



A mix-methods concept testing study of short videos for the national anti-cigarette gift giving campaign in China



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ABSTRACT

Objective: The study aimed to evaluate the potential effect of creative concepts and scripts of different short videos for the “National Anti-Cigarette Gift Giving Campaign” during the Chinese Lunar New Year. **Methods:** The concept testing study used a mix-methods design combining quantitative survey and qualitative group discussion. Online focus group discussions (FGD) were conducted among general population in Beijing, the capital city, and Xining City, Qinghai Province in China in December 2021. A total of 192 participants were recruited and divided into 16 FGD groups by age, sex, smoking history, and socio-economic level.

Results: A total of five short videos were tested. Both quantitative and qualitative findings showed that the concepts and scripts of all the alternative short videos were easy to understand, but differences were observed in their potential to change participants’ behavioral intentions of cigarette gift-giving and culture appropriateness. “Gamified couple at home” was considered as the most suitable short video for wide dissemination during the Chinese Lunar New Year because of its innovative style and potential effectiveness in changing behavioral intentions. Although the short video themed “Gifting harm” showed a pronounced impact on personal motivation to not give cigarettes as gifts, it was not recommended due to the cultural inappropriateness.

Conclusion: Future development of public service advertisements such as short videos targeting tobacco control is suggested to use evidence-based research to identify the most effective and appropriate concepts. Due consideration should be extended to the cultural appropriateness of communication content and its alignment with the relevant occasion.

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1. Introduction

China is the largest tobacco producer and consumer in the world. According to the National Health Commission (NHC) of China, about 26.6% of the Chinese population aged 15 years or above were current smokers in 2018, and more than 1 million people lost their lives due to tobacco use every year [1]. There is still a serious lack of public awareness of the hazards of smoking and second-hand smoke exposure in China. For example, more than 75% of the population cannot fully understand the health hazards of



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smoking, and more than two-thirds of the population do not understand the hazards of second-hand smoke exposure [1,2].

Despite the Chinese government's efforts in tobacco control achieving remarkable results [3], the places where smoking is legally prohibited have not yet become completely smoke-free [4–6]. Public compliance with smokefree regulations should be improved by jointly promoting law enforcement and strengthening tobacco control publicity [7–9]. To accelerate the tobacco control progress in China, the Chinese Center for Disease Control and Prevention (CDC) planned to conduct a 'National Anti-cigarette gift giving campaign' by launching public service announcements and other communication materials to increase public awareness about the harms of smoking and exposure to secondhand smoke, and to discourage the social norm of gifting cigarettes during the Chinese Lunar New Year. Lunar New Year is the most important festive in China. It is a time for reunion and celebration, during which gift-giving among families, friends, and colleagues is a tradition and cigarettes is one of the common gifts [10]. Due to the warm and lively environment of the Lunar New Year, the concepts and scripts of traditional public service announcements for tobacco control, such as the fear-appeal materials, may no longer be culturally appropriate. It is warranted to develop more suitable ones for anti-cigarette gifting during the Chinese Lunar New Year.

Concept testing is a research method that involves asking customers/target groups about their attitudes and opinions towards the concepts and ideas of a product or service before actually launching it [11]. In the field of tobacco control, concept testing has served as a useful way for researchers and public health organizations to identify the most effective and appropriate concepts and designs of short videos to achieve the designated communication objectives. The main advantages of the method include but not limit to enhancing the involvement of target groups in the public service announcement development, saving cost and time, as well as minimizing the technical expertise necessary for new material development [12,13]. They are three types of concept testing, namely concept screening, concept generation, and concept evaluation [11]. The three types of testing are more frequently used at the beginning, in the middle, and near the end of the design process, respectively. The testing process generally includes defining the purpose of the test, choosing study population and determining sample size, confirming the way of data collection, communicating the concepts, data collection via quantitative survey or qualitative interview, analyzing and interpreting the results, and proving suggestions to the product/public service announcements [14,15].

In this study, a concept evaluation test combining quantitative survey and qualitative discussion was conducted to evaluate concepts and scripts of five short video for anti-cigarette gift giving in China, in terms of ease of understanding, personal relevance, ability to teach something new, memorability, cultural appropriateness, generated emotions, and impact on behavioral intentions of cigarette gift-giving and support for smoke-free regulations in China.

2. Methods

2.1. Participants and recruitment

In December 2021, online focus group discussions (FGDs) were conducted among the general population in Beijing, the capital city of China (a developed city in eastern China), and Xining, the capital city of Qinghai Province (a typical developing city in the western region of China). The two cities were purposefully selected as it could represent the country to some extent in the aspects of geographical location and the socio-economic status and also based on the research team's established collaboration with the local CDCs and Non-Governmental Organizations (NGOs). Electronic

recruitment flyers were posted on the local popular social media platforms such as WeChat public accounts. The local collaborators could also directly recommend potential participants to join the study.

