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Adolescent tobacco coupon receipt, vulnerability characteristics and subsequent tobacco use: analysis of PATH Study, Waves 1 and 2

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Abstract

Objectives—We examine adolescent receipt of tobacco coupons and subsequent tobacco use.

Methods—Data were from the Population Assessment of Tobacco and Health (PATH) Study (2013–2015). We identified correlates of coupon receipt at Wave 1 (youth sample age 12–17 ; n = 13 651) including demographics, additional vulnerability factors that may place youth at risk of tobacco use and correlates of coupon receipt by channel. We examined associations of Wave 1 coupon receipt with Wave 2 tobacco use using weighted multivariable models.

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Contributors SWR conceptualised the study and wrote the manuscript. YZ conducted the analyses. All authors contributed to the study design and analysis plan and edited the manuscript. All authors approve the final manuscript.

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Results—Overall, 7.6% of US youth received tobacco coupons in the 6 months before Wave 1. Coupon recipients were more likely to be women, living outside urban areas, living with a tobacco user, current and former (vs never) tobacco users, having high internalising mental health symptoms and having a favourite tobacco advertisement. Coupons were received primarily through direct mail (56%), product packs (28%) and online (25%). Never tobacco users at Wave 1 who received coupons were more likely to be ever users at Wave 2 (adjusted OR (aOR)=1.42; 95% CI 1.06 to 1.91). Coupon recipients were more likely to use a new tobacco product between waves (aOR=1.67; 95% CI 1.18 to 2.36) and report past 30-day tobacco use at Wave 2 (aOR=1.81; 95% CI 1.31 to 2.49).

Conclusions—One in 13 US youth (7.6%) received coupons. Vulnerable youth had the greatest odds of coupon receipt. Coupon recipients had greater odds of tobacco use among never users, trying a new tobacco product and current use. Coupon bans, limits on youth coupon exposure, stronger age verification, pack inserts or restricting coupon redemption may help reduce tobacco use among adolescents, particularly for those at greatest risk.

INTRODUCTION

Exposure to tobacco marketing is associated with initiation of tobacco use and increased consumption of tobacco products.[1–6] Discount coupons that reduce the retail costs of tobacco products are an important promotional strategy for tobacco and electronic cigarette (e-cigarette) companies to influence purchases, build brand loyalty and reduce the impact of tax increases of tobacco products.[7–9] About 25% of young adult (ages 18–24) smokers in the USA reported receiving direct mail (which often includes coupons) from a tobacco company in the past 6 months, and nearly 70% used a coupon to purchase cigarettes.[10] Additionally, smokers who use coupons are less likely to quit.[11]

Vulnerable groups, who are disproportionately impacted by tobacco use, are also more likely to receive such price promotions, including youth (<18) and young adults,[12–14] women,[1516] lesbian, gay, bisexual (LGB) individuals,[1517] low-income populations,[18] those with lower educational attainment[1] and racial/ethnic minorities.[415] Coupons may also be particularly appealing to youth who are price-sensitive[12] and also may be vulnerable due to their broader social and environmental context and/or dispositional factors.[19] Vulnerability factors such as receptivity to marketing, mental health symptoms or living with a smoker can place such youth at greater risk of both marketing and coupon exposure and tobacco use.[11320–24] For example, in a national study of US middle and high school students, 23% of US youth in 2012 who were receptive to tobacco marketing (eg, would be likely to use or wear something with a tobacco brand name, logo or picture on it) had received a tobacco coupon in the past 30 days, compared with only 8% of those not receptive to tobacco marketing.[13]

Article 13 of the Framework Convention for Tobacco Control Tobacco (FCTC) guides ratifying parties to enact bans on tobacco advertising, promotions and sponsorships (TAPS) (including promotional discounts).[25] Among such parties, 72% have a comprehensive TAPS ban in place; however, enactment of restrictions on discounting may vary by region, with the fewest such restrictions in low-income countries.[2627]

