Are Health Topics on Pictorial Cigarette Health Warning Labels Related to Perceived Effectiveness in China?

Jeffrey Hardesty, M.P.H.
Institute for Global Tobacco Control

JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH

Presenter Disclosures

Jeffrey Hardesty:

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

No relationships to disclose.

Co-Authors

Joanna Cohen, Ph.D.
Director of IGTC

Zuyi Zhu, M.D., M.P.H.
Physician

Ryan David Kennedy, Ph.D.
Assistant Professor

Thank you to all co-authors for their support throughout the study.

Outline

I. Background

I. Methods

I. Results

II. Conclusions

I. Background

Context

- In China, 300 million smokers and nearly 600 million non-smokers are affected by secondhand-smoke

- Ratified the WHO FCTC treaty in 2005

- Implementation of tobacco control policies in China has been slow

Tobacco Industry in China

- China National Tobacco Corporation (CNTC) is state-owned monopoly and their government administrative arm, the State Tobacco Monopoly Administration (STMA), develops and manages the tobacco market and implements anti-smoking efforts

- CNTC contributes 7-10% of the country's annual revenue

STMA

中国烟草
CHINA TOBACCO = = **Regulators of tobacco & industry**

Purpose of Cigarette Pictorial Health Warning Labels

- Educate the public about the harms of smoking

- Increase quit-related thoughts among smokers

- Prevent non-smokers from initiating use

https://www.google.com/url?sa=i&rct=j&q=&esrc=s&source=images&cd=&cad=rja&uact=8&ved=0ah
UKEwioz_OW6vrWAhUC9YMKHRuXD4MQjRwIBw&url=http%3A%2F%2Fwww.atfchypnotherapy.com
%2Fservices%2Fsmoking-cessation-hypnosis%2F&psig=AOvVaw3UHFt2984n-
erwlOcC1J5T&ust=1508438625907260

http://www-static.weddingbee.com/pics/278075/kids.jpg

Compliance with FCTC Implementation Guidelines

China's HWLs

Vietnam's HWLs

Translation: Smoking is harmful to your health; please don't smoke in smoke-free places

Translation: Smoking causes lung cancer

Effectiveness of the Current HWLs in China

Not effective at communicating the harms of smoking and encouraging smokers to quit

http://globaltobaccocontrol.org/tpackss/

Figure 5. Percentage of male smokers who believe that second-hand smoke causes lung cancer in non-smokers, by country(4)

