Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

Tob Control

SUPPLEMENTAL MATERIALS

1. Search Terms

Topic	General Terms	Search Field Terms
Reduced nicotine product	Reduced nicotine, reduced exposure	(reduced nicotine[tiab] OR RNC[tiab] nicotine reduction[tiab] OR reducing nicotine[tiab] OR low nicotine[tiab] OR very low nicotine[tiab] OR VLNC[tiab] OR lower nicotine[tiab] OR less nicotine[tiab] OR remov* nicotine[tiab] OR nicotine content[tiab] OR reduced exposure[tiab] OR reduced-exposure[tiab] OR reduced exposure products[tiab] OR reduced exposure tobacco products[tiab] OR PREP[tiab] OR PREPs[tiab] OR MRTP[tiab] OR modified risk[tiab] OR denicotin*[tiab] OR zero nicotine[tiab] OR nonnicotine[tiab] OR nicotine free[tiab] OR nicotine regulation[tiab] OR regulation of nicotine[tiab] OR Quest[tiab] OR nicotine[mesh] OR harm reduction[mesh] OR risk reduction behavior[mesh] OR smoking reduction[mesh])
Cigarettes	Cigarettes, combustible tobacco product, cigarette smoking	**AND** (cigar*[tiab] OR combustible*[tiab] OR smoking[mesh] OR tobacco products[mesh] OR cigarette smoking[mesh])

Topic	General Terms	Search Field Terms
Marketing Features	4Ps - Promotion, Product, Price, and Placement	**AND** (communication*[tiab] OR communicate*[tiab] OR market*[tiab] OR ad[tiab] OR ads[tiab] OR advertis*[tiab] OR promotion*[tiab] OR brand*[tiab] OR pack*[tiab] OR price[tiab] OR claim[tiab] OR descriptor[tiab] OR display[tiab] OR sale[tiab] OR discount[tiab] OR position[tiab] OR placement[tiab] OR sign[tiab] OR media[tiab] OR point of sale[tiab] OR internet[tiab] OR online[tiab] OR print[tiab] OR television[tiab] OR radio[tiab] OR warning[tiab] OR messag*[tiab] OR counter*[tiab] OR campaign[tiab] OR education[tiab] OR marketing[mesh] OR consumer*[mesh] OR product packaging[mesh] OR health communication[mesh] OR communication[mesh] OR health education[mesh])
Language	English only	**AND** (eng[Language])

Note. We aimed for parsimonious terms where possible, particularly when accounting for MESH terms, by using the highest hierarchical term. For instance, "cigarettes" is a subheading within "tobacco products," so we included the latter MESH term.

2. Feature Descriptions

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
1	Bolcic-Jankovic, Dragana; Biener, Lois	2015	934	Non-experimental	Cross-sectional	Nonsmokers and current smokers	n/a	n/a	n/a	General	Descriptor	Nicotine is the substance in cigarettes that makes people get addicted to smoking. The FDA has the authority to reduce the amount of nicotine in cigarettes to a very low level.
2	Byron, M. Justin; Hall, Marissa G.; King, Jessica L.; Ribisl, Kurt M.; Brewer, Noel T.	2019	1353	Randomized Experiment	Cross-sectional	Nonsmokers and current smokers	n/a	n/a	n/a	General	Descriptor	(1) concise language; (2) a percentage; (3) an interpretation; (4) a percentage and interpretation; (5) a percentage and a pictograph; or (6) a percentage, interpretation, and pictograph; or to a control description using (7) FDA's "minimally or nonaddictive" phrasing
3	Byron, M. Justin; Jeong, Michelle;	2018	650	Non-experimental	Cross-sectional	Current smokers	n/a	n/a	n/a	General	Descriptor	Imagine the government required tobacco companies to