Eligible participants were those being (1) aged 18–45 years, (2) in middle-higher or high socio-economic status, (3) currently residing in urban or peri-urban area in the study sites, (4) fluent in Mandarin, and (5) providing written informed consent to participate in the study. Participants were excluded if they were (1) working in certain industries, such as advertising, tobacco, unhealthy foods and sugary drinks industries, or market research companies, (2) working as health professionals, or (3) having cognitive impairment or mental illness. Only people in middle-higher or high socio-economic status were selected, as gifting cigarettes is a more common behavior in people with higher income than those with lower income and the video would be disseminated via social media platforms to which higher income group may have more access [16,17]. A total of 192 participants were recruited and segmented into 16 FGDs according to age, sex, smoking history, and socio-economic level. The final sample size was 162 as 30 participants did not attend the FGD due to changing their mind or time conflict.

2.2. Procedure

Each FGD was conducted via an online meeting (Tencent Meeting) due to the COVID-19 restrictions at the time, and lasted about 120 min. Written informed consent was obtained from each participant before the discussion. Pilot tests were conducted in the first two groups. In the two FGDs, we tested the content and procedures of the discussion and found it feasible and acceptable, and then we continued to conduct the rest 14 FGDs. Each FGD was moderated by a well-trained researcher with at least a master degree in public health. Prior to the start of the study, the moderator was standardly trained on the purpose and significance of this study, as well as the precautions and operation details for conducting qualitative research. The FGDs were screen- and audio-recorded, with two researchers observing the discussion and taking notes.

Each FGD included two parts, a quantitative survey and a qualitative discussion. First, the participants were asked to watch the concept and script of the first-played short video twice and then complete the evaluation rating sheet via an online survey link (www.wjx.cn). Then, following the same procedure, the participants watched and evaluated the rest of the videos. Second, the moderator led a group discussion, during which each short video was played again and fully discussed according to the semi-structured guideline. Each participant would receive 200 CNY for their time and participation.

2.3. Short videos for evaluation

The scripts of the five short videos tested in the study are shown in Table 1. Each script was produced as a 30-s video storyboard of a series of monochrome illustrations or images accompanied by an audio soundtrack. Video 3 was a previously used video for tobacco control in China, while the other four videos were newly created for the campaign. Scripts for Video 1 "Couple at home" and Video 4 "Gamified couple at home" were similar, although the style of presentation differed. Video 2 "Street interview A" and Video 5 "Street interview B" had a similar presentation style but the scripts differed. Considering the limited time of each online FGD, the participants in each FGD were shown two or three videos either from the combination of 1–2/3/1–2 or from the combination of 3–4/5/3–4. In addition, as the order of presentation may influence the

Table 1
Script of the short videos.

Videos Script	
1	“Couple at home” During the Lunar New Year, a couple quarreled about giving gifts to their father. The wife scolded her husband for cigarette gift giving and introduced the harm of smoking.
2	“Street interview A” Cases in daily life were shown through street interviews. For example, a man's father was hospitalized for myocardial infarction, and smoking might be the reason; A woman said that second-hand smoke is harmful to children's health.
3	“Gifting harm” Followed scenes of people giving cigarettes as gifts to family, work boss and parents we see a damaged lung and a wreath, accompanied by serious background music, indicating that giving tobacco is equivalent to giving harm to others. This video has strong images and dramatic background music, which is quite different to the other four videos.
4	“Gamified couple at home” During the Chinese Lunar New Year, a couple quarreled about giving gifts to their father. The wife scolded her husband, by the gamified style, for giving cigarettes and introduced the harm of smoking. This video and Video 1 were similar, but the presentation style and rhythm were different.
5	“Street interview B” Cases in daily life were shown through street interviews. For example, a man said that quitting smoking is to save money and prepare for his wife's pregnancy; A woman said that if the cigarette box was printed with similar patterns like those on foreign cigarette boxes, she would not be willing to give cigarettes; An old woman said that she would give smoking cessation products to others as gifts. The scene of street interviews in this video and Video 2 were similar.

evaluation of the videos, different presentation orders were assigned to each FGD ([Table 2](#)).