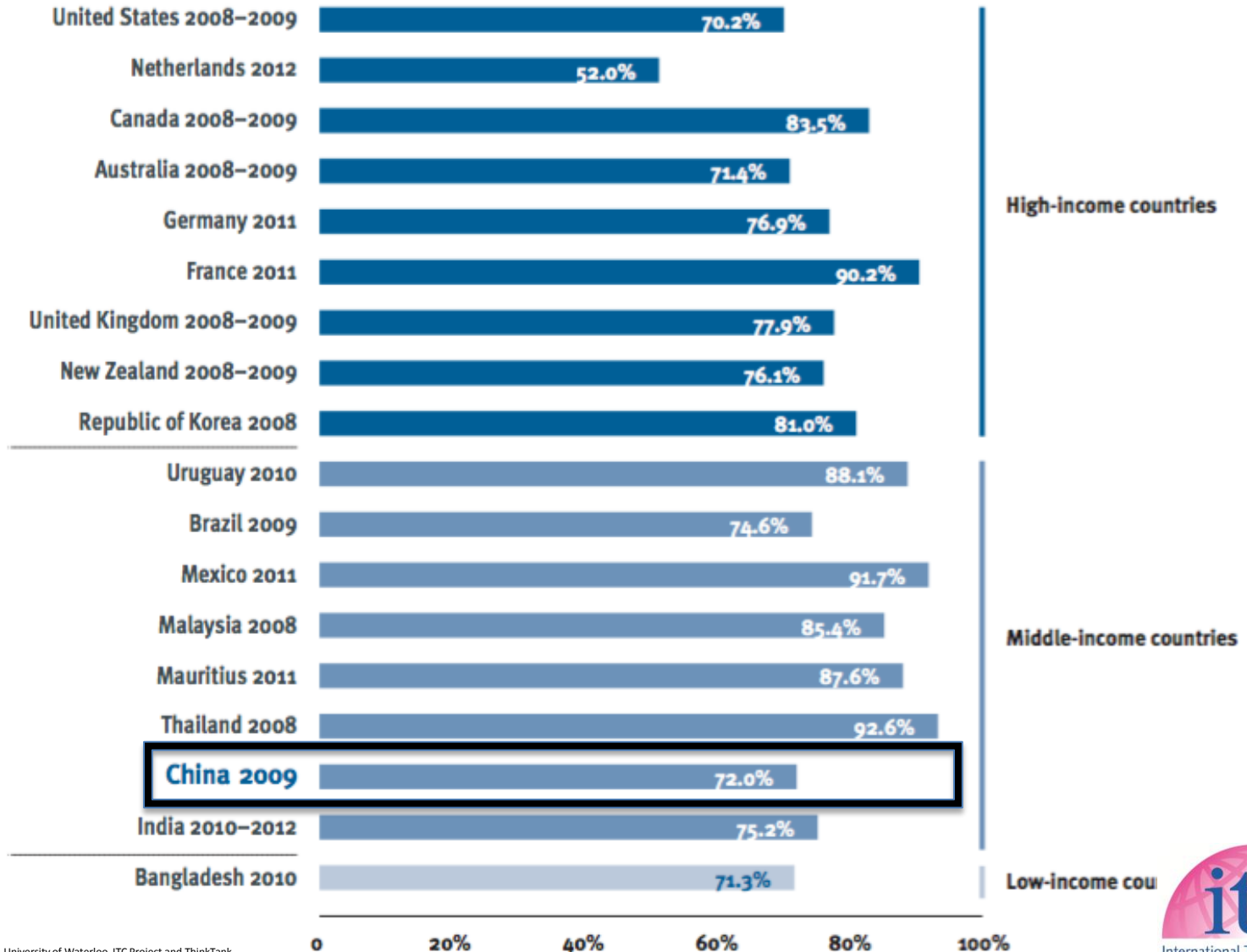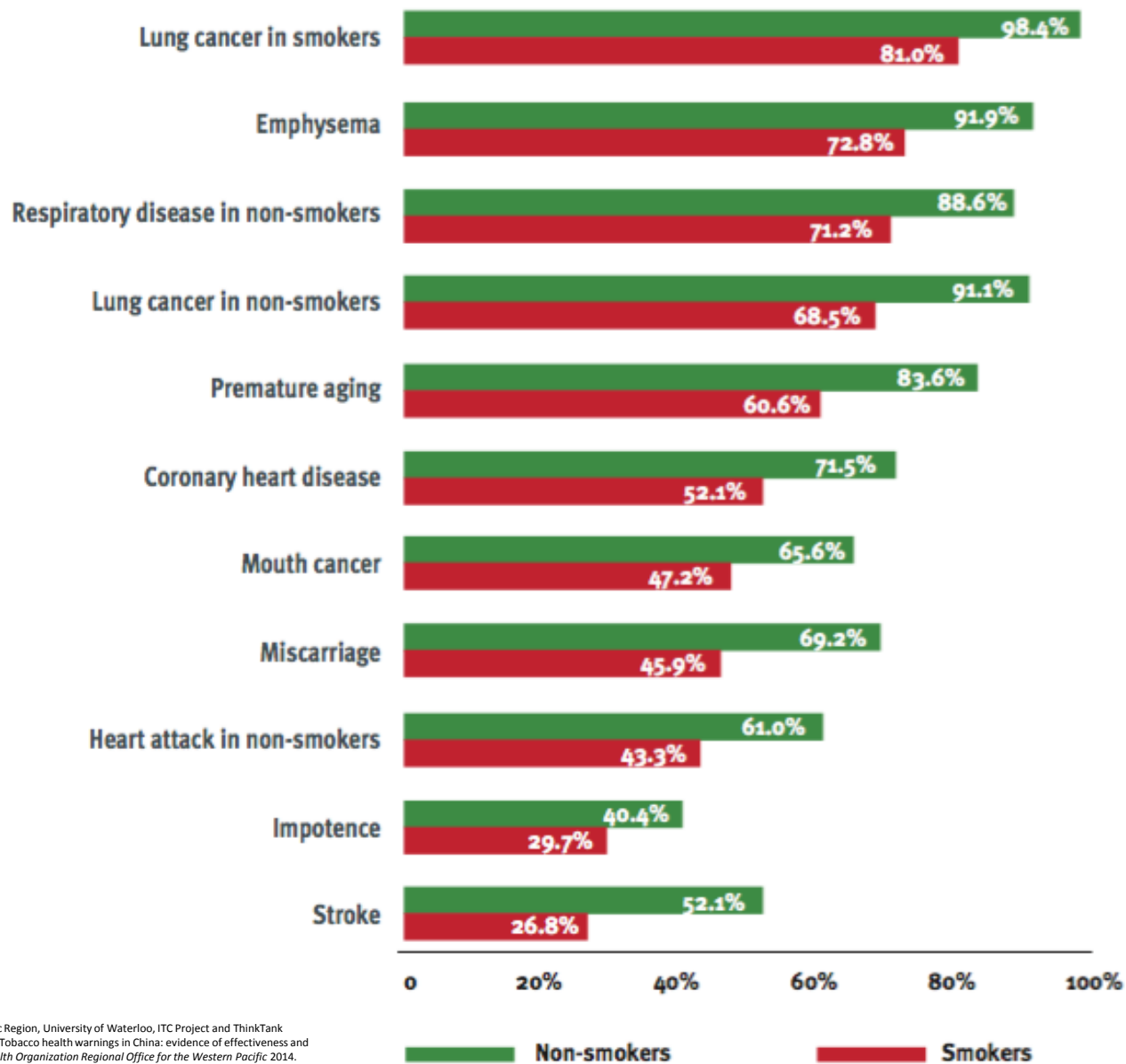| Country	Percentage	Income group
United States 2008–2009	70.2%	High-income countries
Netherlands 2012	52.0%	
Canada 2008–2009	83.5%	
Australia 2008–2009	71.4%	
Germany 2011	76.9%	
France 2011	90.2%	
United Kingdom 2008–2009	77.9%	
New Zealand 2008–2009	76.1%	
Republic of Korea 2008	81.0%	
Uruguay 2010	88.1%	Middle-income countries
Brazil 2009	74.6%	
Mexico 2011	91.7%	
Malaysia 2008	85.4%	
Mauritius 2011	87.6%	
Thailand 2008	92.6%	
China 2009	72.0%	
India 2010–2012	75.2%	
Bangladesh 2010	71.3%	Low-income cou...

