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Natural American Spirit's pro-environment packaging and perceptions of reduced-harm cigarettes

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ABSTRACT

Natural American Spirit (NAS) cigarettes feature a pro-environment marketing campaign on the packs. The NAS "Respect for the Earth" campaign is the first example of on-the-pack corporate social responsibility advertising. In a randomized survey design, we tested perceptions of NAS relative to other cigarette brands on harms to self, others, and the environment. Never (n = 421), former (n = 135), and current (n = 358) US adult smokers were recruited for an online survey from January through March 2018. All participants viewed packs of both NAS and Pall Mall. Participants were randomized to view NAS vs. Pall Mall and to pack color (blue, green, or yellow/orange), which was matched between brands. Survey items assessed perceptions of health risk of the cigarette brand to self, others, and the environment and corporate perceptions. Consistently on all measures, NAS cigarettes were rated as less harmful for oneself, others, and the environment relative to Pall Mall (p's $< .001$). Though Reynolds American owns both brands, participants rated the company behind NAS as more socially responsible than the company behind Pall Mall, $F[1, 909] = 110.25$, $p < .001$. The NAS advantage was significant irrespective of smoking status, pack color, and brand order, with findings stronger for current than never smokers. Pro-environmental marketing on NAS cigarette packs contributes to misperceptions that the product is safer for people and the environment than other cigarettes and made by a company that is more socially responsible. Stricter government regulations on the use of pro-environment terms in marketing that imply modified risk are needed.

Tobacco is the leading preventable cause of death (USDHHS, 2014) and the leading form of litter globally (Rath et al., 2012), releasing toxic chemicals into the soil and water supply (Slaughter et al., 2011; Novotny et al., 2011). Further, mass production of tobacco involves significant environmental costs (Otanez and Glantz, 2011). Given the serious harms of smoking and the growing public concern about these harms, an emphasis by the tobacco industry has been promotion of a safer, less harmful way to smoke (Epperson et al., 2017). In the mid-1950s, the tobacco companies created the illusion of filtration and mass marketed low tar cigarettes (Johnston, 1966), followed in the 1970s by the heavy promotion of light and ultra-light cigarettes (USDHHS, 2001). In 2006, *United States* vs. *Philip Morris* (*D.O.J. Lawsuit*) determined that selling and advertising of low tar and light cigarettes as less harmful than regular cigarettes was deliberate deception by the US tobacco companies of the American public, leading many smokers to switch rather than to quit smoking. Passed in 2009, the Family Smoking Prevention and Tobacco Control Act banned the use of "light," "low," or "mild" labels on tobacco products without a modified risk tobacco product order from the US Food & Drug Administration (FDA), yet the tobacco industry still continues color coding cigarette packs to perpetuate the idea that some cigarettes are healthier (Bansal-Travers et al., 2011).

More recent concern about cigarette marketing has been the focus on natural and organic tobacco, featured prominently in the branding of Natural American Spirit (NAS) cigarettes. Similar to what occurred decades earlier with filters and lights, studies have shown that both smokers and nonsmokers perceive the NAS brand as less harmful to health than other cigarettes (Moran et al., 2017; Gratale et al., 2019;

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Fig. 1. Pack images viewed. Participants viewed both brands but were randomized as to which pack they viewed first (Natural American Spirit or Pall Mall). Participants also were randomized to one of three pack colors (blue, green or orange/gold), with color matched for both packs viewed. There were 6 total randomized conditions, crossing pack brand order (2) by color (3).

Pearson et al., 2016; Leas et al., 2018; Leas et al., 2017). The Population Assessment of Tobacco and Health (PATH) Study estimated that over half of US smokers who prefer NAS mistakenly believe the brand is less harmful than other cigarette brands (Leas et al., 2017). An ultra-premium brand, NAS's market share has increased over 400% since 2002 (Sharma et al., 2016). Due to concerns about reduced harm claims, the FDA required NAS to cease use of "100% additive free" and "natural" in its product marketing and advertising, effective October 2018, yet allowed continued use of "natural" in the trademarked brand name (Campaign for Tobacco-Free Kids, 2017). In place of "additive-free," the NAS packs substituted "tobacco ingredients: tobacco and water," similarly creating misperceptions of reduced harm (Gratale et al., 2019).