In the USA, which does not have federal restrictions on discount coupons, tobacco companies spent US$336 million on cigarette coupons in 2015, a 32% increase over 2014 expenditures.[28,29] For smokeless tobacco, coupons represented 6.1% of marketing expenditure in 2014.[30] As tobacco sales are prohibited to youth under 18, no youth should receive coupons. However, different channels for coupons may make them available to youth.[13] Direct mail is the most common method of receiving tobacco coupons,[13] with 86.5% of mailings containing tobacco coupons worth on average US$4 (about two-thirds the average price of a pack)[8,31] and, increasingly, discounting non-cigarette products like cigars.[32] Coupons are increasingly available on the Internet,[33,34] via social media[9,35] and at the point of purchase,[18] which could broaden tobacco companies' reach to consumers.[9]

Much of the literature on coupon receipt among youth consists of cross-sectional studies. The only prospective study, by Choi and Forster,[1] examined coupon exposure among non-smoking and smoking youth in Minnesota, USA. Non-smokers who received coupons in the mail at baseline subsequently reported smoking more cigarettes in the past 30 days at 6-month follow-up, compared with those who did not receive coupons.[1] Smokers who received coupons in the mail at baseline were less likely to cut back on smoking at follow-up compared with those who did not get coupons.[1] Longitudinal studies are needed as youth coupon receipt may increase risk of later tobacco use in both the youth and young adult period.

Studies on coupon receipt are limited geographically and often occurred before the widespread penetration of Internet and social media marketing. We did not identify any recent international studies of coupon receipt from countries where such promotions are still allowed. This analysis is the first to use US longitudinal data to fill this research gap by (1) examining demographics and additional vulnerability characteristics of youth who received tobacco coupons at Wave 1, (2) describing frequency and difference in channels (eg, mail, product pack, online) of coupon receipt by a broad range of youth vulnerability characteristics, and (3) assessing the association of Wave 1 receipt of tobacco coupons and tobacco use outcomes among never users at Wave 1, continued use among past 30-day users at Wave 1 and all respondents at Wave 2.

METHODS

Data source

Data were from the Population Assessment of Tobacco and Health (PATH) Study—Wave 1 Youth Survey and Wave 2 Youth and Adult Survey. PATH is an ongoing, nationally representative US longitudinal cohort conducted by the National Institute on Drug Abuse and the Food and Drug Administration Center for Tobacco Products.[36] It uses audio computer-assisted self-interviews in English and Spanish to collect self-report information on tobacco use. Wave 1 data collection occurred from 12 September 2013 to 14 December 2014; Wave 2 occurred from 23 October 2014 to 30 October 2015.

Population and replicate weights were created and adjusted for the complex study design characteristics (eg, oversampling at Wave 1) and non-response at Waves 1 and 2 and allow estimates that are representative of the non-institutionalised, civilian US population ages 12

and up. Details on survey interview procedures, questionnaires, sampling, weighting and information on accessing the data are available elsewhere.[3738] Waves 1 and 2 of the survey were approved by the Westat Institutional Review Board (IRB). This analysis was exempted by the Chesapeake IRB. The Wave 1 weighted response rate for the household screener was 54.0%. Among screened households, the overall weighted response rate at Wave 1 was 78.4% for the Youth Interview (ages 12–17) and 87.3% at Wave 2. At Wave 1, interviews were completed with 13 651 youth. At Wave 2, interviews were completed with 10 081 youth and 1915 participants who aged into the adult sample in Wave 2. Demographic information for youth comes from paired parental surveys for non-emancipated youth and from emancipated youth themselves at Wave 1. The current study analyses data from youth at Wave 1 who answered questions about coupon receipt (n=13 651) and the subsample of these participants who have data at Wave 2 (n=10 005).