Supplementary video related to this article can be found at <https://doi.org/10.1016/j.glt.2023.11.001>

2.4. Measures

The measurement tools included the quantitative rating sheet and the semi-structured outline for the qualitative discussion, which were reviewed and revised by several international and domestic experts. The rating sheet contained 11 items which were developed based on prior knowledge [18–22] and consultation from global and domestic experts in the tobacco control field, including ‘it's easy to understand’, ‘it taught me something new’, ‘it made me stop and think’, ‘the content is believable’, ‘it makes me feel uncomfortable’, ‘it's relevant to me’, ‘it makes me feel concerned about giving cigarettes as gifts at New Year’, ‘it increases my motivation to not give cigarettes as gifts at New Year’, ‘it is an effective video to encourage people not to give cigarettes as gifts at New Year’, ‘it makes me more likely to encourage people not to give cigarettes as gifts at New Year’, and ‘I would be likely to talk to someone else about this video’. Each item was rated on a 5-point Likert scale from 1 = ‘strongly disagree’, to 5 = ‘strongly agree’. After reversing the score of the negatively stated item, a summative score was calculated for each video, with a higher score indicating a higher overall rating of the video.

The semi-structured interview outline incorporated the participants' comments and opinions about the ease of understanding, personal relevance, ability to teach something new, memorability, cultural appropriateness, emotion arousal, and impact on behavioral intentions of cigarette gift-giving and support for smoke-free regulations in China.

Table 2
Order of video presentation.

Group	Video tested and the order
FGD 1, 13	1-2-3
FGD 7, 11	3-2-1
FGD 3, 15	1-2
FGD 5, 9	2-1
FGD 8, 12	3-4-5
FGD 2, 14	4-5-3
FGD 4, 16	4-5
FGD 6, 10	5-4

Note: FGD: abbreviations of focus group discussion.

2.5. Data analysis

For the quantitative data of the rating sheet, descriptive analysis was performed via the SPSS 27.0 software (New York, USA), with number and proportions and means and standard deviation (SD) of the variables of interest being reported. For the qualitative data, the recordings of the group discussion were first transcribed verbatim by a third trained researcher. The facilitator and observer of the FGD then reviewed the transcripts to ensure there were no misunderstandings of the content. We used a content analysis method to summarize our themes and results based on the discussion guideline, guided by the Grounded theory [23]. A set of a *prior* code was initially developed based on the discussion guideline. Two trained researchers then read through the transcripts and revised the code accordingly based on the themes that emerged from the transcripts throughout the coding procedure. The NVivo 1.5 software was used. Notably, 8 of the 162 participants were excluded from the quantitative analysis due to fail in the quality check of the rating sheet (n = 154), however, they were still included in the qualitative analysis.

2.6. Ethics statement

This study was carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) and was approved by the Institution Review Board of Tsinghua University (Project number: 20210155). All research participants confirmed and provided informed consent.

3. Results

3.1. Sample characteristics

Based on the information provided by the rating sheet, the socio-demographic characteristics of the participants were shown in [Table 3](#) (n = 162). Sex, smoking history, and age distributed equally across strata. The majority of the participants hold an undergraduate degree (61.1%). About 70.4% of them had no children. The occupation of the participants were mainly technical professionals (40.1%), staff in government agencies/institutions/business companies (23.5%), and students (20.4%). Most of them rated themselves as sociable and outgoing (79.0%) (see [Table 3](#)).

3.2. Quantitative findings

The participants rated the watched videos and the results were presented in [Table 4](#). In terms of the proportion of agreeing or

Table 3
Sample characteristics (n = 162).

Characteristics	n (%)
Sex	
Men	80 (49.4)
Women	82 (50.6)
Tobacco use	
Yes	84 (51.9)
No	78 (48.1)
Age	
18–30 years	84 (51.9)
31–45 years	78 (48.1)
Highest educational level attained	
High school	2 (1.2)
Colleges/Vocational colleges	18 (11.1)
Undergraduate	99 (61.1)
After university	43 (26.5)
Social-economic status	
Middle-higher social-economic status	82 (50.6)
Higher social-economic status	80 (49.4)
Do you have child?	
Yes, ≤14 years	43 (26.5)
Yes, ≥15 years	5 (3.1)
No	114 (70.4)
Occupation	
Staff in government agencies/institutions/business companies	38 (23.5)
Technical professionals	65 (40.1)
Workers in agriculture, forestry, animal husbandry and fishery	5 (3.1)
Workers in production and transportation	4 (2.5)
Students	33 (20.4)
Others	17 (10.5)
Self-evaluation of personality	
Sociable, outgoing and lively	128 (79.0)
Reticent	34 (21.0)