The NAS packs also now feature a pro-environment marketing campaign. While tobacco companies have a history of creating pro-environment marketing campaigns (Otanez and Glantz, 2011; Gonzalez et al., 2012), the NAS "Respect for the Earth" campaign is the first example of corporate social responsibility (CSR) advertising on cigarette packs themselves (Epperson et al., 2018). Pro-environment marketing with a focus on biospheric values can inspire the public to pay a premium for products such as energy efficient appliances and organic foods (Nguyen et al., 2016). In reality, biospheric values are entirely incompatible with the manufacturing and smoking of cigarettes. Yet, the NAS "Respect for the Earth" CSR campaign advertises a facility that is "zero-waste-to-landfill" and includes a wreath of three tobacco leaves that mimics the symbol for recycling. The side of the pack features the logo for the Programme for the Endorsement of Forest Certification (PEFC), a forest certification organization promoting sustainable forest management (Programme for the Endorsement of Forest Certification, 2018).

Pro-environmental advertising campaigns for NAS have been investigated in two studies to date. Participants shown advertisements (e.g., print, online) highlighting environment/sustainability practices of NAS production rated the brand more favorably than a control group not exposed to advertisements (Gratale et al., 2017). Similarly, participants randomized to view NAS advertisements with the text "tobacco and water" or with references to "eco-friendly" practices were more likely to report misperceptions of reduced harm to health compared to those who viewed the NAS advertisements without these terms (Moran et al., 2018). Unexamined is the impact of pro-environment tobacco marketing on cigarette packaging. The cigarette pack is a central message vector viewed 7300 times a year by pack-a-day smokers.

In a within-subject and randomized survey design, the current study examined the effect of NAS's pro-environment product labeling on tobacco-related perceptions of health and environment among never, former, and current adult smokers. We tested the 2018 NAS packs, which replaced the previous messages of "100% additive-free" with "tobacco ingredients: tobacco and water." Pall Mall was selected as the comparison brand pack because they are equally harmful, and both brands are owned by Reynolds American. Thus, all comparisons between NAS and Pall Mall have no actual differences (i.e., in health outcomes or corporate responsibility) and any perceived differences are misperceptions.

1. Method

1.1. Recruitment

Participants were recruited through the online platform Prolific (https://prolific.ac/) for a study on "different marketing approaches with consideration of health and the environment." Based on Prolific

screening data, we stratified by smoking status and restricted the invitation to members over the age of 18, residing in the US, and fluent in English. The survey was limited to US residents because NAS marketing differs in non-US countries (e.g., NAS packs in Japan still include "light" and "additive-free"). Interested individuals were directed to a link for an anonymous survey hosted by Qualtrics. Enrollment closed when our recruitment goal of N = 1000 was reached, which took 310 h from January–February 2018. The study sample is similar to Prolific's overall pool on level of education, age, and race/ethnicity with a greater proportion of men (55%) than the overall Prolific sample (43%). Stanford University's Institutional Review Board approved all study procedures, and participants provided informed consent. They were compensated $2.00 for their time, which averaged < 15 min.

1.2. Study design & procedures

Participants were randomized to different exposure conditions determined by brand (within-subjects) and color (between-subjects). All participants viewed one NAS and one Pall Mall cigarette pack, but were randomized as to which brand they viewed first (NAS vs. Pall Mall) and to which of three colors, which were matched between brands (blue, green, or yellow/orange), for a total of 6 exposure conditions (see Fig. 1). Green packs were menthol varieties for both brands; blue packs were "light" for Pall Mall and "full-bodied" for NAS; orange Pall Mall is "ultra-light" and gold NAS was "organic and mellow."

1.3. Measures

Immediately after viewing the NAS or Pall Mall cigarette pack, participants rated their perceptions of the product, the brand, and the company behind the brand. Participants answered the same questions for the second pack. Study measures, available upon request, are described below.

Product perceptions were assessed by having participants rate the pack image (NAS or Pall Mall) on 18 key features with response options of less [−1], no different [0], or more [1] relative to other cigarette brands, informed by items from the PATH Survey (US Department of Health and Human Services et al., 2018). Fe environmental impact items were reverse coded so that higher scores on all items indicated less perceived harm. Confirmatory factor analysis retained 15 items loading on three scales (Cronbach αs presented for NAS/Pall Mall separately) that related to: health (6 items; α = 0.72/0.74; e.g., "harmful to health," "tar," "nicotine," "addictive"); environmental impact (6 items; α = 0.73/0.76; e.g., "harmful to the environment," "supports forests," "supports US farmers"); and smoking experience (3 items; α = 0.67/0.72; "quality for the price," "taste," "satisfaction it gives the smoker"). All factor loadings were significant and at or above 0.50 for both NAS and Pall Mall versions of the scales except for the "harmful to the environment" item for Pall Mall, which was significant but had a loading of 0.10. We retained the item because perceived harm to the environment was of central interest, and because it was anticipated the item would load less strongly for Pall Mall, since the pack does not have a pro-environment campaign. (The "environmental impact" scale for both Pall Mall and NAS correlated significantly with the pro-environment personalized and generalized brand preference items, see Supplemental Table.) Scale items were averaged, with a possible range from −1 to +1.