Measures

Coupon receipt and channels—At Wave 1, participants were asked, ‘In the past 6 months, have you gotten a discount coupon for any tobacco product?’ (yes/no). Those who reported coupon receipt were asked, ‘Where did you get discount coupons from?’ (the mail, email, the Internet, social networks (such as Facebook and Twitter), a text message, on a cigarette pack or other tobacco product, from a friend or other person, or some other way). Due to small sample size, we combined email and text message channels into one category labelled ‘direct digital’ and combined Internet and social network channels as ‘online channels’.

Covariates

Demographics: Participant demographics were assessed from Wave 1 data: grade (middle school or less, high school, college or more), gender (male, female), race/ethnicity (White non-Hispanic, African-American non-Hispanic, Asian/Native Hawaiian non-Hispanic, Hispanic/Latino and Other race (including more than one race) non-Hispanic), LGB status (heterosexual/straight; gay/lesbian, bisexual and other combined) and urban/non-urban residence based on the 2010 urban area designation of the respondent’s census tract.

Wave 1 tobacco use status: We examined tobacco use status as current user (past 30-day use), former user (have used tobacco but not in the past 30 days) and never user (no current or past use). Tobacco use included use of cigarettes, traditional cigars, cigarillos, filtered cigars, e-cigarettes, smokeless tobacco, snus, hookah and/or pipe tobacco.

Receptivity to tobacco marketing: Participants were asked ‘What is your favourite tobacco advertisement?’ Receptivity was defined as having a favourite tobacco ad from among 35 tobacco brands listed or from ‘something else’.

Living with a tobacco user: Respondents were coded as living with a tobacco user if they answered yes to any one of the following: ‘Does anyone who lives with you now do any of the following’ with response options of ‘smoke cigarettes’, ‘use smokeless tobacco’, ‘smoke cigars, cigarillos or filtered cigars’, or ‘use any other form of tobacco’.[11320] An answer of ‘no one who lives with me now uses any form of tobacco’ was coded as ‘no’.

Mental health problems: Mental health problems were assessed using the Global Appraisal of Individual Needs—Short Screener (GAIN-SS) internalising symptom subscale modified for the PATH study.[39,40] Internalising symptoms were measured using four items assessing the frequency of experiencing significant problems with feeling lonely, anxious, becoming very distressed and upset, or having sleep trouble.[39] Response options were past month, 2–12 months ago, over a year ago and never. Internalising GAIN scores were generated by the sum of the frequency of symptoms with three categories: low (0–1 symptoms), moderate (2–3 symptoms) or high (4 symptoms).

Tobacco use outcomes—We assessed five separate tobacco use outcomes at Wave 2: (1) ever use of any of eight tobacco or nicotine-containing products (cigarettes, large cigars, filtered cigars, cigarillos, e-cigarettes, snus, smokeless tobacco (dip, chew, snuff) and hookah) at Wave 2 among Wave 1 never users; (2) past 30-day use of any product at Wave 2 among Wave 1 never users; (3) past 30-day use of any product at Wave 2 among past 30-day Wave 1 users; (4) past 30-day use of any new product at Wave 2 that was not used at Wave 1 among all Wave 2 respondents; (5) past 30-day use of any product at Wave 2 among all Wave 2 respondents.

Statistical analyses

We conducted analyses using SVY (survey) procedures in Stata/SE V.15.0 to account for weighting and non-response at Wave 2, presented as the weighted population-based prevalence of coupon receipt and channel of receipt with 95% CIs. Non-response bias was analysed using McNemar's test. Missing values for coupon receipt (refused/do not know) were excluded from the analytic sample (n=88); however, individuals who reported receiving a coupon without specifying a channel were not excluded.

We conducted weighted unadjusted and adjusted logistic regression analyses to examine correlates of coupon receipt overall and by channel at Wave 1, and how coupon receipt and other covariates at Wave 1 were associated with tobacco use outcomes at Wave 2.

