-week period. Brand preference, cigarettes per day (CPD), urinary total nicotine equivalents (TNE), carbon monoxide (CO) were collected at baseline and at week 6 for CPD, TNE and CO. The purpose of this analysis was to determine the effects on CPD and biomarkers of exposure when a smoker who prefers a 100mm cigarette is switched to a regular length Spectrum research cigarette. Anecdotally, 100mm smokers report they feel like they need to smoke more regular length cigarettes to get the same effect as their 100mm. To examine this perception, we compared CPD, CO and TNE between subjects who smoked regular length usual brand cigarettes and those who smoked 100mm length cigarettes using linear regression adjusting for random assignment to nicotine content study cigarettes, baseline CPD, age, race and sex. RESULTS: At baseline, 34.9% (n=293) of subjects reported smoking regular length (70-72mm) cigarettes; 6.8% (n=57) reported smoking Kings (77-85mm); 54.1% (n=454) reported smoking 100mm (99-120mm) cigarettes; and 4.2% (n=35) did not specify a preference. These groups differed on several demographic measures including age, race, education, mental status (p<0.001) and CPD (p<0.018). Smokers of 100s, on average, smoked 2.2 more cigarettes per day than smokers that preferred regular length cigarettes (95% CI: 0.93, 3.53; p<0.001), however significant differences were not observed for CO or TNEs. CONCLUSION: It may be important to consider the length of baseline usual brand cigarettes when assessing changes in cigarettes per day on Spectrum’s regular length research cigarettes.

Funding: NIDA U54 DA031659

Corresponding Author: Joni Jensen, MPH, University of Minnesota, jensen010@umn.edu

POS5-142
NICOTINE POTENTIATES NEUREGULIN 3-ERBB4 SIGNALING IN ORBITAL FRONTAL CORTEX

Luyi Zhou*, Miranda Fisher, Pavel Ortinski, Jill Turner, University of South Carolina, SC, USA

Previous studies from our lab have shown that single-nucleotide polymorphisms across the gene for neuregulin 3 (NRG3) are linked to failed smoking cessation. Failed smoking cessation may be due to deficient impulse control. A recent preclinical study from Loos et al (2015) indicates that NRG3 overexpression in the frontal cortex increased impulsivity in the 5-choice serial reaction time task. However, the precise mechanism underlying these changes in the cortex is unknown. Therefore, we first use electrophysiology field recording to assess whether NRG3 alters long-term potentiation (LTP) in orbital frontal cortex (OFC). We found that without NRG3, 50Hz tetanic stimulus induced LTP in OFC. However, in the presence of NRG3, the same stimulus induced long-term depression (LTD), which was selectively attenuated by Afatinib, an ErbB4 inhibitor. Interestingly, acute nicotine bath application had the same effect as NRG3 – it also induced reversal LTD which was attenuated by Afatinib. This finding suggest that acute nicotine modulate synaptic plasticity in OFC via ErbB4 activation. We next use RT-PCR to assess whether chronic nicotine treatment and/or 24h spontaneous withdrawal alters expression of genes in the neuregulin signaling pathway. Similar to our previous findings in the hippocampus, 2 weeks of chronic nicotine treatment and/or 24 hour withdrawal significantly increased NRG3 and ErbB4 mRNA in OFC. Interestingly, this nicotine and/or withdrawal effect is specific to NRG3-ErbB4, as NRG1 (which also activates ErbB4) and ErbB3 mRNA is not affected. These data suggest that chronic nicotine may influence impulse control through modulation of NRG3-ErbB4 signaling in the OFC. Current studies are evaluating the mechanisms and functional ramifications of this increased NRG3-ErbB4 signaling elicited by chronic nicotine and acute withdrawal. Results from these studies could suggest potential novel therapeutics for smoking cessation that targeting the NRG3-ErbB4 signaling pathway.
THE RELATIONSHIP BETWEEN TOBACCO USE AND DEPRESSION ACROSS MID-ADOLESCENCE: A COMPARISON OF ELECTRONIC AND TRADITIONAL CIGARETTES

William Lechner1, Tim Janssen1, Christopher Kahler1, Janet Audrain-McGovern2, Adam Leventhal3, Brown University, Center for Alcohol and Addiction Studies, RI, USA, 1University of Pennsylvania, Perelman School of Medicine, PA, USA, 2University of Southern California, Keck School of Medicine, RI, USA

BACKGROUND: Strong associations between smoking and depression have been reported in adolescent populations. While the prevalence of cigarette smoking has decreased in adolescents over the past several years, use of electronic cigarettes has dramatically increased; several studies have documented higher prevalence of e-cigarette use than use of traditional combustible cigarettes. The recent emergence of these products in adolescent populations, and the known association between nicotine and depression raise questions regarding how these new products might compare to traditional cigarettes in terms of depression as a risk factor for onset of use, and how depression trajectories over time associate with tobacco product use onset. The current study examined whether electronic and combustible cigarette use patterns relate to depression differently over an 18-month period in mid-adolescence.