Personalized brand image was assessed by having participants respond from strongly disagree (1) to strongly agree (5) that: "Smoking [NAS/Pall Mall] would show that I care about… my health/the health of my family and friends/the health of the environment."

Generalized brand preferences (i.e., what "most people" would choose) were assessed by having participants respond from strongly disagree (1) to strongly agree (5) that: "Most people would choose [NAS/Pall Mall] cigarettes to smoke because they are… safer for the environment than other cigarettes/healthier than other cigarettes."

Corporate social responsibility perceptions of the tobacco company behind each brand were assessed with 11 true/false statements (Kuder-Richardson-20 = 0.70 for NAS/0.65 for Pall Mall); e.g., "The company donates profits to replant forests," "The company sells a product that is a leading cause of forest fires". The items were reverse coded as needed and summed so that higher scores indicated stronger beliefs that the company behind the cigarette brand is socially responsible.

At the survey end, participants reported their gender, age, race/ethnicity, sexual orientation, and education. Cigarette smoking was assessed as the number of cigarettes smoked in one's lifetime and the number of days smoked in the past 30 days. Ever smokers were asked to indicate which cigarette brand(s) in their lifetime they have ever purchased and smoked (top brands were listed with an "other" write-in option).

1.4. Analyses

Smoking status was categorized as current smokers (> 100 cigarettes in one's lifetime and smoking at least once in the past 30 days), former smokers (> 100 cigarettes in one's lifetime and no smoking in the past 30 days), or never smokers (< 100 cigarettes in one's lifetime). Those who reported smoking in the past 30 days but not > 100 cigarettes in their lifetime were considered new initiators (n = 10) and were excluded from the analyses. Race/ethnicity compared non-Hispanic White vs. others because of small numbers of all other racial/ethnic groups. Level of education attained was analyzed as high school or less; some college; bachelor's degree or higher. Sexual orientation was coded as heterosexual/straight or other. Gender was analyzed as male or female, and participants identifying as "other" gender were dropped from model testing due to small representation (n = 8). Participants with data missing for model testing (n = 10, 1% of sample) and participants who failed one or more attention checks (n = 83, 8% of sample) were excluded from the analyses. Demographics, pack color, and order were compared among the 6 randomized conditions for equivalence, and the conditions were balanced. An a priori power analysis indicated a minimum overall sample of 787 participants provided 80% power for detecting a small sized effect at a $p < .05$ criterion of statistical significance.

Descriptive statistics characterized the sample overall and by smoking status (never, former, current). For both NAS and Pall Mall, the product perception, personalized brand image, generalized brand preferences, and CSR scores were mostly significantly correlated, ranging from r = −0.15 to 0.90 (Supplemental Table).

One-way analysis of covariance (ANCOVA) analyses were conducted to examine differences in ratings of NAS and Pall Mall brand cigarettes (NAS score minus Pall Mall score) by smoking status controlling for the order of presentation (reference: Pall Mall viewed first) and pack color (reference: blue). For the within-subject brand comparison, each respondent served as his/her own control. The model intercepts provided the tests for significance of the mean differences in brand ratings (NAS rating minus Pall Mall rating). We used a Bonferroni correction for the nine tests of interest: (i) brand features (3 scales); (ii) personalized brand image (3 items); (iii) generalized brand preference (2 items); and (iv) corporate social responsibility (single sum score), where $p < \alpha/(9 \text{ items}) = 0.0056$.

2. Results

2.1. Sample characteristics

The final sample was N = 914, with sample sizes by exposure condition shown in Fig. 1. Average age of the sample was 34.1 years (SD = 11.5) with 54.7% identifying as male, 71.2% as non-Hispanic white, and 85.6% as heterosexual/straight. Approximately 49.1% had attained a college degree. The sample was 46.1% never, 39.2% current,

Table 1
Sample descriptive characteristics by smoking status (N = 914).