RESULTS

Table 1 shows prevalence and bivariate (unadjusted) and adjusted correlates of coupon receipt among youth. At Wave 1 (2012–2013), 7.6% (n=1047) of US youth reported receiving a tobacco coupon in the past 6 months. In unadjusted analyses of demographic characteristics, women (8.6%) were more likely to report receiving coupons than men (6.6%) (OR=1.3; 95% CI 1.2 to 1.5). White, non-Hispanic youth (8.5%) compared with youth of other racial/ethnic backgrounds, LGB or other (12.3%) versus straight youth (8.0%) (OR=1.6; 95% CI 1.2 to 2.2), and high school or greater (8.1%) versus middle school youth (6.5%) (OR=1.3; 95% CI 1.1 to 1.5) were also more likely to report coupon receipt. Those living outside of urban areas (10.4%) were more likely to be coupon recipients than urban youth (6.9%) (OR=1.6 95% CI 1.4 to 1.8). Former (11.4%, OR=2.0; 95% CI 1.6 to 2.5) and current tobacco users (20.2%, OR=4.0; 95% CI 3.4 to 4.7) were significantly more likely to report coupon receipt than did never users (5.9%). Those living with a tobacco user (13.2%; OR=3.1; 95% CI 2.8 to 3.5) and individuals with a favourite tobacco advertisement (21.4%; OR=4.3; 95% CI 3.6 to 5.0) compared with those without these factors, and those who

scored higher on internalising mental health symptoms (12.7%) compared with those who scored low (5.2%) were more likely to receive coupons (OR=2.7; 95% CI 2.3 to 3.1).

In the fully adjusted model controlling for all covariates, women (adjusted OR (aOR)=1.3; 95% CI 1.1 to 1.6), those living in a non-urban area (aOR=1.4; 95% CI 1.1 to 1.7), those living with a tobacco user (aOR=2.3; 95% CI 1.9 to 2.8), having a favourite tobacco advertisement (aOR=2.6; 95% CI 2.1 to 3.3), those with high internalising mental health symptoms (aOR=1.5; 95% CI 1.2 to 1.9) and former (aOR=1.5; 95% CI 1.1 to 2.0) and current (aOR=2.2; 95% CI 1.7 to 2.7) tobacco users compared with never users were more likely to report coupon receipt. In the fully adjusted model, educational grade, LGB status and race/ethnicity were no longer significantly associated with increased odds of receiving a coupon.

Figure 1 shows the prevalence of different channels of coupon receipt at Wave 1 (n=1047). Direct mail was the most frequent channel cited for receiving a coupon (55.6%), followed by product packs (28.3%) and online (25.3%). Most (69.7%) coupon recipients received a coupon from only one channel, 16.7% received coupons from two channels and 13.5% received coupons from three or more channels (online supplementary table 1).

Online supplementary table 2 shows correlates of coupon receipt by channel. Given small sample sizes for other channels, we report correlates of receiving a coupon through direct mail (n=572), product pack (n=294) and online (n=266). In fully adjusted models, among those who had received a coupon at Wave 1, current tobacco users were more likely than never users to receive coupons from product packs (aOR=6.4; 95% CI 4.1 to 10.1), but less likely to receive a coupon from direct mail (aOR=0.3, 95% CI 0.2 to 0.6) or online (websites and social media) (aOR=0.3, 95% CI 0.2 to 0.6). Living with a tobacco user (aOR=2.2; 95% CI 1.4 to 3.4) was positively associated with receiving coupons from product packs and negatively associated with receiving online coupons (aOR=0.6; 95% CI 0.4 to 0.8). African-American respondents were less likely to receive product pack coupons (aOR=0.4; 95% CI 0.1 to 0.9), while Hispanic youth were more likely to receive coupons from online sources (aOR=1.8; 95% CI 1.2 to 3.0) compared with white respondents. Having a favourite tobacco advertisement was positively associated with receiving a coupon from online sources (aOR=1.6; 95% CI 1.0 to 2.6). Those with high inter-nalising mental health symptoms were more likely than those with low symptoms to receive coupons from a product pack (aOR=1.7; 95% CI 1.0 to 2.9). Educational grade, gender, LGB status and urban location were not significantly associated with any specific coupon channel.