METHOD: Data were drawn from a longitudinal study (3 assessments: baseline, 6 and 12 month follow-up) of health risk behaviors in Los Angeles, CA. The sample included (N=2,243) adolescents who never used combustible or electronic cigarettes at the baseline assessment (mean age = 14.1, 53.4% female, 44.1% Hispanic, 19.0% Asian, 16.2% Caucasian, 5.6% Multi-ethnic or Multi-racial, 4.8% African American, 4.1% Native American / Pacific Islander, 5.5% other). Dummy-coded variables representing differing nicotine product onset and use patterns were regressed on latent intercepts and slopes of depression generated via growth curve models. Baseline age, gender, school, socio-economic status, parental education, alcohol, drug use, and use of other tobacco products were included as covariates. RESULTS: Higher levels of baseline depression predicted subsequent onset of combustible cigarette use as compared to abstinence from tobacco products (β=0.954, SE=2.849, p<.001); whereas depression did not predict electronic cigarette use onset. Electronic cigarette use (versus abstinence from tobacco products) was associated with a greater rate of increase in depression over time (β=1.425, SE=.520, p<.001), whereas combustible cigarette use (versus abstinence) did not significantly predict depression trajectories. CONCLUSIONS: Results suggest that electronic cigarettes and combustible cigarettes may hold different relationships with depression in terms of risk of onset and the trajectory of symptoms following onset. Depression may be a less pronounced risk factor for e-cigarette use onset than combustible cigarette use onset, and e-cigarette use is associated with greater increases in the trajectory of depression over time. The nature of these observations preclude direct causal inferences; future research is needed to further explore any causal relationship between e-cigarette use and increased depression.

HOW SWEET IS YOUR E-JUICE? SUCROSE, FRUCTOSE, AND GLUCOSE CONTENT IN FLAVORED ELECTRONIC CIGARETTE LIQUID REFILLS

Pebbles Fagan1,2, Pallav Pokhrel1,2, Thadeus Herzog1,2, Mignonne Guy1,2, Thomas Eissenberg3,1, Ian Pagano1,3, Donna CDC, 1University of Southern California, Keck School of Medicine, RI, USA, 2University of California San Francisco, CA, USA

The Food and Drug Administration (FDA) requires that the amount of sugar be labeled on food products. However, electronic cigarette liquid refills (e-juice) are unregulated and little is known about their sugar content. Sugar, a major constituent in tobacco products, is known to balance the harshness, irritation, and bitter taste of nicotine and enhance the flavor and aroma of tobacco and tobacco smoke. Studies suggest that the proportion of sugar in tobacco products influences its acceptability to consumers and may entice new users. This study examined the levels of sucrose, fructose, and glucose in flavored e-juices purchased from local shops (n=36). We also examined levels of formaldehyde, acetaldehyde, and acrolein, which result from the decomposition of sugars and are listed as FDA harmful and potentially harmful constituents in tobacco and tobacco smoke. E-juice bottles were purchased from 3 vape shops from March to April 2015. Four to five different nicotine concentrations were selected for each of the 16 flavors (e.g. juicy dragon, pina colada) from 8 e-juice brands. Nicotine concentrations labeled on each bottle ranged from 0 to 24 mg/mL. The Analytical Biochemistry Shared Resource at the University of Hawaii Cancer Center use liquid chromatography-mass spectrometry and enzymatic test kits to determine the levels of constituents in unheated e-juice. Results showed that 22%, 53% and 53% of the total sample had glucose, fructose and sucrose levels respectively that exceeded the detection limits (DL). None of the samples had sugars listed on their labels. The proportion of samples with glucose and sucrose that exceeded the DL was higher in nicotine-based compared to zero nicotine labeled e-juices. Of the total sample, 72%, 84%, and 75% had formaldehyde, acetaldehyde, and acrolein levels respectively that exceeded the DL, none of which were listed on the labels. The proportion of samples with aldehydes that exceeded the DL was higher in nicotine-based compared to zero nicotine labeled e-juices. Constituent ranges above the DL were 6.4 to 88.9 ug/mL for glucose; 8.8 to 331.2 ug/mL for fructose; 9.3 to 620.1 ug/mL for sucrose; 1.4 to 368 ng/mL for formaldehyde; 2.1-4676 ng/mL for acetaldehyde; and .03 to 10.1 ng/mL for acrolein. Sugar in flavored e-juices may appeal to young people and increase consumer acceptability of the use of electronic cigarette smoking. FDA regulation that supports accurate labeling of e-juice
constituents and interventions to educate parents and young people about product constituents and their potential harm are needed.

Funding: This study was funded by the University of Hawaii Cancer Center, University of Hawaii at Manoa.

Corresponding Author: Pebbles Fagan, PhD, MPH, University of Hawaii Cancer Center, University of Hawaii at Manoa, pfagan@cc.hawaii.edu

**POS5-147**

**REMOTE ACCULTURATION, MOVIE SMOKING EXPOSURE, AND CIGARETTE SMOKING AMONG YOUTH IN MEXICO**

James Thrasier1, James Sargent2, 1University of South Carolina, SC, USA, 2Dartmouth College, NH, USA