Variable	Never smoker	Former smoker	Current smoker
	n = 421	n = 135	n = 358
Age, *M* (*SD*)	31.0 (11.1)[a]	36.7 (12.1)[b]	36.7 (10.8)[b]
Gender, N (%)			
Male	235 (55.8)	74 (54.8)	191 (53.4)
Female	181 (43.0)	59 (43.7)	166 (46.4)
Other	5 (1.2)	2 (1.5)	1 (0.3)
Sexual orientation, N (%)			
Heterosexual/straight	353 (85.3)	115 (85.8)	314 (87.7)
LGBTQ	61 (14.7)	19 (14.2)	44 (12.3)
Race/ethnicity, N (%)			
Non-Hispanic white	257 (61.0)[a]	109 (80.7)[b]	285 (79.6)[b]
Other	164 (39.0)[a]	26 (19.3)[b]	73 (20.4)[b]
Level of education, N (%)			
High school or less	61 (14.5)[a,b]	9 (6.7)[b]	59 (16.5)[a]
Some college	136 (32.3)[a]	56 (41.5)[a]	144 (40.2)[a]
College degree	224 (53.2)[a]	70 (51.8)[a,b]	155 (43.3)[b]

LGBTQ = Lesbian, Gay, Bisexual, Transgender, Queer = High School'. [a,b]Letters denote significant group differences by row per chi-square analyses, $p < 0.05$. Mean age group comparisons by smoking status using one-way analysis of variance.

and 14.8% former smokers. Among current and former smokers, 33.5% reported ever smoking NAS and 34.5% reported ever smoking Pall Mall. Current and former smokers were older and more likely to be non-Hispanic White than never smokers, while current smokers were less likely to have a college degree than never smokers (Table 1).

2.2. Product perceptions

In one-way ANCOVAs, all three scales testing product perceptions had significant and positive intercept terms (p's < .001), indicating that NAS, relative to Pall Mall, was perceived as less harmful to health, better for the environment, and provided a better smoking experience (Table 2) relative to other cigarette brands. Effect sizes for the intercept terms reflecting perceived brand differences were large (Cohen, 1988) for environmental impact (eta squared [η^2] = 0.44) and health effects (η^2 = 0.21) and medium for smoking experience (η^2 = 0.17). The within-subject mean difference scores for NAS minus Pall Mall ratings, which could range from −2 to +2, were $M = 0.21$, $SD = 0.39$ for perceived health effects; $M = 0.49$, $SD = 0.49$ for environment impacts; and $M = 0.26$, $SD = 0.59$ for smoking experience, where greater positive scores indicate better product perceptions for NAS.

Brand order and pack color were not significant in the product perception models. Smoking status was significant for perceived environmental impact (η^2 = 0.01, small effect) and smoking experience (η^2 = 0.02, small effect). In follow-up post hoc tests, compared to never smokers (M_{diff} = 0.17, SD = 0.45), current (M_{diff} = 0.32, SD = 0.73) and former smokers (M_{diff} = 0.39, SD = 0.56) had larger differences in their ratings of NAS and Pall Mall on perceived smoking experience (both p's < .001); for environmental impact, current smokers (M_{diff} = 0.54, SD = 0.51) had larger differences in their brand ratings compared to never smokers (M_{diff} = 0.44, SD = 0.48, p = .002).

2.3. Personalized brand image

In one-way ANCOVA tests (Table 3), all three items assessing personalized brand image had significant and positive intercept terms (p's < .001) indicating NAS relative to Pall Mall was perceived as healthier for one's self, others, and the environment than other cigarettes. Brand order and pack color were not significant. Smoking status was significant only for personal health (η^2 = 0.01, small effect) with larger differences found in ratings of NAS and Pall Mall for current smokers (M_{diff} = 0.42, SD = 0.97) than never smokers (M_{diff} = 0.20, SD = 0.80, p = .001).

2.4. Generalized brand preferences

In one-way ANCOVA tests, both items assessing generalized brand preferences had significant and positive intercept terms (p's < .001) indicating NAS relative to Pall Mall was perceived as healthier (η^2 = 0.08) and better for the environment (η^2 = 0.16) than other cigarettes, with medium and large effect sizes, respectively (Table 3). The within-subject mean difference scores, which could range from −4 to +4, were M = 0.80, SD = 1.24 for perceived as healthier and M = 1.06, SD = 1.27 for perceived as better for the environment, where greater positive scores indicate better ratings for NAS relative to Pall Mall.