Table 2 shows the prospective association between Wave 1 coupon receipt and tobacco use outcomes at Wave 2. We tested for non-response bias in those who responded to Wave 2 and did not find any differences from Wave 1 covariates shown in table 1 (analyses not shown). In adjusted models controlling for demographic factors and other vulnerability factors, youth who received coupons at Wave 1 were more likely than those who did not to try at least one new tobacco product by Wave 2 (aOR=1.7; 95% CI 1.2 to 2.3) and were more likely to report past 30-day tobacco use at Wave 2 (aOR=1.8; 95% CI 1.3 to 2.5). Wave 1 coupon receipt among never tobacco users was associated with increased odds of ever tobacco use at Wave 2 (aOR=1.4; 95% CI 1.1 to 1.9). However, receiving a coupon at Wave 1 was not

significantly associated with Wave 2 past 30-day tobacco use among Wave 1 never users (aOR=1.5; 95% CI 0.9 to 2.6) or continued use in the past 30 days at Wave 2 among Wave 1 past 30-day users (aOR=2.0; 95% CI 0.9 to 4.3).

DISCUSSION

One in 13 (7.6%) US youth in 2013–2014 received tobacco coupons in the past 6 months, equivalent to approximately 1.9 million youth nationwide, despite restrictions on tobacco use among youth. Youth who receive these coupons are more likely to subsequently begin using tobacco. This prevalence rate is lower than the 13% of middle and high school youth reporting coupon receipt in 2012 National Youth Tobacco Survey (NYTS).[13] The lower rate may be due to the national decline in adolescent combustible tobacco use,[41] survey administration (household (PATH) vs school-based (NYTS)) (school-based surveys may result in higher estimates of youth tobacco use)[42] or question wording (eg, NYTS provides a select all coupon channels option, and PATH provides a yes/no question; select all that apply questions have been associated with higher prevalence of tobacco use).[43]

We also found that women were more likely to report receiving coupons, consistent with one recent study,[17] but inconsistent with others that did not find differences.[113] Higher rates may also be due to higher female coupon use patterns in general compared with men.[4445] Youth outside an urban area are also more likely to receive tobacco coupons. This is consistent with results from the US Monitoring the Future survey, which found higher rates of tobacco coupon saving among rural versus urban youth, though in early years of this survey this finding may relate to saving coupons for loyalty programmes and not just receiving discount coupons.[46] Additionally, higher odds of coupon exposure may be related to greater tobacco advertising exposure among rural versus urban youth.[47]

Additional vulnerability factors were also associated with tobacco coupon receipt: being a former or current tobacco user, living with a tobacco user, having a favourite tobacco advertisement and having high mental health symptoms.[113] Having a favourite tobacco advertisement was also associated with coupon receipt overall and through online channels, suggesting that youth who are receptive to tobacco advertising may also be vulnerable to online tobacco marketing, which has been associated with tobacco use susceptibility.[48] Having stringent age verification for accessing online coupons and tobacco industry websites could reduce this risk; several recent studies of Internet e-cigarette vendors found that most sites lacked effective age verification.[4950] Populations with mental illness have higher rates of tobacco use than the general public,[2151] and tobacco industry documents have revealed targeting of this population by the industry through marketing and price promotions.[23] Therefore, it is perhaps not surprising that internalising mental health symptoms like anxiety or depression were associated with coupon receipt and, specifically, receiving coupons on a product pack. Former users who have quit tobacco could also be counselled to opt-out of coupon distribution lists.