International Tobacco Control
Policy Evaluation Project

Figure 3. Percentage of smokers and non-smokers who believe that cigarette smoking causes specific health effects, Wave 3 (May–Oct. 2009)(4)

Health effect	Non-smokers	Smokers
Lung cancer in smokers	98.4%	81.0%
Emphysema	91.9%	72.8%
Respiratory disease in non-smokers	88.6%	71.2%
Lung cancer in non-smokers	91.1%	68.5%
Premature aging	83.6%	60.6%
Coronary heart disease	71.5%	52.1%
Mouth cancer	65.6%	47.2%
Miscarriage	69.2%	45.9%
Heart attack in non-smokers	61.0%	43.3%
Impotence	40.4%	29.7%
Stroke	52.1%	26.8%

0   20%   40%   60%   80%   100%

■ **Non-smokers**   ■ **Smokers**

itc
International Tobacco Control
Policy Evaluation Project

Objective

Test whether the health topics on pictorial cigarette health warning labels (HWLs) are related to perceived effectiveness ratings to identify effective health topics for Chinese adult smokers

Health Topics

- Lung cancer
  - lung cancer in smokers and non-smokers
- Other airway-related pathology
  - lung disease, asthma, and mouth cancer
- Non-airway-related pathology
  - heart attack, stroke, and blindness

II. Methods

Study Design, Cities, and Sample

- A cross-sectional randomized experimental survey

- Beijing, Shanghai, Wuhan, and Kunming

- 1615 adult Chinese smokers in 2016

  - Oversampled men (95%)

