THE UNIVERSITY OF CHICAGO

The Effect of Foreign Language Use on Human Papillomavirus Vaccine Intentions

By

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Abstract

Due to globalization, people increasingly need to make decisions and judgments in a foreign language rather than their native language environment. This thesis examines whether the use of a foreign language has an impact on vaccination intentions. Previous research suggested that the use of a foreign language might decrease perceived risks and increased perceived benefits by influencing their overall affective evaluation of relative risk. Based on this, I hypothesized that foreign language use would increase people's willingness to get the human papillomavirus (HPV) vaccine by decreasing the perceived risks of the vaccine and increasing its perceived benefits. The data collection for this study is still ongoing. Based on the data obtained thus far, although the results are not significant, the use of a foreign language might actually reduce vaccination intentions of participants by decreasing their perceived risks of HPV infection. In order to further investigate the effect of foreign language use on vaccination intentions, future studies should examine the effect of foreign language use on the perceived risks of HPV infection and the perceived risks of HPV vaccine independently.

Keywords: risk perception, judgment and decision making, vaccination intention, foreign language.

The Effect of Foreign Language Use on Human Papillomavirus Vaccine Intentions

Due to the wave of globalization, the world is more connected. According to the International Organization for Migration (2019), the number of people living in countries other than their country of birth in 2019 is about 272 million, 119 million more than in 1990 and more than three times as many as in 1970. Considering people from different areas often do not share a native tongue, this increase in cross-national contact means people increasingly need to make decisions in their foreign language instead of their native tongue. Based on an analysis of Census Bureau data, Zeigler and Camarota (2019) found that 67.3 million U.S. residents do not speak English at home, which is more than double the number since 1990. Here, we are interested in one specific decision-making area of importance, which is how making healthcare decisions in your native or foreign language influences your intentions and behavioral outcomes specifically in the context of vaccination.

Getting vaccinated is a crucial health behavior because it can provide protection before people are exposed to harmful diseases (World Health Organization [WHO], 2019). The development of vaccination is one of the most significant contributions to global health. In fact, WHO suggested that "Immunization is a key component of primary health care and an indisputable human right." In order to provide more equitable access to available vaccines for people in all communities, the Global Vaccine Action Plan (GVAP) was adopted at the 65th World Health Assembly to promote global access to vaccines.

One such vaccine that has received attention in recent years is the human papillomavirus (HPV) vaccine. HPV is a common sexually transmitted infection, with the vast majority of people

having been exposed to HPV during their lifetime (Centers for Disease Control and Prevention [CDC], 2021). For most people, HPV goes away on its own and does not cause any symptoms, but sometimes it persists and can cause genital warts and even various forms of cancer such as cervical cancer. However, while these health problems can be prevented through HPV vaccination, HPV vaccination uptake rates have been persistently low in many countries. In China, it was estimated that only 3.1% of the population had received the HPV vaccine based on survey data (Deng et al., 2021). In terms of acceptability, only 36.9% of women and 24.8% of men in China said they would accept HPV vaccination. Because of the possible risks of contracting HPV and the reliable protection against the virus after vaccination, current efforts are underway to find ways to encourage vaccination and uptake. However, before exploring the effect of language on vaccination intentions, it is necessary first to discuss the role of language in decision-making and judgment more broadly.

Language and Decision Making

Language has been studied for a long time, and its potential influence on human perception and thought has also long attracted the attention of researchers (Vygotsky, 1986). More recently, researchers have begun studying how people make systematically different choices when utilizing their native as compared to foreign language (for a review, see Hadjichristidis, Geipel, & Keysar, 2019).