Acculturation refers to changes individuals experience when they come into continuous contact with another culture (Schwartz et al., 2015). Research with U.S. Mexican youth shows a significant relationship between acculturation and cigarette smoking (Lorenzo-Blanco et al., 2015). Acculturation scholars assume that acculturation begins when Mexican immigrant youth move to the U.S. or when U.S. born youth are exposed to U.S. culture (Schwartz et al., 2010). However, studies with youth in Thailand and Jamaica suggest that acculturation can occur remotely through exposure to U.S. movies (Goldberg et al., 2002; Ferguson et al., 2015). Additionally, in research with Thai youth, remote acculturation to U.S. culture related with greater smoking. Thus, Mexican youth in Mexico may experience remote acculturation which may influence youth smoking in Mexico through exposure to U.S. produced movies. To investigate this possibility, the present study used Structural Equation Modeling with data from the Cinema and Youth Smoking in Latin America Study and investigated the degree to which remote acculturation related with a) positive smoking-related expectancies to influence youth intentions to smoke, and b) movie smoking exposure through U.S. or Mexican produced movies to influence positive smoking-related expectancies and intentions to smoke. Data came from a school-based survey with 10,123 non-smoker middle school students (51 percent were female; mean age = 12.39 years). As hypothesized, acculturation to U.S. culture (enjoying English language movies) was associated with more positive smoking-related expectancies and acculturation to Mexican culture (enjoying Spanish language movies) was associated with lower positive smoking-related expectancies. Positive smoking-related expectancies, in turn, related with more smoking intentions. Acculturation to U.S. culture related with greater movie smoking exposure in U.S. and Mexican movies produced movies. Moreover, movie smoking exposure in U.S. and Mexican produced movies related with more positive smoking-related attitudes and intentions to smoke. Our findings suggest that acculturation to U.S. culture may increase youth smoking risk while acculturation to Mexican culture related with lower movie smoking exposure in U.S. and Mexican produced movies. Thus, understanding the role of acculturation in smoking in Mexico is critical for increasing their effectiveness. The 10-repeat allele of the variable number tandem repeat polymorphism (VNTR) of the dopamine transporter gene (DAT1) has been associated with greater risk of addiction and information processing deficits. We hypothesized that smokers with the 10-repeat allele of the DAT1 VNTR may respond better to PSAs with high message sensation value (MSV), which is an aggregate measure of the sensory intensity of audio and visual features of PSAs. METHODS: Using functional magnetic resonance imaging (fMRI), we examined the neural response to high and low MSV PSAs in 53 smokers (23 female, age=18-49) who were either homozygous for the DAT1 10-repeat allele (High-Risk, N=26) or with nine- or fewer-repeat alleles (Low-Risk, N=27). Urine cotinine levels were tested before and 4-week after the fMRI session. RESULTS: Compared to the Low-Risk group, the High-Risk group showed reduced visual and auditory cortical response to PSAs in general (x/y/z=0/-82/-2 & -63/-25/10, corrected p<0.01), and reduced right temporoparietal junction (rTPJ) response to low MSV PSAs in particular (x/y/z=+48/-43/34, corrected p<0.01). These neural activity differences were positively correlated with urine cotinine levels (r=0.05). CONCLUSIONS: Our findings suggest that DAT1 genotype contributes to the individual variability in the brain and behavioral processing of anti-smoking PSAs.

Funding: R21DA024419-0, R01DA036028

Corresponding Author: Shi Zhenhao, PhD, University of Pennsylvania, zhenhao@gmail.com

**POS5-149**

**THE ASSOCIATION OF SELF-REPORTED EXPOSURE TO E-CIGARETTE ADVERTISEMENTS ON E-CIGARETTE USE AND SUSCEPTIBILITY IN TEXAS ADOLESCENTS**

Nicole Nicksic1,***, Melissa Harrell1, Adriana Perez1, Cheryl Perry1, Keryn Pasch2, 1University of Texas School of Public Health, TX, USA, 2University of Texas-Austin, TX, USA

BACKGROUND: Since e-cigarettes are not currently regulated by the US Food and Drug Administration, there are no restrictions on e-cigarette advertising and marketing. With e-cigarette use on the rise for middle and high school students, the overall objective of this study is to determine the effects of e-cigarette advertising on youth e-cigarette susceptibility and use. METHODS: This study used data from the Texas Adolescent Tobacco Advertising and Marketing Surveillance (TATAMS) study. Data were collected using self-reported surveys from 6th, 8th, and 9th/10th grade students in major metropolitan areas of Texas. Logistic regression models adjusted for sociodemographics and other tobacco use. The associations between self-reported exposure to e-cigarette advertisements (TV, radio, online, retail stores, internet) and susceptibility to use e-cigarettes and past 30 day e-cigarette use. The associations were evaluated cross-sectionally and longitudinally. Wave 1 respondents included 3,907 students; 2,483 students completed the Wave 2 survey 6 months later. RESULTS: Self-reported exposure to e-cigarette advertisements on TV, radio, billboards, internet, and retail stores was significantly related to susceptibility to e-cigarette use in Wave 1 (OR=1.29-2.26, p<0.05) advertisements were significantly associated with e-cigarette use in Wave 1. Self-reported exposure to TV, billboards, retail stores, and internet advertising in Wave 1 was significantly associated with susceptibility in Wave 2 (OR=1.38-1.97, p<0.05), while self-reported exposure to radio advertisements was only marginally significant (OR=1.43, p=0.055). E-cigarette retail store (OR=2.13, p<0.05) and internet (OR=1.76, p<0.05) advertisements in Wave 1 were significantly associated with e-cigarette use in Wave 2. CONCLUSION: Both e-cigarette susceptibility and use in youth were shown to be associated with self-reported exposure to advertisements in various settings. These findings support the need for regulation in order to decrease adolescent exposure to e-cigarette advertisement and marketing.

Funding: Funding for this research was provided by grant number [1 P50 CA180906-01] from the National Cancer Institute and the FDA Center for Tobacco Products (CTP).