strongly agreeing with the stated items, all the video were considered as being easily understood (92.9–98.0%) and believable (88.8–93.5%). “Gamified couple at home” [Video 4] was rated the highest on transferring new knowledge (79.8%) and prompting discussion about the video with other people (80.6%). “Gifting harm” [Video3] was rated the highest on making participants stop and think (81.4%), and on increasing motivation not to give cigarettes as gifts at New Year (87.8%). This video concept was also rated the highest for making participants feel uncomfortable (51.9%). Both “Gifting harm” [Video3] and “Gamified couple at home” [Video 4] got a high score on generating concern about giving cigarettes as gifts (83.0% and 82.7%, respectively) and on prompting participants to encourage people not to give cigarettes as gifts (89.6% and 89.8%, respectively). “Street interview A” [Video 2] was rated the highest on being personally relevant (80.5%). The mean of

Table 4
Quantitative results of the evaluation (n = 154).

Items	Video 1 (n = 75)	Video 2 (n = 75)	Video 3 (n = 79)	Video 4 (n = 79)	Video 5 (n = 79)
Easy to understand	93.5%	96.8%	96.2%	92.9%	98.0%
It taught me something new	70.7%	74.0%	77.6%	79.8%	74.8%
It makes me stop and think	71.6%	78.1%	81.4%	72.7%	73.7%
It is believable	90.2%	93.5%	88.8%	90.9%	90.9%
It makes me feel uncomfortable ^a	21.2%	19.6%	51.9%	22.3%	15.2%
It is relevant to me	74.0%	80.5%	76.6%	76.8%	76.8%
It makes me feel concerned about giving cigarettes as gifts at New Year	71.5%	73.1%	83.0%	82.7%	80.6%
It increases my motivation to not give cigarettes as gifts at New Year	78.9%	83.0%	87.8%	83.7%	82.7%
It is an effective ad to encourage people not to give cigarettes as gifts at New Year	74.8%	89.4%	82.0%	82.6%	84.7%
It makes me more likely to encourage people not to give cigarettes as gifts at New Year	82.1%	85.4%	89.6%	89.8%	86.7%
I would be likely to talk to someone else about this ad	72.4%	73.1%	70.7%	80.6%	76.5%
Total score, mean ± SD	44.9 ± 6.9	46.0 ± 6.6	45.0 ± 7.4	46.1 ± 7.0	46.0 ± 6.9

#: agree or strongly agree.
Scoring: 1 = ‘strongly disagree’, 2 = ‘some disagree’, 3 = ‘neutral’, 4 = ‘some agree’, 5 = ‘strongly agree’.
^a Negative questions; results were reverse coded.

the total score of the 11 items for each video were very similar, ranging from 44.9 to 46.1, where “Gamified couple at home” [Video 4] received the highest total score (46.1 ± 7.0).

3.3. Qualitative findings

3.3.1. Understandability and convey of main message

Overall, most participants said the videos they watched were easy to understand and clearly conveyed the core theme of ‘giving cigarettes is giving harm’.

(Video 2) “Character interviews crystallize the plot, and the personal experiences of normal people are more moving.” - Group 9 (18–30 years old, non-smoker, woman, higher socioeconomic status)

(Video 4) “This video was easy to understand, there is no discomfort, very positive, advocate that people quit smoking.” - Group 4 (31–45 years old, smoker, woman, middle socioeconomic status)

(Video 5) “The advert is easy to accept and relevant to real life, especially the point where husbands save money for their wives. Happy life, (“Street interview B”) which covers all ages, is well received for its dimension breadth, and can be played in public in elevator rooms, LED screens and TVs.” - Group 12 (31–45 years old, non-smoker, woman, middle socioeconomic status)

3.3.2. Personal relevance and credibility

For Video 1, 2, 4 and 5, the majority of the participants said that the video content was relevant to them and close to real life. For Video 3, some participants considered that the content about harms of smoking were too absolute to believe.

(Video 1) “The entry point is very good, the most direct explosion of conflict between people, you feel that this matter is very close to you” - Group 1 (18–30 years old, smoker, woman, higher socioeconomic status)

(Video 4) “I think the content conveyed by it (Video 4) is closely related to our life, it is more realistic and has a stronger sense of substitution.” - Group 2 (18–30 years old, woman, smoker, middle socioeconomic status)

(Video 3) “Why is it so absolute? The language in the video is too extreme and the impact is too strong. Why do you think that giving cigarettes is giving harm? If someone else smokes, I give him good cigarettes. This is a blessing.” - Group 14 (18–30 years old, non-smoker, man, high socioeconomic status)

3.3.3. Ability to teach something new

During the discussion, the majority of the participants said that

these videos did not convey new knowledge and information for them. Only some younger participants (aged 18–30 years) said that some information (e.g., harm of cigarettes on cardiovascular system mentioned in Video 3; smoking may cause diabetes and impotence mentioned in Video 4) were new knowledge to them.