  - Half above 40 years old

www.maps.google.com

Protocols

1. Randomized participants to one of four groups of HWLs:
   - Self-harm messages + factual text (8 HWLs)
     - Lung cancer, mouth cancer, stroke, and blindness
   - Self-harm messages + personal text (8 HWLs)
     - Lung cancer, mouth cancer, stroke, and blindness
   - Smokers-harming-others messages + factual text (8 HWLs)
     - Lung cancer, lung disease, asthma, and heart attack
   - Smokers-harming-others messages + personal text (8 HWLs)
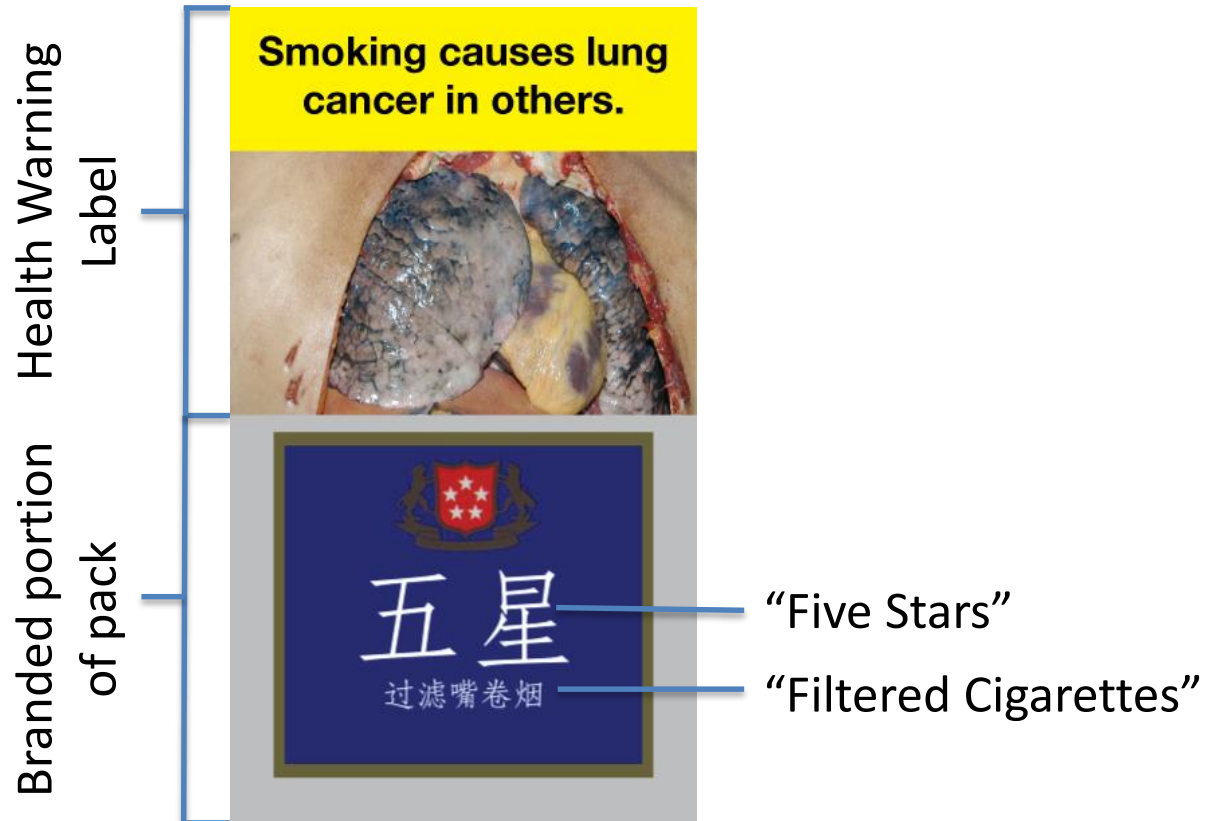   - Lung cancer, lung disease, asthma, and heart attack

Protocols (Cont.)

2. All 32 HWLs were individually rated using a 10-point scale, with 10 being most effective

3. HWLs were sorted based on effectiveness ratings to assess potential clustering of health topics among the relative ratings
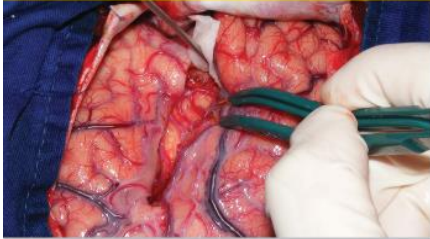
Mock Cigarette Pack

Health Warning Label

Branded portion of pack

Smoking causes lung cancer in others.