Corresponding Author: Nicole Nicksic, MPH, University of Texas School of Public Health, nicole.e.nicksic@uth.tmc.edu

**POS5-150**

**GOODNESS OF LIFE FOR EVERY ALASKA NATIVE (GLEAN)**

Maria Crouch*, Alaska Native Tribal Health Consortium, University of Alaska Anchorage, University of California, San Francisco, Stanford University, AK, USA

According to the Center for Disease Control (2015), Alaska Native (AN) and American Indian (AI) peoples smoke at higher rates than almost all other racially ethnic minorities, putting these populations at greater risk for cardiovascular disease (CVD). The Alaska Department of Health and Social Services (2012) reports that 41% of adult smokers within Alaska are AN, with a staggering 2 in 5 AN people being smokers. Thus, the aim is to target multiple risks in AN smokers for CVD pre-
vention, to identify themes associated with QoL that could inform wellness of AN peoples by conducting focus groups, and to examine subjective health domains in understanding AN access to both Western and indigenous resources. A sample of 15 AN participants (6 male, 9 female) with a mean age of 58 was recruited from the HEALTHH Research Study within the Norton Sound region of Alaska. A Pearson product-moment correlation coefficient was computed to assess the relationship between Western and indigenous correlates of QoL. There was a large negative correlation between health status and electronic cigarettes ($r = .53, p = .012$), and large positive correlations between depression scores and spit tobacco ($r = .65, p = .008$) and IqmkBlackbull ($r = .72, p = .003$) use. Also, large negative correlations between AN language understanding and poor physical ($r = .58, p = .023$) and mental health ($r = .73, p = .002$) in the past 30 days, and a large negative correlation between community connectedness and poor mental health in the past 30 days ($r = .57, p = .026$). The results suggest that indigenous identity could be a critical factor in QoL, cardiovascular risk, and smoking behaviors. A focus group of 3 participants revealed seven QOL domains as follows: acts of self, health and happiness, subsistence, family, being active, providing, and religion. These domains were then used to inform which Western and indigenous correlates of QoL to explore from participants’ HEALTHH study baseline survey data. Future research could benefit from community based participatory research (CBPR) approaches in exploring QOL among indigenous communities.

**Funding:** The Goodness of Life for Every Alaska Native (GLEAN) Research Study is a National Institute of Health (NIH) funded diversity supplement formative study and sub-study of the Healing and Empowering Alaskan Lives Towards Healthy-Hearts (H2H) Study. This research is fully funded through the NIH, National Heart, Lung, and Blood Institute (NHLBI) Diversity Award Supplement under award number: R01HL117736. Funding for participant time and healthy meals and approaches in exploring QOL among indigenous communities.

**ELECTRONIC CIGARETTE REFILL LIQUID SAMPLES COLLECTED IN TWO MAJOR U.S. CITIES**

Mignonne Guy*, Peebles Fagan¹, Matthew Halquist¹, Sarah Javier¹, Pallav Pokhrel³, Thaddeus Herzog², Dorothy Jorgensen², Eric Moolchan², Thomas Eisenberg³, Virginia Commonwealth University, VA, USA, ¹University of Hawaii Cancer Center, University of Hawai at Manoa, HI, USA, ²Independent Consultant, MA, USA

**BACKGROUND:** Electronic cigarette refill liquids (e-liquids) are unregulated tobacco products that are widely available. Studies suggest that consumers purchase e-cigarettes and e-liquids to assist in quitting smoking. However, consumers may not receive the expected amount of nicotine due to inaccurate labeling of the quantity of constituents in these tobacco products. **PURPOSE:** This study examined concordance between the nicotine concentration labeled on e-liquid bottles and the measured nicotine concentration in e-liquids purchased from local vape shops. We also examined nicotine content by the flavor profile of the e-liquids. **METHODS:** Forty e-liquids from seven brands were purchased from seven local retail vape shops in Richmond, Virginia (VA) and Honolulu, Hawaii (HI) from March to April 2015. Five nicotine concentrations ranging from 0-18 mg/ml were selected for each of the top 10 selling flavors. Samples were analyzed in VA using liquid chromatography mass spectrometry. **RESULTS:** Present results are for all VA samples with the exception of the 0 mg/ml nicotine concentrations (detection limit=0.5 mg/ml). There was discordance between the measured and labeled nicotine content across 100% of the samples (n=28). Measured nicotine from the VA samples ranged from 39-139% (n=14) of the labeled content, while those from HI ranged from 45-121% (n=14). Fourteen percent of the VA samples analyzed and 2% (n=1) of the HI Study. This research is fully funded through the NIH, National Heart, Lung, and Blood Institute (NHLBI) Diversity Award Supplement under award number: R01HL117736. **DISCUSSION AND CONCLUSION:** Our study demonstrated the impact of device power, personal vaping patterns, and different e-juice on the physical and chemical properties of vapors generated from electronic cigarettes. Since the physical and chemical properties of vapors affect the deposition and toxicity of E-vapor, our study provides insights into product regulations for e-cigarettes.

**Corresponding Author:** Mignonne Guy, PhD, Virginia Commonwealth University, mguy@vcu.edu

**Funding:** National Institute on Drug Abuse at the National Institutes of Health (UG1DA036105 to MG, TE), and the Center for Tobacco Products of the US Food and Drug Administration. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health or the Food and Drug Administration.

**POS5-152 THE IMPACT OF DEVICE SETTINGS, VAPING PATTERNS, AND E-JUICE ON VAPORS GENERATED FROM ELECTRONIC CIGARETTES**

Qingyu Meng*, Yeongkwon Son, Cristine Delnevo, Rutgers School of Public Health, NJ, USA

**BACKGROUND:** E-cigarettes are being increasingly used. Not only have toxicants been observed in E-vapor, but there is also concern that e-cigarettes may affect the cigarette smoke exposure that has also been reported. The pattern of personal exposure to E-vapor and resulting particle deposition patterns in human lungs are not well understood. There is an urgent need to investigate and better recognize personal exposures to E-cigarette vapor and cell toxicity. **METHODS:** E-cigarette smokers were recruited from this research is fully funded through the NIH, National Heart, Lung, and Blood Institute (NHLBI) Diversity Award Supplement under award number: R01HL117736. Funding for participant time and healthy meals and approaches in exploring QOL among indigenous communities.