Pack color was not significant, while brand order was significant only for health perception (η^2 = 0.01, small effect). Specifically, participants who viewed NAS packs first had larger difference scores between NAS and Pall Mall (M_{diff} = 0.91, SD = 1.17) compared to those who viewed Pall Mall packs first (M_{diff} = 0.69, SD = 1.30, p = .004). Smoking status was significant in both models (both η^2 = 0.02, small effects, p's ≤ .001) with the differences between current and never smokers. For perceptions of healthier, the mean difference scores between NAS and Pall Mall were M_{diff} = 0.61, SD = 1.15 for never smokers and M_{diff} = 0.99, SD = 1.34 for current smokers. For perceptions of being safer for the environment, the mean difference scores between NAS and Pall Mall were M_{diff} = 0.91, SD = 1.21 for never smokers and M_{diff} = 1.24, SD = 1.34 for current smokers.

2.5. Corporate social responsibility

In a one-way ANOVA test of participants' ratings of corporate social responsibility for the company behind the brand, the model intercept was positive and significant with a medium effect size (η^2 = 0.11). Even though the brands are from the same company, participants rated the company that manufactures NAS as being more socially responsible

Table 2
Univariate models of product perceptions for Natural American Spirit relative to Pall Mall cigarettes.

	Harms to health (6 items)			Environmental impact (6 items)			Smoking experience (3 items)		
	β	F	η^2	β	F	η^2	β	F	η^2
Intercept[a]	–	**240.87**	**0.21**	–	**705.51**	**0.44**	–	**178.49**	**0.17**
Smoking status (ref: never smoker)									
Current smoker	0.06	3.02	0.01	**0.11**	4.70	0.01	**0.12**	**9.85**	**0.02**
Former smoker	0.08			0.03			**0.13**		
Brand order	−0.04	1.43	0.00	0.04	1.16	0.00	−0.02	0.43	0.00
Color	0.01	0.06	0.00	−0.02	1.65	0.00	0.02	0.21	0.00

[a] Note: the intercept reflects the difference score for ratings of NAS relative to Pall Mall (NAS - Pall Mall) for each dependent variable of interest in the models. Bolded effects are significant at p < .0056 (Bonferroni adjusted). Smoking status is categorized as never, former and current smokers. β = standardized coefficient.

Table 3
Univariate models of personalized brand image (personal health, others health, and environmental health) and public brand preferences (healthier and safer for the environment) for Natural American Spirit (NAS) relative to Pall Mall cigarettes.

	Personalized brand image									Public brand preferences					
	Personal health			Others health			Environmental health			Healthier			Safer for the environment		
	β	F	η^2	β	F	η^2	β	F	η^2	β	F	η^2	β	F	η^2
Intercept[a]	–	**19.02**	**0.02**	–	**13.88**	**0.02**	–	**66.41**	**0.07**	–	**78.74**	**0.08**	–	**169.25**	**0.16**
Smoking status (ref: never smoker)															
Current smoker	**0.13**	**6.52**	**0.01**	0.05	0.29	0.00	0.08	2.35	0.01	**0.13**	**10.48**	**0.02**	**0.16**	**6.94**	**0.02**
Former smoker	0.03			0.01			0.02			0.04			0.08		
Order	0.02	0.40	0.00	0.06	3.37	0.00	0.08	5.65	0.01	**0.03**	**8.21**	**0.01**	0.09	0.67	0.00
Color	0.04	1.12	0.00	0.02	0.47	0.00	0.04	1.37	0.00	−0.02	0.08	0.00	0.01	0.30	0.00

[a] Note: the intercept reflects the difference score for ratings of NAS relative to Pall Mall (NAS - Pall Mall) for each dependent variable of interest in the models. Bolded effects are significant at $p < .0056$ (Bonferroni adjusted). Smoking status is categorized as never, former and current smokers. β = standardized coefficient.

than the company that manufactures Pall Mall (full model $F[1, 909] = 110.25$, $p < .001$, adjusted $R^2 = 0.01$). The average difference score was 1.85 (SD = 2.43), where difference scores could range from −11 to +11. Corporate social responsibility ratings of the two brands did not differ by smoking status, brand order, or pack color.

3. Discussion

Using a randomized survey design to test perceptions of health-oriented and pro-environment marketing, the current study compared two cigarette brands, NAS and Pall Mall, owned by the same company: Reynolds American. We found that NAS cigarette packs with pro-environment text and images were more likely to be associated with beliefs that NAS is better for the environment and healthier relative to the Pall Mall packs of the same color without pro-environmental text/imagery. On measures of product perceptions, personalized brand image, and generalized brand preferences, the full sample, and current smokers relative to never smokers, rated the NAS brand as healthier and better for the environment. The findings for brand differences were consistent across measures of interest and with moderate to large effect sizes. The NAS advantage was significant irrespective of smoking status, pack color, and brand order, with findings stronger for current than never smokers. Further, despite both brands being owned by the same company participants rated the company behind NAS to be more socially responsible.