五星

过滤嘴卷烟

"Five Stars"

"Filtered Cigarettes"

Courtesy of Dr. Prakit, Action on Smoking and Health Foundation, Thailand

Independent Groups

Self-harm messages + factual text	Self-harm messages + personal text	Smokers-harming-others messages + factual text	Smokers-harming-others messages + personal text
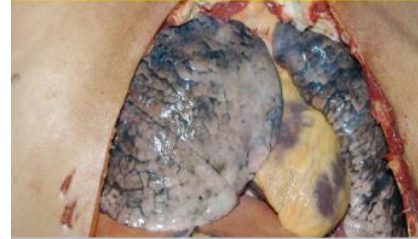
Smoking causes stroke.

iStock.com/wenht

Smoking caused my mouth cancer.

By Bionerd (Own work) [CC BY 3.0 (http://creativecommons.org/licenses/by/3.0)], via Wikimedia Commons

Smoking causes lung cancer in others.

Courtesy of Dr. Prakit, Action on Smoking and Health Foundation Thailand

My smoking caused my child's asthma.

Licensed under Health Canada copyright

<u>Self-harm health effects</u>
lung cancer; mouth cancer; stroke; and blindness

<u>Secondhand smoke health effects</u>
lung cancer; lung disease; asthma; and heart attack

III. Results

JOHNS HOPKINS

BLOOMBERG SCHOOL
of PUBLIC HEALTH

Effectiveness ratings for each HWL among adult Chinese smokers (n=1,615)
Listed in descending order.

	Message	Text	Image	Disease	Rating
1	Harming-others	Personal	Clinical	Lung cancer (lungs)	7.73
2	Harming-others	Factual	Clinical	Lung cancer (lungs)	7.63
3	Self-harm	Personal	Individual Suffering	Lung cancer (man)	7.32
4	Self-harm	Factual	Clinical	Lung cancer (x-ray)	7.23
5	Self-harm	Personal	Clinical	Lung cancer (x-ray)	7.22
6	Harming-others	Personal	Individual Suffering	Lung disease	7.18
7	Harming-others	Personal	Individual Suffering	Lung cancer (woman)	7.15
8	Harming-others	Factual	Individual Suffering	Lung cancer (woman)	7.11
9	Self-harm	Factual	Individual Suffering	Lung cancer (man)	7.07
10	Harming-others	Personal	Individual Suffering	Asthma	6.99
11	Harming-others	Factual	Individual Suffering	Lung disease	6.94
12	Self-harm	Personal	Clinical	Mouth cancer	6.85
13	Self-harm	Factual	Clinical	Mouth cancer	6.83
14	Harming-others	Personal	Clinical	Asthma	6.82
15	Harming-others	Personal	Clinical	Lung disease	6.78
16	Harming-others	Personal	Clinical	Heart attack	6.75
17	Harming-others	Factual	Individual Suffering	Asthma	6.72
18	Self-harm	Personal	Individual Suffering	Mouth cancer	6.71
19	Harming-others	Factual	Clinical	Lung disease	6.67
20	Self-harm	Personal	Clinical	Stroke	6.66
21	Harming-others	Factual	Clinical	Asthma	6.61
22	Harming-others	Factual	Clinical	Heart attack	6.58
23	Harming-others	Personal	Individual Suffering	Heart attack	6.56
24	Harming-others	Factual	Individual Suffering	Heart attack	6.47
25	Self-harm	Factual	Individual Suffering	Mouth cancer	6.46
26	Self-harm	Factual	Clinical	Stroke	6.42
27	Self-harm	Personal	Individual Suffering	Stroke	6.05
28	Self-harm	Factual	Individual Suffering	Stroke	6.00
29	Self-harm	Personal	Clinical	Blindness	5.89
30	Self-harm	Factual	Clinical	Blindness	5.83
31	Self-harm	Personal	Individual Suffering	Blindness	5.51
32	Self-harm	Factual	Individual Suffering	Blindness	5.50

Ratings were based on a scale of 1 to 10 with 10 being the most effective
Effectiveness: Thinking about quitting

Effectiveness ratings for each HWL among adult Chinese smokers (n=1,615)
Listed in descending order.