**RESULTS:** The puff volume, puff duration, and puff peak flow across the 16 subjects were measured and different E-juice. The results suggest that indigenous identity could be a critical factor in QoL, cardiovascular risk, and smoking behaviors. A focus group of 3 participants revealed seven QOL domains as follows: acts of self, health and happiness, subsistence, family, being active, providing, and religion. These domains were then used to inform which Western and indigenous correlates of QoL to explore from participants’ HEALTHH study baseline survey data. Future research could benefit from community based participatory research (CBPR) approaches in exploring QOL among indigenous communities.

**Corresponding Author:** Qingyu Meng, Rutgers School of Public Health, mengqi@sph.rutgers.edu

**Funding:** Cancer Institute of New Jersey

**POS5-153 INTERVIEWS WITH YOUNG ADULT USERS OF E-CIGARETTES AND NICOTINE VAPORIZERS: UNDERSTANDING MOTIVES FOR CONTINUATION**

Alexander Sokolovsky*, University of Illinois at Chicago, IL, USA

Awareness and prevalence of use of electronic nicotine delivery systems (ENDS) has expanded greatly among young adults (age 18 – 24), even as their rates of combustible cigarette use continue to decline slowly. ENDS use is even more pronounced among young adult smokers, with poly-tobacco users comprising nearly half of young adult cigarette users. Although the relationships between ENDS use and distal smoking outcomes such as nicotine dependence, poly-tobacco use, and cessation remains unclear, understanding young adult motives for using ENDS is critical to inform future research and intervention on these behaviors. This exploratory qualitative study examines young adult ENDS users’ motives to continue using these products. Data were obtained from a sample of 15 young adults (8 male; 8 non-Hispanic white; 2 African American; 2 Hispanic; 3 Asian) participating in the first phase of a three phase investigation aimed at developing a measure of motives for continuation of ENDS use. All participants self-reported using ENDS in the 7 days prior to enrollment. Participants were invited to individual interviews in a private clinical setting. Interviews were transcribed and qualitative data analytic methods were used to deduce meaning from interview data and identify themes. Several widespread themes related to continuation were identified including: taste/ snacking, sensory profile, affiliative attachment, tolerance, craving, positive rein-
fornement (mood and social), negative reinforcement (mood and withdrawal), cog-
nitive enhancement, task/skill reward (i.e. hobbyism; skill in modding and device
construction), automaticity, identity, and cue reactivity (social and environmental).
Task/skill reward was an important and novel consideration among ENDS users that
may serve an independent maintaining role in the use of ENDS. The implica-
tions of these findings for measure development are considered. Future research
could examine how these putative motives differentially relate to ENDS use and
other smoking outcomes. Such investigations may help researchers identify indi-
viduals at risk of escalation and help facilitate targeting individually salient motives
that may maintain use.

Funding: This research was supported by a Georgia State University Tobacco
Centers of Regulatory Science Graduate Student Scholarship Award.

Corresponding Author: Alexander Sokolovsky, MA, University of Illinois at Chi-
cago, alexsokolo@uic.edu

POS5-154
DOES FLAVORED E-CIGARETTE USE INFLUENCE TEENS’ SUSCEPTIBILITY TO CIGARETTE SMOKING? AN ANALYSIS OF CURRENT NONSMOKERS
Julia Cen Chen*, Dina Borzekowski, Babita Das, Erin Mead, University of Maryland
College Park, MD, USA

INTRODUCTION: The prevalence of flavored e-cigarette use among U.S. adoles-
cents has increased tremendously. Concerns exist about whether flavored e-cig-
arette use influences perceptions and initiation of conventional cigarette use. This
study aims to examine the association of flavored e-cigarette use with cigarette
smoking susceptibility among adolescent nonsmokers. METHODS: Using data
from the 2014 National Youth Tobacco Survey, this study considered among ado-
lescent nonsmokers’ (ages 11-18 years) demographics, risk factors for cigarette
smoking (e.g., tobacco ads exposure), and current e-cigarette use status (nonuse,
plain and flavored e-cigarette use). Multivariate logistic regression was used to
examine the relationship between current e-cigarette use and cigarette smoking
susceptibility, adjusting for confounders and interactions were added to identify po-
tential moderators. RESULTS: Among adolescent nonsmokers (n=18,392), 2.1%
and 2.2% reported current use of plain and flavored e-cigarettes. Compared to
30.0% of nonusers, 61.1% and 74.1% of plain and flavored e-cigarette users re-
ported smoking susceptibility (p<0.0001). Flavored e-cigarette users were almost
two times as likely to report smoking susceptibility than plain cigarette users
(AOR=1.7, p< 0.0001), and almost four times as likely as nonusers (AOR=3.8,
< 0.0001). Among assessed risk factors for smoking, the association of flavored e-
cigarette use with smoking susceptibility was the strongest, followed by cigare-
nette experimentation and then plain e-cigarette use. Significant interactions be-
 tween e-cigarette use and five risk factors indicated that while plain e-cigarette
use only influences youth with low risk, flavored e-cigarette use affects those with
both low and high risks of using cigarettes. CONCLUSIONS: Adolescents’ flavored
e-cigarette use is strongly associated with smoking susceptibility, a validated pre-
dictor of subsequent smoking behavior. Additionally, flavored e-cigarette use has
a pervasive influence on smoking susceptibility among adolescents with various
risk levels. Possible explanations for the association between e-cigarette use and
smoking susceptibility include sensation seeking, duration of use, and perceived
social norms towards smoking. Legislation efforts to restrict the number of youth-
friendly flavors and limit Internet purchasing access should be enhanced.