(Video 1) “It followed the same pattern (with previous health education materials) and had nothing new.” – Group 1 (18–30 years, smoker, woman, high socioeconomic status)

(Video 3) “Everyone knows that smoking is harmful.” - Group 2 (18–30 years old, smoker, woman, middle socioeconomic status)

(Video 4) “Diabetes and impotence mentioned in the video were something I didn’t know before.” - Group 6 (18–30 years old, smoker, man, middle socioeconomic status)

3.3.4. Memorability

Overall, each of these 5 videos had some distinct memory points (e.g., wife’s pregnancy in Video 1 and 4, hospitalization of the man’s father due to smoking in Video 2, husband quit smoking and bought cosmetic for his wife in Video 5). For Video 3, most of the participants were deeply impressed by the strong background music and the picture of wreaths for funeral and black lungs due to smoking. For Video 4, several participants thought that the scripts using internet hot words, such as ‘first blood’ and ‘double kill’, and the gamified style were attractive, innovative, and memorable.

(Video 2) “The man’s father getting sick from smoking is impressive and thought provoking.” – Group 5 (18–30, smoker, man, high socioeconomic status)

(Video 3) “What impressed me the most about this video is the music, and the lungs that suddenly appeared. Because of smoking, the lungs are different from normal lungs.” – Group 2 (18–30 years old, smoker, woman, middle socioeconomic status)

(Video 4) “The deepest impression is the form of the ‘battle’ between this couple.” – Group 2 (18–30 years old, smoker, woman, middle socioeconomic status)

3.3.5. Culturally appropriateness

Culturally inappropriateness was mainly pointed out for Video 3. More than half of the participants thought that Video 3 was too terrible to watch during the festival due to the scary background music and pictures. Both the smokers and non-smokers felt uncomfortable after watching it. They argued that although Video 3 might be effective for stop people gifting cigarettes, it was not suitable for play during the Chinese Lunar New Year.

(Video 3) “It seems to be embarrassing for the person who gives cigarettes and it would be unlucky if it were played during the Chinese Lunar New Year.” – Group 11 (18–30, smoker, woman, higher socioeconomic status)

(Video 3) “For smokers, watching such videos can be uncomfortable due to psychological escape” – Group 13 (18–30 years old, non-smoker, man, higher socioeconomic status)

3.3.6. Emotion arousal

Video 3 and 4 had a relatively stronger effect in arousing people’s emotions (e.g., concerns, fear) than other videos. For instance, about two-thirds of the participants said that the Video 3 used strong visual stimuli to show the harm of tobacco use, which was very shocking.

(Video 3) “It triggers my concerns and feels like it hits my pain point.” – Group 1 (18–30, smoker, woman, high socioeconomic status)

(Video 4) “It will cause me to worry about using cigarettes as a gift during the Chinese Lunar New Year, because many people like to give tobacco to relatives and friends during the Chinese Lunar New Year, but I think this is actually a big problem for people receiving the gifts. Smoking itself is relatively harmful to the body,

so I think it is better not to give cigarettes.” – Group 2 (18–30 years old, smoker, woman, middle socioeconomic status)

3.3.7. Impact on behavioral intentions and behaviors

Compared with the other videos, Video 3 and 4 had better effects in behavioral change. About half of the participants who had watched these two videos acknowledged that they would change their behavior of gifting cigarettes and also discourage others to do so. Few participants mentioned such effect for other videos.

(Video 2) “It doesn’t have much effect; I will still give cigarettes as gifts. I will not discourage others; smoking is my own business.” – Group 5 (18–30 years old, smoker, man, high socioeconomic status)

(Video 3) “I feel a sense of touching, and I will change my behavior” – Group 8 (31–35 years old, smoker, man, middle socioeconomic status)

(Video 4) “If someone were to give cigarettes as gifts to someone else, as a friend I might give a little bit of solid advice that it’s not healthy.” – Group 2 (18–30, smoker, woman, middle socioeconomic status)

3.4. Cross validation of quantitative and qualitative findings

Table 5 presented the results of cross-validation between qualitative and quantitative analysis. Overall, the findings in quantitative study can be further elucidated by the qualitative results. For example, Video 3 received a higher score on the item “it makes me feel uncomfortable”. The subsequent group discussion revealed that the scary images in the video had a tendency to imitate people and dampen their intention to continue watching the video. Regarding Video 4, the combination of humor and scientific elements were attractive for participants, aligning with the higher score of the video on items of “it taught me something new” and “I would be likely to talk to someone else about this ad.”