Coupon receipt in this study was associated with greater likelihood of subsequent tobacco use among never users, greater odds of trying a new tobacco product and current use among all youth. These findings suggest that coupon receipt may be a catalyst of current tobacco

use, trial of tobacco products among never users and use of a new tobacco product among all youth. This corroborates and augments results from other studies in which use of coupons has been associated with tobacco initiation by reducing the price and increasing familiarity with the product and brand.[52] Coupons are also one method of cross-product promotion, which may facilitate new product use. For example, coupons for Camel snus were found on Camel cigarette packs in 25% of convenience stores in areas where snus was being introduced.[53] Cigarette product packs also provided the most number of snus coupons to former and current smokers.[34] We did not see an association between coupon receipt and continued use of tobacco in the past 30 days at Wave 1 and Wave 2 or with past 30-day use among Wave 1 never users. Perhaps the 1-year follow-up period was not long enough to detect transitions to regular use among never users. Additionally, continued use of tobacco products once they are started may depend on additional factors beyond coupon receipt.[5455]

To our knowledge, this study is the first to examine the prospective relationship of coupon receipt on tobacco use outcomes among a nationally representative sample of US youth. We report on a broad range of demographic and vulnerability factors that may be associated with coupon receipt.[11320–22]

Limitations and implications for future research

We acknowledge limitations to this study. First, the PATH questionnaire did not specify type of tobacco product the coupons were for, and thus we could not link specific coupon receipt to specific product use. Identifying trends in youth coupon exposure specifically for non-cigarette products is also an important future direction as use of these products rise among youth.[56] The relatively long 6-month time period of the question may also increase recall bias and promote under-reporting of coupon receipt.[57] We also focused our analysis on coupon receipt among the entire youth population, and not on coupon redemption, which is an important outcome to consider in future studies of youth tobacco users. Finally, we used only one wave of follow-up data. Additional PATH survey waves can examine longer-term use trajectories, transitions from experimental or former use to regular use, and onset and offset of use as a function of coupon receipt.

These findings have important implications for youth-oriented tobacco prevention and control interventions, and indicate a potential need for stronger regulation on availability and the use of tobacco coupons among youth. Among FCTC signatories, implementing comprehensive bans on coupons will offer the most protection for youth. For example, the UK restricts coupons along with other forms of tobacco advertising and promotions.[58] Additionally, several municipalities in the USA have restricted retailer redemption of tobacco coupons to reduce price discounting and reduce tobacco use particularly for price-sensitive youth. New York City and Providence, Rhode Island, have laws that prohibit redemption of tobacco coupons and other price discounting like multipack offers.[5960] In areas without coupon bans, adding inserts to product packs promoting smoking cessation may help buffer the potential influence of coupons on youth tobacco use.[61–65] Monitoring youth access to newer forms of coupon receipt such as mobile coupons available through smartphone apps can be used to inform regulations to reduce youth exposure to these coupons.[66] These types of approaches may help to reduce tobacco experimentation and use.

Reducing coupon exposure and use may be particularly important among already vulnerable youth and may help to reduce tobacco use disparities among those most at risk of tobacco use.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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What this paper adds

- Exposure to tobacco marketing among youth is associated with initiation of tobacco use and increased consumption of tobacco products, and coupons are one of the most prevalent forms of direct tobacco marketing.
- Only one study has examined the prospective relationship between coupon receipt and later tobacco use, so the current study is the first US longitudinal study to fill this research gap.
- Vulnerable populations of youth including women, non-urban youth, those with high mental health symptoms, current and former tobacco users, those living with a tobacco users and youth with a favourite tobacco ad were more likely to receive coupons.
- Coupon receipt in this study was associated with greater likelihood of subsequent tobacco use among youth never users, greater odds of trying a new tobacco product and current use among all youth; however, there was no association between coupon receipt and continued use of tobacco in the past 30 days at both Wave 1 and Wave 2, or with past 30-day use among Wave 1 never users.
- These findings suggest that coupon receipt may be a catalyst of current tobacco use, trial of tobacco products among never users and use of a new tobacco product among all youth, but that a 1-year follow-up period may not be long enough to detect transitions to regular use among never users.