Previous research has found that both smokers and nonsmokers rated NAS packs and advertising with the text “natural” and “additive-free” as significantly less harmful to health compared to other top brands (e.g., Marlboro) (Moran et al., 2017; Pearson et al., 2016; Leas et al., 2017). Consistent with prior research (Pearson et al., 2016; Leas et al., 2018), we found that NAS marketing was influential for the sample overall and particularly so among current smokers, which may discourage quitting and/or encourage “switching” brands. Adding to the literature, the current study matched packs on color, which also can elicit feelings of safety (e.g., green) or harm (e.g., red) (Lempert and Glantz, 2017), and notably, the NAS product line does not include a red pack. We also evaluated the newest NAS packs, which have replaced the “additive-free” claim with an equivalent claim: “Tobacco Ingredients: Tobacco and Water”. The strength and consistency of the findings here and in relation to prior research point to significant misperceptions regarding the true health and environmental harms of NAS cigarettes. The findings indicate a perceived health-oriented brand-advantage. The tremendous growth in NAS sales is reminiscent of the tobacco industry's prior health reassurance efforts with the introduction of the illusion of filtration in the mid-1950s (Johnston, 1966) and with the mass marketing of light and ultra-light cigarettes from the 1970s to 2010 (National Cancer Institute, 2001). The consequences have been continued tobacco use and addiction through new initiates and retention of those who may have quit, but instead switched to brands and cigarette lines perceived as a healthier way to smoke (National Cancer Institute, 2001).

Study strengths include the within-subject brand comparison of actual NAS and Pall Mall packs and randomizing participants to order of pack brand viewed and to one of three pack colors (blue, green, gold/orange). The study had a large sample size and compared never, former, and current smokers. Further, we evaluated the full product brand proposition rather than modifying the packs to try to isolate responses to individual environmental or health-related text or images. Comparisons were made on a number of dimensions, and we controlled for Type I error.

The current study did not include a no-exposure control group, and the presence of pro-environment marketing is confounded with the higher price point of NAS relative to Pall Mall. Indeed, the ultra-premium price of NAS complicates the choice of a comparison brand because there is no other brand with a comparable price and market share. Although previous studies compared NAS to Marlboro (Pearson et al., 2016), we were interested in comparing brands from the same manufacturer. Although Pall Mall is marketed as a value brand, the consistent findings by smoking status, including among never smokers who would have no or limited information about price point, suggest this was not a likely explanation for the results. Alternatively, the gold “organic” NAS pack may have contributed to the perception that the brand, and specifically that color pack, is safer for the environment. However, only a third of the sample viewed the organic NAS pack, color was controlled for in all analyses, and no differences were found by color. A limitation of the study is that the sample was homogeneous (i.e., mostly non-Hispanic White with some college education) and not representative of the US population overall, although it is more reflective of NAS smokers. Future studies could test these images in a more diverse sample.

3.1. Implications

All commercially available cigarettes are designed to develop and sustain addiction (World Health Organization, 2017), and the components of a cigarette – tobacco, additives, paper, filter - are rather simple and have remained relatively stable over time and across brands (U.S. Department of Health and Human Services, 2010). The primary differentiation comes in tobacco marketing, which seeks to create a unique value proposition (Aaker and Joachimsthaler, 2000). NAS is one of the fastest growing cigarette brands, and the current findings document packaging driven misperceptions about the health and environmental safety of NAS and the actions of its parent company Reynolds American. Our results provide further support for the need for comprehensive tobacco regulation by the FDA. Policy interventions to address deceptive marketing practices would include prohibiting the word “natural” in tobacco brand names, prohibiting pro-environmental language and imagery on a product that is demonstrably harmful to the environment,

and requiring plain cigarette packaging. This study demonstrates the tendency to aggregate pro-environment messaging, such as the NAS back of the pack "Respect for the Earth" campaign, with health-related claims. People believe erroneously that what is better for the environment is also better for their own health and that of secondhand smokers. All commercially available cigarettes will kill half of all long-term users when smoked as intended (Gottlieb, 2018). Marketing language that obscures these health harms, even indirectly through questionable pro-environment claims, ought to be prohibited.

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