Funding: No Funding

Corresponding Author: Julia Cen Chen, MPP, University of Maryland College Park,
Jchen8@umd.edu

POS5-156
CAN SOCIAL MEDIA FUNCTION AS AN EARLY WARNING FOR SYMPTOMS ASSOCIATED WITH E-LIQUIDS CHARACTERISTICS?
Qiudan Li1, Yongcheng Zhang2, Lei Wang1, Scott Leischow3, Daniel Zeng2,
1Chinese Academy of Sciences, China, 2The University of Arizona, AZ, USA,
3Mayo Clinic, AZ, USA

OBJECTIVES: The study was designed to analyze the relationships between self-reported symptoms ad use of specific e-liquids in ENDS products via Reddit, a social media platform. METHODS: A dataset of 493,994 public, non-private comments
from Reddit, and keywords such as e-liquid, PG, VG, nicotine, flavors, etc were
retrieved in order to obtain a total sample of 3000 unique ENDS e-liquid-related postings. Those postings were classified into flavor categories based on prior research, and then VG/PG ratio along with subcategories of VG/PG were iden-
tified. In addition, the relationships between e-liquid components and reported
‘throat hit’ - and indicator of certain VG/PG ratios - was analyzed. Additional symp-
toms were also identified based on prior research in order to explore potential link-
ages between symptoms, products and use patterns. RESULTS: Three groups of
flavors were identified as similar relative with respect to their VG/PG ratios: (1)
Fruits, cream and nut flavors; (2) sweet, menthol, and seasonings flavors, (3) to-
bacco and beverages. When reports of throat hit were assessed relative to flavor,
menthol and tobacco, along with high ratios of PG and nicotine level, were associ-
ated with greater throat hit. In addition, 25 different symptoms were analyzed (eg
cough and other respiratory effects), and we found that specific components of the
e-liquid were associated with specific symptoms (eg VG/PG ratio, flavor, nicotine).
For example, symptoms related to the lungs, eg cough, were most commonly asso-
ciated with high PG. Similarly, high PG was also associated with headaches, as
were fruit and seasoning flavors. Interestingly, many people reported negative
comments because the throat hit was not satisfactory, thus related negative com-
ments that they seek the sensation of ‘smoking’ in a way that goes beyond just the
puffing behavior. Many associations between e-liquid were analyzed, and multiple
consistent patterns were observed. DISCUSSION: The present study provides
potential valuable self reported information on ENDS e-liquid characteristics, and
their relationships between those research characteristics and reported symptoms. Because
Reddit is heavily used by the vaping community, it is a rich resource for obtaining

SRNT • 2016 Rapid Response Posters • Saturday, March 5, 2016 • 11:30 a.m.-1:00 p.m.
large quantities of user reports on their experiences with the products. More specifically, it is possible that ongoing and real time tracking of vape system characteristics (e.g. battery size), e-liquid characteristics (e.g. VG/PG, nicotine amount, flavors), self-reported use patterns, and self-reported symptomology could serve as early warning indicators for products that are more addicting, are causing greater harm, etc. Using informatics approaches to analyze very large quantities of data rapidly provides a potential source of data that could be used to both provide public health warnings and also impact regulatory actions. Because there are multiple limitations of using and analyzing social media data to assess relationships, continued analyses are needed.

Funding: NIH R01DA037387-01
Corresponding Author: Scott Leischow, PhD, Mayo Clinic, leischow.scott@mayo.edu

POS5-157
DEVELOPING A HUMAN LABORATORY MODEL OF TOBACCO WITHDRAWAL: THE EFFECT OF ACUTE ABSTINENCE ON TASK PERFORMANCE IN SMOKERS
Meryem Grabski1, Valerie Curran2, David Nutt3, Stephen Husbands4, Stuart Ferguson5, Marcus Munafò1, University of Bristol, United Kingdom, 2University College London, United Kingdom, 3Imperial College London, United Kingdom, 4University of Bath, United Kingdom, 5University of Tasmania, Australia

BACKGROUND: Tobacco withdrawal symptoms are considered to be a main obstacle to successful smoking cessation, and are therefore a target for treatment efforts. Tobacco abstinence has been linked to cognitive performance deficits, as well as to increased attentional bias towards smoking related cues. Tasks assessing these domains might serve as a model to indicate the withdrawal state of a smoker, which could be used as an early indicator for the effectiveness of novel smoking cessation treatments. METHODS: Informed by a systematic review and meta-analysis of the relevant literature, we evaluated a battery of four laboratory tasks measuring response inhibition (go/no-go task), working memory (N-back task), impulsivity (delay-discounting task), and attentional bias (dot probe task with eye tracking) for their sensitivity to acute abstinence. After two morning laboratory sessions (overnight abstinence, smoking saturated), ecological momentary assessment of craving levels via a smartphone app was conducted over the course of the afternoon. RESULTS: Participants (N=70, 41% female) were on average aged 22 years (SD 5), smoked 11 cigarettes per day (SD 4) and had an FTCD score of 4.4 (SD 1.6). Abstinence resulted in more commission errors on the go/no-go task (t(69)=-3.07, p=0.003). However, no clear difference was found in omission errors on the N-back task (t(67)=1.49, p=0.14) or the discounting parameter k on the delay discounting task (t(69)=0.18, p=0.86). A repeated measures ANOVA of the eye-tracking data for the dot probe task indicated a main effect of dwell time on picture type (F1, 57)= 42.53; p<0.0001), but no main effect of abstinence (F1, 57)=0.60; p=0.81), and no picture type x abstinence interaction (F1,57)=0.22; p=0.65). Post-hoc analysis strongly predicted EMA of craving (r=56, p<0.001). CONCLUSIONS: Go/no-go task performance, augmented by EMA of craving, might serve as a model for tobacco abstinence. Ongoing work is assessing whether the go/no-go-task is also sensitive to anxiety, a risk factor for relapse, by inducing anxiety experimentally via the inhalation of 7.5% CO2 enriched air.