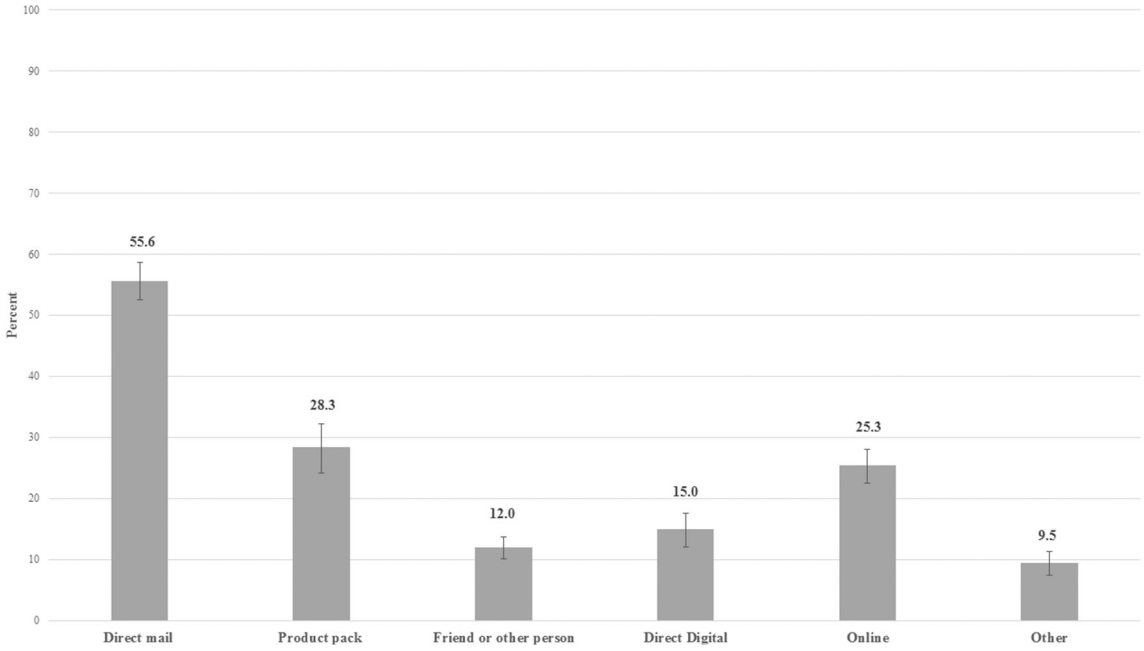

Figure 1.
Weighted proportion of coupon channels among youth who received coupons at Wave 1.