	Message	Text	Image	Disease	Rating
1	Harming-others	Personal	Clinical	Lung cancer (lungs)	7.73
2	Harming-others	Factual	Clinical	Lung cancer (lungs)	7.63
3	Self-harm	Personal	Individual Suffering	Lung cancer (man)	7.32
4	Self-harm	Factual	Clinical	Lung cancer (x-ray)	7.23
5	Self-harm	Personal	Clinical	Lung cancer (x-ray)	7.22
6	Harming-others	Personal	Individual Suffering	Lung disease	7.18
7	Harming-others	Personal	Individual Suffering	Lung cancer (woman)	7.15
8	Harming-others	Factual	Individual Suffering	Lung cancer (woman)	7.11
9	Self-harm	Factual	Individual Suffering	Lung cancer (man)	7.07
10	Harming-others	Personal	Individual Suffering	Asthma	6.99
11	Harming-others	Factual	Individual Suffering	Lung disease	6.94
12	Self-harm	Personal	Clinical	Mouth cancer	6.85
13	Self-harm	Factual	Clinical	Mouth cancer	6.83
14	Harming-others	Personal	Clinical	Asthma	6.82
15	Harming-others	Personal	Clinical	Lung disease	6.78
16	Harming-others	Personal	Clinical	Heart attack	6.75
17	Harming-others	Factual	Individual Suffering	Asthma	6.72
18	Self-harm	Personal	Individual Suffering	Mouth cancer	6.71
19	Harming-others	Factual	Clinical	Lung disease	6.67
20	Self-harm	Personal	Clinical	Stroke	6.66
21	Harming-others	Factual	Clinical	Asthma	6.61
22	Harming-others	Factual	Clinical	Heart attack	6.58
23	Harming-others	Personal	Individual Suffering	Heart attack	6.56
24	Harming-others	Factual	Individual Suffering	Heart attack	6.47
25	Self-harm	Factual	Individual Suffering	Mouth cancer	6.46
26	Self-harm	Factual	Clinical	Stroke	6.42
27	Self-harm	Personal	Individual Suffering	Stroke	6.05
28	Self-harm	Factual	Individual Suffering	Stroke	6.00
29	Self-harm	Personal	Clinical	Blindness	5.89
30	Self-harm	Factual	Clinical	Blindness	5.83
31	Self-harm	Personal	Individual Suffering	Blindness	5.51
32	Self-harm	Factual	Individual Suffering	Blindness	5.50

80% of the top 10 HWLs depicted lung cancer

Ratings were based on a scale of 1 to 10 with 10 being the most effective
Effectiveness: Thinking about quitting

Effectiveness ratings for each HWL among adult Chinese smokers (n=1,615)
Listed in descending order.

	Message	Text	Image	Disease	Rating
1	Harming-others	Personal	Clinical	Lung cancer (lungs)	7.73
2	Harming-others	Factual	Clinical	Lung cancer (lungs)	7.63
3	Self-harm	Personal	Individual Suffering	Lung cancer (man)	7.32
4	Self-harm	Factual	Clinical	Lung cancer (x-ray)	7.23
5	Self-harm	Personal	Clinical	Lung cancer (x-ray)	7.22
6	Harming-others	Personal	Individual Suffering	Lung disease	7.18
7	Harming-others	Personal	Individual Suffering	Lung cancer (woman)	7.15
8	Harming-others	Factual	Individual Suffering	Lung cancer (woman)	7.11
9	Self-harm	Factual	Individual Suffering	Lung cancer (man)	7.07
10	Harming-others	Personal	Individual Suffering	Asthma	6.99
11	Harming-others	Factual	Individual Suffering	Lung disease	6.94
12	Self-harm	Personal	Clinical	Mouth cancer	6.85
13	Self-harm	Factual	Clinical	Mouth cancer	6.83
14	Harming-others	Personal	Clinical	Asthma	6.82
15	Harming-others	Personal	Clinical	Lung disease	6.78
16	Harming-others	Personal	Clinical	Heart attack	6.75
17	Harming-others	Factual	Individual Suffering	Asthma	6.72
18	Self-harm	Personal	Individual Suffering	Mouth cancer	6.71
19	Harming-others	Factual	Clinical	Lung disease	6.67
20	Self-harm	Personal	Clinical	Stroke	6.66
21	Harming-others	Factual	Clinical	Asthma	6.61
22	Harming-others	Factual	Clinical	Heart attack	6.58
23	Harming-others	Personal	Individual Suffering	Heart attack	6.56
24	Harming-others	Factual	Individual Suffering	Heart attack	6.47
25	Self-harm	Factual	Individual Suffering	Mouth cancer	6.46
26	Self-harm	Factual	Clinical	Stroke	6.42
27	Self-harm	Personal	Individual Suffering	Stroke	6.05
28	Self-harm	Factual	Individual Suffering	Stroke	6.00
29	Self-harm	Personal	Clinical	Blindness	5.89
30	Self-harm	Factual	Clinical	Blindness	5.83
31	Self-harm	Personal	Individual Suffering	Blindness	5.51
32	Self-harm	Factual	Individual Suffering	Blindness	5.50