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
	Abrams, David B.; Brewer, Noel T.											remove most of the nicotine from cigarettes.
4	Chung-Hall, Janet; Fong, Geoffrey T.; Driezen, Pete; Craig, Lorraine	2018	3215	Non-experimental	Cross-sectional	Current smokers (only and dual e-cigarette users)	n/a	n/a	n/a	General	Descriptor	If you could get nicotine in products other than tobacco, would you support or oppose a law that reduced the amount of nicotine in cigarettes and tobacco, to make them less addictive?
5	Connolly, Gregory N.; Behm, Ilan; Healton, Cheryl G.; Alpert, Hillel R.	2012	1021	Non-experimental	Cross-sectional	Nonsmokers and current smokers	n/a	n/a	n/a	General	Descriptor	Do you think that the FDA should reduce nicotine in cigarettes if it would cause fewer kids to become addicted or hooked on smoking?
6	Denlinger-Apte, Rachel L.; Joel, Danielle L.; Strasser, Andrew A.; Donny, Eric C.	2017	68	Randomized Experiment	Cross-sectional	Current smokers	General	Descriptor in context of product use	The next cigarette that you will be smoking contains a very low/average nicotine level, compared to most cigarettes available in the United States.	n/a	n/a	n/a
7	Denlinger-Apte, Rachel L.; Tidey, Jennifer W.;	2019	360	Randomized Experiment	Longitudinal	Current smokers	n/a	n/a	n/a	General	Descriptor in context	Would you support or oppose a law that

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
	Koopmeiners, Joseph S.; Hatsukami, Dorothy K.; Smith, Tracy T.; Pacek, Lauren R.; McClernon, F. Joseph; Donny, Eric C.										of product use	reduced the amount of nicotine in cigarettes, to make cigarettes less addictive?
8	Fix, Brian V.; O'Connor, Richard J.; Fong, Geoffrey T.; Borland, Ron; Cummings, K. M.; Hyland, Andrew	2011	678	Non-experimental	Cross-sectional	Current smokers	n/a	n/a	n/a	General	Descriptor	If nicotine was made easily available in non-cigarette form, would you support or oppose a law that reduced the amount of nicotine in cigarettes, to make cigarettes less addictive?
9	Fraser, Trish; Kira, Anette	2017	21	Quasi-Experimental	Longitudinal	Current smokers	Pack, Product	General	Branding	General	Descriptor	Lead researcher informed the participants of the potential benefits of VLNC cigarettes and a mandated VLNC cigarette-only policy, such as prevention of addiction to nicotine, reduction of tobacco dependence leading to increased quitting smoking and that a VLNC cigarette-only

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

Tob Control

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
												policy might be the best policy option for VLNC cigarettes as it reduces the risk of smokers smoking both low and HNC cigarettes.
10	Gallopel-Morvan, Karine; Moodie, Crawford; Hammond, David; Eker, Figen; Beguinot, Emmanuelle; Martinet, Yves	2011	836	Non-experimental	Cross-sectional	Nonsmokers and current smokers	General	Descriptor	0.8mg vs. 0.9mg	n/a	n/a	n/a
11	Hall, Marissa G.; Byron, Justin M.; Brewer, Noel T.; Noar, Seth M.; Ribisl, Kurt M.	2019	1712	Randomized Experiment	Cross-sectional	Current smokers	n/a	n/a	n/a	General	Descriptor	Imagine a new law requiring tobacco companies to remove 95% of the nicotine in cigarettes. Stores could legally sell only these new very low nicotine cigarettes, but not cigarettes that have regular amounts of nicotine.
12	Johnson, Andrea C.; Mays, Darren; Villanti, Andrea C.; Niaura, Raymond S.; Rehberg, Kathryn; Phan,	2019	426	Randomized Experiment	Cross-sectional	Current smokers	Ad	Pack color	Blue v. red package color for implicit risk	n/a	n/a	n/a

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

Tob Control

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
	Lilianna; Mercincavage, Melissa; Luta, George; Strasser, Andrew A.											
13	Lochbuehler, Kirsten; Tang, Kathy Z.; Souprountchouk, Valentina; Campetti, Dana; Cappella, Joseph N.; Kozlowski, Lynn T.; Strasser, Andrew A.	2016	203	Randomized Experiment	Cross-sectional	Current smokers	Ad	Pack color	Blue (inaccurate) v. red (accurate) packaging color for implicit risk	Counter-messaging	Warning	Text-only warnings (e.g., Not intended for quitting; Pregnant women Surgeon General)
14	Mercincavage, Melissa; Saddleson, Megan L.; Gup, Emily; Halstead, Angela; Mays, Darren; Strasser, Andrew A.	2017	77	Randomized Experiment	Longitudinal	Current smokers	Ad, Product	General	Branding	n/a	n/a	n/a
15	Mercincavage, Melissa; Smyth, Joshua M.; Strasser, Andrew A.; Branstetter, Steven A.	2016	36	Randomized Experiment	Longitudinal	Current smokers	General	Descriptor in context of product use	The cigarette you are smoking contains: (1) "…the same level of nicotine as your usual brand. (2) "…a low level of nicotine compared to your usual brand. (3) "…a very low level of nicotine compared to your usual brand."	n/a	n/a	n/a