Table 1

Prevalence and correlates of coupon receipt among youth at Wave 1

	Overall sample (n=13651)		Received coupon at W1 (n=1047)		Correlates of coupon receipt				
	n	%	N	%	95% CI	Unadjusted OR	95% CI	aOR	95% CI
Gender									
Male	6993	51.3	468	6.6	(6.0 to 7.3)	Ref		Ref	
Female	6657	48.7	579	8.6	(7.9 to 9.5)	1.3***	(1.16 to 1.54)	1.3***	(1.1 to 1.6)
Race/ethnicity									
White, non-Hispanic	6478	54.6	559	8.5	(7.9 to 9.3)	Ref		Ref	
Black/African American, non-Hispanic	1801	13.7	123	6.7	(5.5 to 8.1)	0.8*	(0.62 to 0.94)	0.9	(0.7 to 1.3)
Other race, non-Hispanic	1230	9.3	106	6.8	(5.7 to 8.1)	0.8*	(0.64 to 0.97)	0.9	(0.7 to 1.2)
Hispanic or Latino	3880	22.5	240	6.2	(5.4 to 7.2)	0.7***	(0.60 to 0.85)	0.9	(0.7 to 1.1)
LGB status									
Straight, heterosexual	8206	93.0	656	8.0	(7.4 to 8.6)	Ref		Ref	
LGB or other	626	7.0	80	12.3	(9.6 to 15.6)	1.6**	(1.22 to 2.17)	1.1	(0.7 to 1.5)
Grade									
Middle school or less	5216	38.5	343	6.5	(5.9 to 7.3)	Ref		Ref	
HS or greater	8129	61.6	670	8.1	(7.4 to 8.8)	1.3**	(1.10 to 1.45)	1.0	(0.7 to 1.4)
Urban									
Yes	10 884	80.1	761	6.9	(6.4 to 7.5)	Ref		Ref	
No	2766	19.9	286	10.4	(9.4 to 11.5)	1.6***	(1.36 to 1.80)	1.4**	(1.1 to 1.7)
Tobacco use status									
Never	10 606	81.8	631	5.9	(5.5 to 6.4)	Ref		Ref	
Former	1208	9.3	139	11.4	(9.6 to 13.4)	2.0***	(1.64 to 2.52)	1.5**	(1.1 to 2.0)
Current (past 30 day)	1151	8.9	243	20.2	(18.0 to 22.5)	4.0***	(3.42 to 4.70)	2.2***	(1.7 to 2.7)
Live with tobacco user									
No	8709	65.4	403	4.6	(4.2 to 5.1)	Ref		Ref	
Yes	4827	34.6	635	13.2	(12.3 to 14.1)	3.1***	(2.76 to 3.52)	2.3***	(1.9 to 2.8)
Favourite tobacco advertisement									
No	10 710	88.2	655	6.0	(5.5 to 6.5)	Ref		Ref	

	Overall sample (n=13651)		Received coupon at W1 (n=1047)		Correlates of coupon receipt				
	n	%	N	%	95% CI	Unadjusted OR	95% CI	aOR	95% CI
Yes	1455	11.9	311	21.4	(19.2 to 23.8)	4.3***	(3.63 to 5.03)	2.6***	(2.1 to 3.3)
GAIN internalising scale									
Low	6379	48.1	334	5.2	(4.6 to 5.8)	Ref		Ref	
Middle	3889	29.0	296	7.6	(6.6 to 8.8)	1.5***	(1.23 to 1.84)	1.2	(0.9 to 1.5)
High	3043	22.9	392	12.7	(11.6 to 13.8)	2.7***	(2.25 to 3.13)	1.5***	(1.2 to 1.9)

*P<0.05;

**P<0.01;

***P<0.001.

aOR, adjusted OR; GAIN, Global Appraisal of Individual Needs; HS, high school; LGB, lesbian, gay, bisexual; W1, Wave 1.

Table 2

Association between coupon receipt at Wave 1 and tobacco use at Wave 2

Received coupon	New product P30D use at W2 (n=12 172) aOR (95% CI)	P30D use at W2 (n=12 172) aOR (95% CI)	never use at W1 to ever use at W2 (n=8251) aOR (95% CI)†	never use at W1 to P30D use at W2 (n=8251) aOR (95% CI)	P30D use at W1 to P30D use at W2 (n=573) aOR (95% CI)
No	Ref	Ref	Ref	Ref	Ref
Yes	1.7** (1.2 to 2.4)	1.8*** (1.3 to 2.5)	1.4* (1.1 to 1.9)	1.5 (0.9 to 2.6)	1.3 (0.3 to 4.9)

*P<0.05;

**P<0.01;

***P<0.001.

†Controlling for grade, gender, race/ethnicity, living with a tobacco user, LGB status, urbanicity, having a favourite tobacco advertisement and internalising mental health symptoms.

aOR, adjusted OR; LGB, lesbian, gay, bisexual; P30D, past 30-day use; W1, Wave 1; W2, Wave 2.