80% of the labels ranked 11-20 depicted other pathology of the airway (lung disease, mouth cancer, or asthma)

Ratings were based on a scale of 1 to 10 with 10 being the most effective
Effectiveness: Thinking about quitting

Effectiveness ratings for each HWL among adult Chinese smokers (n=1,615)
Listed in descending order.

	Message	Text	Image	Disease	Rating
1	Harming-others	Personal	Clinical	Lung cancer (lungs)	7.73
2	Harming-others	Factual	Clinical	Lung cancer (lungs)	7.63
3	Self-harm	Personal	Individual Suffering	Lung cancer (man)	7.32
4	Self-harm	Factual	Clinical	Lung cancer (x-ray)	7.23
5	Self-harm	Personal	Clinical	Lung cancer (x-ray)	7.22
6	Harming-others	Personal	Individual Suffering	Lung disease	7.18
7	Harming-others	Personal	Individual Suffering	Lung cancer (woman)	7.15
8	Harming-others	Factual	Individual Suffering	Lung cancer (woman)	7.11
9	Self-harm	Factual	Individual Suffering	Lung cancer (man)	7.07
10	Harming-others	Personal	Individual Suffering	Asthma	6.99
11	Harming-others	Factual	Individual Suffering	Lung disease	6.94
12	Self-harm	Personal	Clinical	Mouth cancer	6.85
13	Self-harm	Factual	Clinical	Mouth cancer	6.83
14	Harming-others	Personal	Clinical	Asthma	6.82
15	Harming-others	Personal	Clinical	Lung disease	6.78
16	Harming-others	Personal	Clinical	Heart attack	6.75
17	Harming-others	Factual	Individual Suffering	Asthma	6.72
18	Self-harm	Personal	Individual Suffering	Mouth cancer	6.71
19	Harming-others	Factual	Clinical	Lung disease	6.67
20	Self-harm	Personal	Clinical	Stroke	6.66
21	Harming-others	Factual	Clinical	Asthma	6.61
22	Harming-others	Factual	Clinical	Heart attack	6.58
23	Harming-others	Personal	Individual Suffering	Heart attack	6.56
24	Harming-others	Factual	Individual Suffering	Heart attack	6.47
25	Self-harm	Factual	Individual Suffering	Mouth cancer	6.46
26	Self-harm	Factual	Clinical	Stroke	6.42
27	Self-harm	Personal	Individual Suffering	Stroke	6.05
28	Self-harm	Factual	Individual Suffering	Stroke	6.00
29	Self-harm	Personal	Clinical	Blindness	5.89
30	Self-harm	Factual	Clinical	Blindness	5.83
31	Self-harm	Personal	Individual Suffering	Blindness	5.51
32	Self-harm	Factual	Individual Suffering	Blindness	5.50

83% of the labels ranked 21-32 depicted non-airway health effects (heart attack, stroke, or blindness)

Ratings were based on a scale of 1 to 10 with 10 being the most effective
Effectiveness: Thinking about quitting

Top Performing HWLs

1

2

3

4

5

6

7

8

9

10

IV. Conclusions

Discussion

- Adult Chinese smokers rated lung cancer the most effective HWL health topic followed by other airway pathologies and non-airway pathologies, respectively.

- These findings suggest preconceived knowledge might affect initial perceived effectiveness of HWLs.

- Strategic implementation of HWL policy could improve perceived effectiveness of non-lung cancer-related HWLs in China.