4. Discussion

Public service announcements, such as short videos played on TV and social media platforms, are essential for tobacco control in China. The concept testing study used a mix-methods design to evaluate the concepts and scripts of five alternative short videos developed for the national anti-cigarette gift giving campaign during the Chinese Lunar New Year. The findings provided important evidence for the development and production of final short video for dissemination in the anti-cigarette gift giving campaign.

Overall, all the five videos were easy to understand, believable, personally relevant, and conveyed clear knowledge. Based on the results of the quantitative rating, “Gamified couple at home” [Video 4] received a slightly higher overall score and performed relatively better in the aspects of providing new knowledge, credibility, emotional arousal, behavioral change, and willingness of sharing. In the qualitative discussion, this video was thought to be more culturally appropriate and acceptable than Video 3 (with strong music and scary pictures). This finding was consistent with a prior systematic review, indicating that using positive message framing is more effective in invoking behavioral change through making people aware of risk of smoking, than negatively framed message [24]. And Video 4 was thought to be more innovative and attractive than other videos such as Video 5 (street interview). The video 4 was believed to have a potential in changing behavioral intentions of cigarette-gifting during Chinese Lunar New Year, as the video provided believable and scientific knowledge about harms of smoking via an interesting format and using popular internet words. The findings highlight the crucial role of novelty in health communication concerning tobacco control, a notion corroborated

Table 5
Cross-validation between qualitative and quantitative analysis for the evaluation of short videos.

Themes	Quantitative results: Mean score	Qualitative discussions illustrative quotes	Interpretation of mixed methods findings
Easy to understand	Video 1: M = 4.64 Video 2: M = 4.75 Video 3: M = 4.66 Video 4: M = 4.62 Video 5: M = 4.71	"This video was a dialogue between the husband and wife, was easily understandable." "This kind of format can be easily accepted." "It's easy to understand but it was old fashionable." "This video's prominent theme is very obvious, so it's very easy for me to understand." "I think this video is easy to understand."	The comments from FGDs indicated that all the five videos were easy to understand, confirmed by the high average scores.
It taught me something new	Video 1: M = 3.85 Video 2: M = 4.00 Video 3: M = 3.99 Video 4: M = 4.09	"I think there was not any new information." "I knew all this knowledge before." "Nothing is new in this video." "The harms of smoking are usually associated with the lungs or liver, I have never link smoking with the other disease or cancers." "I learned the difference between foreign cigarette packs and domestic ones"	The comments from FGDs revealed that most of the videos don't provide much new information for the audience other Video 4. This was confirmed by the higher average score of Video 4.
It makes me stop and think	Video 1: M = 3.89 Video 2: M = 4.05 Video 3: M = 4.08 Video 4: M = 4.05 Video 5: M = 4.09	"The audience for this video is too narrow, it has nothing to do with me." "It doesn't talk about the dangers of smoking, it's not deep (professional) enough." "If you've seen the video, you might think twice about gifting cigarettes." "After watching this video, I am more determined not to give tobacco as a gift, and will take action" "The video mentioned that giving cigarettes to the elderly during the Chinese New Year, which is bad for their health and may cause harms to my children. It has some warning effects on myself."	The comments from FGDs revealed that Video 3 and 5 were more likely to make people stop and think. This was confirmed by the higher average scores of these two videos.
It is believable	Video 1: M = 4.49 Video 2: M = 4.53 Video 3: M = 4.46 Video 4: M = 4.48 Video 5: M = 4.52	"I believe that smoking can cause disease, but I think it needs some evidence for specific diseases such as lung cancer and liver cancer." "In the form of interviewing characters, this video will also be more convincing than others." "There is nothing untrustworthy. Indeed, if you smoke too much, you will lose your life." "There is nothing untrustworthy. It is indeed a common phenomenon in our real life." "There is nothing untrustworthy."	The comments from FGDs revealed that all the five videos were believable. This was confirmed by the higher average scores of these videos.
It makes me feel uncomfortable*	Video 1: M = 2.33 Video 2: M = 2.34 Video 3: M = 3.20 Video 4: M = 2.30 Video 5: M = 2.16	"The video scenes are too limited for the audience to bring in. For example, lots of young people smoke, not only the old adults" "It doesn't make sense to keep hammering the point (don't give cigarettes)." "I felt uncomfortable after watching it, especially the rotten lungs and the wreaths." "It is always inappropriate to let our children kidnap us. Quitting smoking is our own business, not others" "The lady said she wanted disgusting pictures on the packet, which was not very pleasant to see."	The comments from FGDs revealed that the content of Video 3 can make people feel uncomfortable due to its scary images. This was confirmed by the relatively higher average score of Video 3.
It is relevant to me	Video 1: M = 3.93 Video 2: M = 4.14 Video 3: M = 4.01 Video 4: M = 4.17 Video 5: M = 4.11	"My surroundings don't smoke, so I would not use cigarettes as gift." "The format of interview made me feel close to them." "This video encouraged me quitting smoking." "I think the content it conveys is closely related to our lives, which is more realistic and has a strong sense of substitution." "I have a similar situation in my family, so I think it's about me"	The comments from FGDs revealed that Video 4 and Video 2 were more likely to make people feel close to themselves. Because these two videos mentioned caring about family members. This was confirmed by the higher average scores of these videos.
It makes me feel concerned about giving cigarettes as gifts at New Year	Video 1: M = 3.89 Video 2: M = 3.92 Video 3: M = 4.21	"If I have pregnant family members, I will be more concerned." "In fact, I don't gift cigarettes before, and this video had an effect, too." "It's scary to see pictures of those organs, so I am worrying for it."	The comments from FGDs revealed that Video 3 was more likely to arise people's concern about gifting cigarettes. This was confirmed by the higher average scores of Video 3.