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
16	Nguyen, Anh B.; Zhao, Xiaoquan; Hoffman, Leah; Morse, Aura Lee; Delahanty, Janine	2018	5474	Non-experimental	Cross-sectional	Non, Current, and Former smokers	General	Descriptor	Rated whether a cigarette advertised as "low nicotine": (1) be more or less harmful than a typical cigarette; (2) have lower or higher risk of causing lung cancer than a typical cigarette; (3) be more or less addictive than a typical cigarette	n/a	n/a	n/a
17	O'Brien, Erin Keely; Nguyen, Anh B.; Persoskie, Alexander; Hoffman, Allison C.	2017	3738	Non-experimental	Cross-sectional	Non, Current, and Former smokers	General	Descriptor	Rated whether a cigarette advertised as "low nicotine" would be more or less harmful/addictive than a typical cigarette	n/a	n/a	n/a
18	O'Connor, Richard J.; Ashare, Rebecca L.; Fix, Brian V.; Hawk, Larry W.; Cummings, K. Michael; Schmidt, William C.	2007	424	Quasi-Experimental	Cross-sectional	Current smokers, Susceptible and Non-susceptible nonsmokers	Ad	General	Branding	n/a	n/a	n/a
19	O'Connor, Richard J.; Hyland, Andrew; Giovino, Gary A.;	2005	2028	Non-experimental	Cross-sectional	Current smokers	Product	General	Tobacco companies are developing new types of cigarettes or	n/a	n/a	n/a

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance placed on this supplemental material which has been supplied by the author(s)

Tob Control

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
	Fong, Geoffrey T.; Cummings, K. Michael								cigarette-like products that are supposed to be less harmful than ordinary cigarettes. Have you heard of such products? If yes, unaided recall of product brands.			
20	Parascandola, Mark; Augustson, Erik; O'Connell, Mary E.; Marcus, Stephen	2009	5586	Non-experimental	Cross-sectional	Current and Former smokers	Product	General	Have you heard of the following products: Quest	n/a	n/a	n/a
21	Parascandola, Mark; Hurd, Ami L.; Augustson, Erik	2008	9736	Non-experimental	Cross-sectional	Non, Current, and Former smokers	Product	General	Have you heard of the following products: Quest	n/a	n/a	n/a
22	Patel, Minal; Cuccia, Alison F.; Czaplicki, Lauren; Donovan, Emily M.; Simard, Bethany; Pitzer, Lindsay; Hair, Elizabeth C.; Schillo, Barbara A.; Vallone, Donna M.	2019	917	Non-experimental	Cross-sectional	Current smokers	n/a	n/a	n/a	General	Descriptor	The federal government may require tobacco companies to significantly reduce the level of nicotine in cigarettes.
23	Popova, Lucy; Owusu, Daniel; Nyman, Amy L.; Weaver, Scott R.;	2019	1185	Randomized Experiment	Cross-sectional	Current smokers	n/a	n/a	n/a	General	Descriptor	What would you most likely do if [FRAMING]?" where

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance
placed on this supplemental material which has been supplied by the author(s)

Tob Control

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
	Yang, Bo; Huang, Jidong; Ashley, David L.											the FRAMING was (1) "nicotine levels were reduced by 95% in all cigarettes for sale"; (2) "the government reduced nicotine levels by 95% in all cigarettes for sale"; (3) "all cigarettes for sale were changed so that they were no longer addictive"; (4) "all cigarettes for sale were changed so that they no longer relieved your cravings"; or (5) "all cigarettes for sale were changed so that you would be able to quit more easily?
24	Shadel, William G.; Lerman, Caryn; Cappella, Joseph; Strasser, Andrew A.; Pinto, Angela; Hornik, Robert	2006	200	Quasi-Experimental	Cross-sectional	Current smokers	Ad	General	Branding	n/a	n/a	n/a