Funding: This research was supported by an Economics and Social Research Council PhD scholarship and Rusan Pharma Ltd.
Corresponding Author: Meryem Grabski, MSc, University of Bristol, m.grabski@bristol.ac.uk

POS5-158
“R3CREW” PEER-DELIVERED INTERVENTIONS FOR COMMUNITY COLLEGE STUDENT SMOKERS: A PILOT STUDY
Sarah Hellesen1, Kimberly Bankston-Le2, Elisa Tong1, Susan Stewart1, Carol Maytum2, University of California, Davis, CA, USA, Breathe California of Sacramento-Emigrant Trails, CA, USA

BACKGROUND: Community colleges typically have more students with lower socioeconomic status and higher smoking rates than universities. UC Davis and Breathe California of Sacramento-Emigrant Trails (BCSET) collaborated on a pilot study on the Sacramento City College campus from 2013-2015 to assess potential cessation intervention strategies within this population. METHODS: From 2013-2015, the pilot study consisted of a randomized controlled trial with two peer-delivered intervention arms (1:1 brief motivational interviewing; direct referral to the California Smokers’ Helpline), compared to usual care (student clinic referral). The peer-delivered intervention was based on BCSET’s “Street Team” program that had youth (ages 16-18) conduct cessation outreach at public events in 2006-9. BCSET and UC Davis adapted the “Street Team” model of peer-delivered intervention for the community college setting, renamed the “R3Crew” (Research, Resources, Reach out). Demographics, tobacco behavior, and self-reported past 30-day smoking status were measured by brief survey. Qualitative interviews were conducted for 10 study participants about their experience with the study, with a third from each arm, and 4 R3Crew team members. RESULTS: The research staff recruited and trained 10 R3Crew team members, of whom 4 were active. The R3Crew recruited and enrolled 104 randomized participants into the study. Demographics of participants show diversity in age (18-70 years, median 32.5), sex (59% female), and race/ethnicity (38% non-Latino white, 32% African American, Latino 5%, mixed race 16%). Among the three-quarters of participants who responded, 73% reported an annual household income <$20,000. Most were daily smokers (84%), Cigarettes were most commonly used (96%), followed by electronic smoking devices (16%), hookah (13%) and little cigars/cigarellos (9%). Many intended to quit in the next 30 days (42%) and in the next 6 months (18%). There was no significant difference in the quit rates by intention-to-treat baseline. A third of the pilot participants enrolled in the pilot, 54 participants completed the 1 month survey, 30 participants completed the 3 month survey, and 24 completed the 6 month survey for a 23% completion rate. The participants in the post-intervention interviews were ages 28-55 years and 90% female. Most, including those in the control group, agreed that talking with the R3Crew was helpful and stated that an in-person interaction was important to them. However, many noted the age differences between themselves and the younger R3Crew members, and indicated they did not feel the interaction was necessarily peer-based. Participants wanted more resources, such as quitting tips and success stories, and continued support during the follow-up month; among those contacted by the Helpline, many preferred not to be contacted by phone, but were agreeable to being contacted via text message. The R3Crew found it difficult to conduct in-person brief motivational interviewing with student smokers beyond a few minutes due to class and scheduling conflicts. The small incentive program that was originally used in the Street Team model was found to be ineffective at retaining R3Crew members. Therefore, the research team changed the incentive structure to a prorated stipend, a change that was received favorably by the student interviewers. DISCUSSION: The R3Crew model is a promising way to deliver tobacco cessation interventions on community college campuses. Refinements planned include creating stipends for R3Crew members, integrating a text and online component for study recruitment and retention, and combining the intervention arms for greater flexibility in adapting to student preferences.

Funding: Tobacco-Related Disease Research Program (TRDP)
Corresponding Author: Sarah Hellesen, University of California, Davis, S.Hellesen@sacbreathe.org

POS5-159
SURVIVALS DISPARITIES IN EXPOSURE TO SECONDHAND SMOKE: WE CAN DO BETTER
Taghrid Asfar*, Kristopher Arheart, Tulay Koru-Sengul, Margaret Byrne, Noella Dietz, Charles Chen, David Lee, University of Miami Miller School of Medicine, Miami FL, FL, USA

BACKGROUND: Nonsmoking cancer survivors comprise a vulnerable population for the negative health effects of exposure to secondhand smoke (SHS). Limited data exist regarding exposure among nonsmoking survivors, and national figures regarding the number of cancer survivors who are exposed to SHS have not been established. OBJECTIVES: This study aimed to compare the prevalence and time-trend of exposure to SHS between nonsmoking adult cancer survivors and nonsmoking adults without a cancer history (controls); and to examine predictors of SHS exposure among survivors. METHODS: Data were obtained from the 2001-2012 National Health and Nutrition Examination Survey (survivors: n=2,168; controls: n=19,436). SHS exposure was defined as a serum cotinine level of >0.015 and <10 ng/mL. We included in the analysis all nonsmoking participants (self-reported verified by serum cotinine level <10 ng/mL) who are
Florida, College of Medicine, Fl, USA, the unique social nature of WP smoking, an important factor contributing to its