Table 5 (continued)

Themes	Quantitative results: Mean score	Qualitative discussions illustrative quotes	Interpretation of mixed methods findings
It increases my motivation to not give cigarettes as gifts at New Year	Video 4: M = 4.16	"There were few plots about gifting, but mainly stressing on the tobacco's harm for children. So, I'm not worried"	The comments from FGDs revealed that all the five videos have potential to increase people's motivation and the effect of Video 3 was relatively prominent than others. This was confirmed by the higher average scores of Video 3.
	Video 5: M = 4.09	"I'm a little worried. After all, everyone will give gifts for the new year, and it's also common to give cigarettes."	
	Video 1: M = 4.20	"I probably won't be giving away tobacco this year"	
	Video 2: M = 4.20	"This video motivated me to consider not giving cigarettes as gifts."	
	Video 3: M = 4.42	"I will think twice when I plan to gift cigarettes."	
It is an effective ad to encourage people not to give cigarettes as gifts at New Year	Video 4: M = 4.26	"After watching this video, I am more determined not to give tobacco as a gift, and will take action"	The comments from FGDs revealed that most people hold the opinion that the effectiveness was depending on different situation. This was confirmed by the average scores across these videos were similar.
	Video 5: M = 4.27	"The motivation effect was not significant, because I didn't feel the necessity to stop giving cigarettes."	
	Video 1: M = 4.11	"I will not discourage others smoking because smoking is a personal thing."	
	Video 2: M = 4.34	"For heavy smokers, may be less effective. For some people who sometimes smoke, may be effective".	
	Video 3: M = 4.26	"Giving cigarettes as gifts during New Year is a traditional culture, that is hard to change."	
It makes me more likely to encourage people not to give cigarettes as gifts at New Year	Video 4: M = 4.30	"To tell you the truth, this video has less influence in persuading others not to do so. I may give cigarettes as gifts to the leader, but not to my family."	The comments from FGDs revealed that all the five videos can encourage people to not to give cigarettes as gifts. Notably, the videos containing serious elements (e.g., Video 3) or entertainment elements (e.g., Video 4) were more useful. This was confirmed by the higher average scores of these videos.
	Video 5: M = 4.22	"I think this video was creative and I would like to not consider cigarettes as gifts."	
	Video 1: M = 4.23	"If the people around me want to buy cigarettes for others, I will give him some suggestions, and I hope they can buy some healthy products for their parents."	
	Video 2: M = 4.27	"I don't persuade strangers, but I will persuade my parents and relatives to smoking less."	
	Video 3: M = 4.41	"It was really a warning for us, so it's effective in making me more likely to try to encourage someone to quit smoking."	
I would be likely to talk to someone else about this ad	Video 4: M = 4.36	"I will try not to give cigarettes. Elders like to give tobacco as a gift, their educational level is relatively low, there is no more meaningful gift than giving tobacco in their mind."	The comments from FGDs revealed that people think only Video 4 was worth to share with other people. This was confirmed by the higher average score of Video 4.
	Video 5: M = 4.31	"Do not give cigarettes and do not smoke is to the people around the care and responsibility."	
	Video 1: M = 4.02	"No, the rhythm was too fast, after watching it, I feel that there was nothing new".	
	Video 2: M = 4.09	"If the interviewees added, I will share it, only ask 2 or 3 passersby is not enough."	
	Video 3: M = 3.91	"It's impossible for me to share it. I think it is kind of taboo with some elements, like wreath,"	
	Video 4: M = 4.20	"I will recommend this video to my relatives and friends, serving as a warning function."	
	Video 5: M = 4.15	"The video didn't meet my expectation about a good promotion of tobacco control."	

by existing evidence. Traditional formats of health communication videos and the warning messages on tobacco control have been proven to be insufficient in eliciting changes in risk perception among urban and educated population groups [25]. Therefore, Video 4 was recommended for the final production and dissemination in the anti-cigarette gift giving campaign.