Supplemental material

BMJ Publishing Group Limited (BMJ) disclaims all liability and responsibility arising from any reliance
placed on this supplemental material which has been supplied by the author(s)

Tob Control

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
25	Strasser, A. A.; Tang, K. Z.; Tuller, M. D.; Cappella, J. N.	2008	500	Randomized Experiment	Cross-sectional	Current smokers	Ad	Descriptor/ Pack color	Text v. no text ad, red v. blue pack color; All conditions showed pack branding and "low nicotine," "extra low nicotine," and "nicotine free"	n/a	n/a	n/a
26	Villanti, Andrea C.; West, Julia C.; Mays, Darren; Donny, Eric C.; Cappella, Joseph N.; Strasser, Andrew A.	2019	521	Randomized Experiment	Cross-sectional	Past 30–day tobacco users and non-past 30-day tobacco users	n/a	n/a	n/a	General	Descriptor	(1) nicotine is the addictive substance in tobacco products, (2) nicotine makes it easier for people to start smoking regularly, (3) nicotine makes it harder for people to quit smoking, (4) nicotine does not cause cancer, (5) chemicals in cigarette smoke, not nicotine, largely cause cancer, heart disease, and other health problems related to smoking, and (6) nicotine can be used safely long-term

ID	Authors	Year	Sample Size	Type	Data Collection Type	Smoking Status	Commercial Exposure Medium	Commercial Exposure Feature	Commercial Exposure Detail	Public Health Exposure Medium	Public Health Exposure Feature	Public Health Exposure Detail
												in quit smoking products like nicotine patches, gum, or lozenges.

3. Results Summary

Message Features	Message Processing Outcomes					
	Attention	**Recall**	**Subjective Ratings or Reactions**	**Attitudes & Beliefs**	**Intentions**	**Behavior**
Commercial						
Product/Ad/Pack		Parascandola, 2008 ↓ Parascandola, 2009 ↓ O'Connor, 2005 ↑	O'Connor, 2007 ↓ Fraser, 2017 ↓	Mercincavage, 2017 ↓ Shadel, 2006 ↓ Strasser, 2008 ↓	O'Connor, 2007 ↑	O'Connor, 2005 ↓ Parascandola, 2009 ↓ Mercincavage, 2017 ↑↓
Color	Lochbuehler, 2016 ↑	Johnson, 2019 ↑ Lochbuehler, 2016 NS	Johnson, 2019 ↑	Johnson, 2019 NS Lochbuehler, 2016 NS Strasser, 2008 NS	Johnson, 2019 NS	
Descriptor			Denlinger-Apte, 2017 ↓ Mercincavage, 2016 ↓	Denlinger-Apte, 2017 ↓ Gallopel-Morvan, 2010 ↓ O'Brien, 2017 ↓ Nguyen, 2018 ↓ Strasser, 2008 ↓	Denlinger-Apte, 2017 ↓	Denlinger-Apte, 2017 NS Mercincavage, 2016 ↓
Public health						
General			Bolcic-Ja, 2015 ↑ Connolly, 2012 ↑ Chung-Hall, 2018 ↑ Fix, 2011 ↑ Denlinger-Apte, 2019 ↑↓	Byron, 2018 ↓ Byron, 2019 ↑ Popova, 2019 ↑ Villanti, 2019 ↑ Fraser, 2017 ↑	Byron, 2018 ↓ Popova, 2019 ↑↓ Hall, 2019 ↑ Patel, 2019 ↑↓ Villanti, 2019 NS	
Warning Label	Lochbuehler, 2016 NS	Lochbuehler, 2016 NS		Lochbuehler, 2016 ↑		

NS = Not significant; ↑ = associated with an increased outcome; ↓ associated with a decreased outcome. Studies include different outcome targets, methodologies, and designs. Outcome directions are generally associated with greater attention and recall, positive subjective ratings and reactions, positive attitudes and beliefs, increased use intentions, and increased RNC behavior.