**BACKGROUND:**

School of Medicine, tasfar@miami.edu

Corresponding Author: Taghrid Asfar, MD, MSPh, University of Miami Miller School of Medicine, Miami, FL, USA

POS5-160

HOW WATERPIPE SMOKING ESTABLISHMENTS ATTRACT SMOKERS? IMPLICATIONS FOR POLICY

Taghrid Asfar1,2, Ziyad Ben Taleb3, Olatokunbo Osibogun1, Kenneth Ward4, Ramzi Salloum1, Wasim Mazziak1,2, 1University of Miami Miller School of Medicine, Miami, FL, USA, 2Syrian Center for Tobacco Studies, FL, USA, 3Florida International University, FL, USA, 4Center for Community Health, TN, USA, 5University of Florida, College of Medicine, FL, USA, 6Robert Stempel College of Public Health and Social Work, Florida International University, FL, USA

**BACKGROUND:** Waterpipe (WP) smoking is increasing rapidly in the US. Given the unique social nature of WP smoking, an important factor contributing to its popularity is the spread of WP establishments (WPEs). Building an understanding of the marketing environment for WPEs is vital to guiding WP regulation. **OBJECTIVE:** The purpose of this study was to conduct a qualitative assessment of online customer reviews of WPEs in Miami to gain insight into marketing tools used by the WPE industry to attract WP users. **METHODS:** An online search on Yelp was conducted in October 2015 to identify major WPEs in Miami. Based on customer ratings (1 to 5 stars), the first 6 WPEs within each rating group with available websites were selected (n=26). A full description of WPEs including served items, WP menu, promotions, social media links, and prices was obtained. Then, 5 customer reviews (one from each rating category) were obtained. A thematic analysis using Braun's six phases was conducted. **RESULTS:** Most WPEs served alcohol (76%) and food (72%). Of these, only 16% had age restrictions in the WP menu, and flavor was grouped into: regular (88%), premium (72%), make-your-own (36%), or no flavor (4%). Promotions were happy hour (68%), entertainment (60%), ladies night out (30%), and college night (8%). All WPEs had social media links, and price was low ($16), moderate ($$80), or high ($$$ or more) (4%). Nine themes were identified and 258 incidences of these themes were coded. Main factors attracting WP smokers were: friendly and knowledgeable staff about WP; wide variety of WP tobacco flavors and alcoholic beverages; organic and lasting charcoal; reasonable price and special offers; extra opening hours; clean and top-of-the-line devices; and entertaining and relaxing environment. **CONCLUSIONS:** WPEs are important and unique settings for regulation and policy to curb WP use and should be considered in future WP regulations. Potential policies for WPEs are: limiting the availability of flavored WP tobacco, increasing the price, prohibiting promotions, requiring age restriction and disclosure of nicotine content on the menu, and requiring health warning labels on the devices.

**Funding:** This work is supported by NIH Grant # R01DA035160 (P.I. Dr. Mazziak).

**Corresponding Author:** Taghrid Asfar, MD, MSPH, University of Miami Miller School of Medicine, tasfar@miami.edu

POS5-161

ASSOCIATION OF CHILDHOOD SOCIAL COGNITION WITH ADOLESCENT TOBACCO AND SUBSTANCE ABUSE

Meg E. Fliuharty1, Jon Heron2, Marcus R. Munafò3, 1MRC Integrative Epidemiology Unit (IEU) at the University of Bristol, United Kingdom, 2School of Social and Community Medicine, University of Bristol, United Kingdom

**BACKGROUND:** Prolonged substance use, including tobacco use, is associated with a range of social cognitive deficits, including impaired facial recognition of emotions and theory of mind. However, it remains unclear whether it is substance abuse itself causing these deficits, or whether these deficits lead to substance use (for example, to enhance certain aspects of social cognition). This study explored whether early social cognitive impairments (non-verbal communication, NVC; social communication, SC; Theory of Mind, ToM) are associated with later tobacco, cannabis, or alcohol use (ever use, frequency, age of onset, and abuse). **METHODS:** We used data from the Avon Longitudinal Study of Parents and Children, a UK birth cohort study, to investigate associations between childhood social cognition (age 7-8) and adolescent substance use (age 17) before and after adjustment for pre-birth, maternal, and offspring confounders. **RESULTS:** Poor NVC was associated with a decrease in the odds of ever-use of tobacco (OR 0.70, 95% CI 0.61 to .85) and cannabis (OR 0.64, 95% CI 0.54 to 0.77). These associations were robust to adjustment. We investigated NVC in more depth, finding no clear pattern of associations across individual emotions (happy, sad, anger, fear). However, poor identification of ‘low’ and ‘high’ intensity faces was associated with tobacco and cannabis use. Both SC and ToM were associated with an increase in the odds of cannabis use (SC: OR 1.38, 95% CI 1.06 to 1.79; ToM: OR 1.27, 95% CI 1.04 to 1.54), which were robust to adjustment. There were no associations between any of our exposure outcomes and age of onset, frequency of use, or abuse. **CONCLUSIONS:** Our data indicate, in this cohort, that poor NVC is associated with decreased tobacco and cannabis use. When investigated further, there were no associations found across individual emotions, and poor identification of emotions in general (as illustrated by ‘low and high intensity’ faces) appeared to be driving the effect. Complementary methods are required to robustly examine effects of non-verbal communication on tobacco and cannabis use.

**Funding:** University of Bristol postgraduate research scholarship

**Corresponding Author:** Meg E. Fliuharty, MRC Integrative Epidemiology Unit (IEU) at the University of Bristol, United Kingdom, meg.fliuharty@bristol.ac.uk