Notably, Video 4 and Video 1 (Quarreled couple at home) were similar in design and script, however, the overall rating of Video 4 was higher than that of Video 1 (46.1 vs. 44.9). A possible reason drawn from qualitative study was that in Video 1, the couple used very critical words and the rhythm was too fast. Another possible reason was the participants rating the two videos were actually different, which might lead to systematic bias. The finding suggests that novelty and credibility of the content of public service announcements is particularly important for attracting the targets, arousing their emotion, and changing their behaviors, especially among young and middle-aged adults. Behavioral change begins with the development of behavioral intention to change, as suggested by the Health Belief Model [26]. This study further indicated that a novel and engaging style of health communication materials

may help people accept the health information and in turn strengthen their behavioral intention to change. Future development of health communication materials of tobacco control should integrate innovative design and credible and scientific information.

The study showed that public service announcements created based on the fear appeal theory [27] may have a strong ability to arouse emotion and change behaviors (e.g., Video 3 using scary background music and pictures), but may not be culturally appropriate and acceptable, especially during festivals. In the study, Video 3 'Gifting harm' achieved a high score in some indicators, such as making people stop and think, making people concerned about gifting cigarettes, and increasing motivation to not gift cigarettes. However, many participants thought it made them feel uncomfortable. In the group discussion, some participants said the video was too scary and too exaggerating to believe, and they would stop play it immediately if they saw it on TV or social media platforms during festivals. The cultural appropriateness was poor for wide dissemination, especially during the Chinese Lunar New Year. The finding suggests that future development of videos and other health communication materials of tobacco control should

balance the ability of behavioral change and culture appropriateness. Sample strategies include emphasizing ‘care and love’, softening the strong background music and scary pictures, and improving the professionalism of the content.

The study also provided some other suggestions for future development of short videos and other communication materials targeting tobacco control. For example, the participants mentioned that in videos that asking people not to gift cigarettes, it is better to provide other options for gift, such as healthy food, which may help people know how to change their behaviors. Second, the balance between entertainment and professionalism of communication materials is very essential. If the design of materials was too entertaining, people’s attention may be shifted from the core information to the funny style of the materials [28].

There are some limitations of the study. Firstly, this study was just conducted in two cities, so the generalizability of the study findings to broader areas was limited. Secondly, this study employed a convenience sampling method for participant recruitment. A substantial portion of participants hold higher educational background and were non-parents, potentially introducing selection bias. These factors collectively constrain the ability to extrapolate the findings to a more comprehensive population level. But as the aim of the study was to evaluate the potential effect of concepts and scripts of different short videos for further production and health communication, the sampling method is acceptable and is commonly used in concept testing studies [12,13,21]. Thirdly, 30 respondents were unable to participate in the FGDs due to scheduling conflicts or changes of mind, which could potentially impact the balance of the study population. However, we have expected and accounted for such attrition during the sample size calculation. Additionally, when forming groups, we adjusted for inter-group balance based on criteria such as gender, smoking habits, economic status, and age. The number of final participants met the anticipated number of participants in each category. Therefore, the non-participation might have minimal impact on the balance of the study population. Fourthly, participants might be affected by dominant opinions and responses, leading to social desirability bias. Finally, due to the time limit of FGD, the participants in each group did not watch all the five videos, but just watched 2 or 3 videos with a varying order. Therefore, bias might exist when directly comparing the rating score of the five videos. To minimize the impact of this bias, both quantitative and qualitative results were used to make the final recommendation.

5. Conclusions

The concept testing study showed that short video integrating innovative style, professional knowledge, and cultural appropriateness may be the most suitable one for wide dissemination in the national anti-cigarette gift giving campaign during the Chinese Lunar New Year. Future development of public service announcements targeting tobacco control is suggested to use evidence-based research to identify effective and appropriate communication approaches and components.

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CRediT authorship contribution statement

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Declaration of competing interest

Sitong Luo is an editorial board member for Global Transitions and was not involved in the editorial review or the decision to publish this article. All authors declare that there are no competing interests.

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