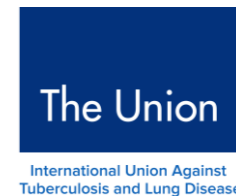# Acknowledgements

China CDC
WHO China Office
Vital Strategies
Union Against Tuberculosis and Lung Disease
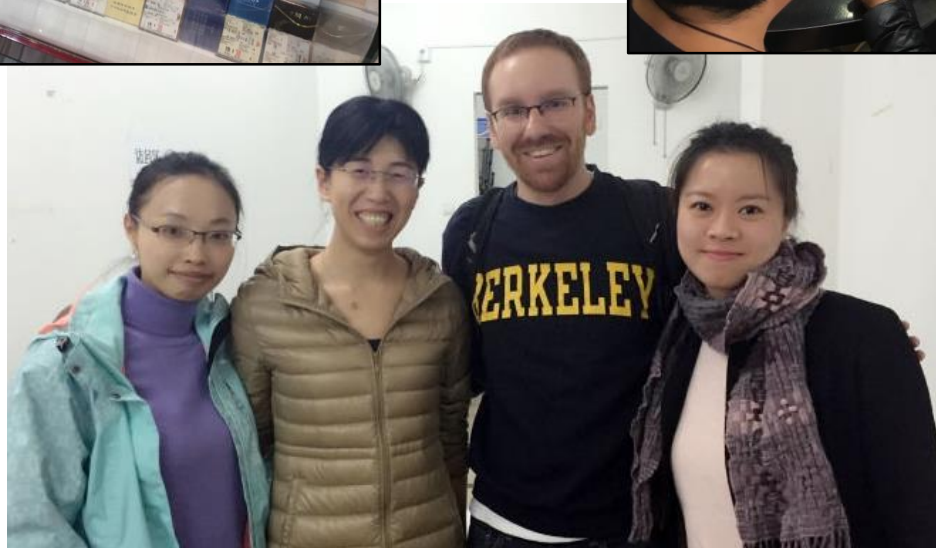Campaign for Tobacco Free Kids
IGTC Communications Team
RisingSun
Behavioural Architects

Q&A

References

1. Gonghuan Y. Global Adult Tobacco Survey (GATS) China 2010 Country Report. *China Center for Disease Control and Prevention, China CDC* 2010.

2. WHO | Parties to the WHO Framework Convention on Tobacco Control. Available at: http://www.who.int/fctc/signatories_parties/en/. Accessed 7/20/2017, 2017.

3. He P, Takeuchi T, Yano E. An overview of the China National Tobacco Corporation and State Tobacco Monopoly Administration. *Environmental Health & Preventive Medicine* 2013;18:85.

4. Tobacco Companies | The Tobacco Atlas. Available at: http://www.tobaccoatlas.org/topic/tobacco-companies/. Accessed 10/13/2017, 2017.

5. Institute for Global Tobacco Control. State of Evidence Review: Health Warning Labels on Tobacco Products 2013.

6. People's Republic of China. Rules on Cigarette Package Labeling in the Jurisdiction of the People's Republic of China 2015.

7. Yang Y, Wang JJ, Wang CX, et al. Awareness of tobacco-related health hazards among adults in China. *Biomedical And Environmental Sciences: BES* 2010;23:437 doi:10.1016/S0895-3988(11)60004-4.

8. Fong GT, Hammond D, Jiang Y, et al. Perceptions of tobacco health warnings in China compared with picture and text-only health warnings from other countries: an experimental study. *Tob Control* 2010;19:i69 doi:10.1136/tc.2010.036483.

9. World Health Organization Western Pacific Region, University of Waterloo, ITC Project and ThinkTank Research Center for Health Development. Tobacco health warnings in China: evidence of effectiveness and implications for action. *Manila: World Health Organization Regional Office for the Western Pacific* 2014.

Supplemental Slides

- Strengths:
  - Standardized HWL groups
    - Combinations of features
  - No brand bias

- Limitations:
  - More difficult to find high quality clinical and individual suffering images for other airway and non-airway health effects

Supplemental Slides

- Next Steps:
    - Using our data to design and evaluate more culturally-relevant and policy-ready HWLs
    - Consult with in-country and Bloomberg partners on strategic implementation of HWLs