Foreign as compared to native language use has been found to change individual choices in a number of different domains. For instance, foreign language use makes people more honest (Bereby-Meyer et al., 2018). In the experiment, participants were able to make additional profits

by inflating the number of points they rolled in a dice-rolling game without any risky consequences. When participants reported the number of dice points in a foreign language, their average earnings were less inflated. That is, participants lied more often in their native language. Foreign language use also reduces loss aversion (Keysar et al., 2012; Costa et al., 2014). Loss aversion is the tendency for individuals for individuals to feel negatively about a loss than they would feel positively about a symmetrical gain (Kahneman & Tversky, 1979). Here, the researchers found that people are less loss averse when the bet is presented in a foreign than their native language, which led them to be more willing to make risky bets with a positive expected value than taking a safer, but less beneficial, sure option. Finally, foreign language use has been found to suppresses superstitious beliefs. Hadjichristidis, Geipel, and Surian (2019) found that when unlucky scenarios (ex. breaking a mirror) or lucky scenarios (ex. finding a four-leaf clover) were presented in a foreign language, people were less likely to report wanting to change their subsequent behavior in light of the superstitious event occurring.

Across these studies, one of the main reason foreign language use has been found to impact decision-making is by reducing the emotional response to information. First, language is deeply connected with affect. Our language becomes emotionally rich through the experiences we have using that language, which then adds an emotional depth of our native tongue as the language we have used most frequently throughout our lives. However, because a foreign language is usually acquired in less emotional environments, such as in the classroom, prior work has found that bilinguals often report feeling less emotion tied to their foreign language (Pavlenko, 2005). For example, studies have found that discussing awkward topics, expressing

love, and arguing in their native language evoke stronger emotional responses than using a foreign language (Caldwell-Harris, 2015; Pavlenko, 2005). Furthermore, in a study with immigrants who arrived in the United States after their teens, researchers found that emotional phrases presented in their native language elicited stronger skin conductance responses (SCRs) compared with the phrases presented in a foreign language (Harris et al., 2003). Notably, researchers have found that negative affect was attenuated more significantly when using a foreign language relative to positive affect (Sheikh & Titone, 2016).

In the context of decision making, this reduced emotional response can have major implications for how we judge information and make decisions. In general, particularly for complex topics, individuals without expertise will make judgments based on how they initially feel about a product, procedure, or service under consideration. This tendency to use feelings towards something to make more complex judgments about it is called the affect heuristic (Slovic et al., 2002). While the affect heuristic has been studied in a number of domains (for example, see Phillips et al., 2009; Bateman et al., 2007), one of particular importance is how affect impacts how individuals judge relative risk and benefit (Finucane et al., 2000; Västfjäll et al., 2014). Specifically, through the affect heuristic, if the stimulus produces more positive than negative affect (overall positive), people are likely to judge the event to be more beneficial than risky; conversely, if the stimulus produces more negative than positive affect, it will be judged as more risky than beneficial. For example, by changing affective responses, the affect heuristic has been successfully used in anti-smoking campaigns (Hammond & Fong, 2004). Specifically, by displaying pictures of long-term smokers' teeth and lungs on cigarette cartons, the increased

negative response towards smoking led to increased perceived riskiness of smoking amongst participants. They thus believed that the risks of smoking far outweigh the benefits. This negative affective effect successfully motivated the smokers to reduce or even quit smoking.

In two studies, Hadjichristidis, Geipel, and Savadori (2015) examined how native or foreign language use influences judgements of risk. In Study 1, they explored the relationship between foreign language use and judgments of risk and benefit participants were asked to assess 26 specific hazards (e.g., cigarettes) in terms of the risks and benefits to society. Half of the participants received the questionnaire in a foreign language, while the other half received it in their native language. The results suggested that the use of a foreign language decreased risk judgments and increased benefit judgments compared to the native language overall. In addition, the results of the analysis revealed that risk and benefit judgments were negatively but strongly correlated in both language conditions, suggesting that judgments of risk and benefit appear to be supported by affect heuristics in both languages.

In Study 2, they examined whether stimuli described in a foreign language elicited more positive emotions overall and whether this reduction of negative emotions in the foreign language mediated risk and benefit judgments. Here, participants were asked to complete as similar task as Study 1, but additionally rate their positive and negative feelings for each hazard from a collection of affect measures. Besides observing the similar results of Study 1, using a foreign language produced weaker negative and stronger positive affect than using the native language. That is, target stimuli described in the foreign language were rated as more positive than those described in the native language. Also, after running two multiple mediation analyses,

they determined that positive and negative feelings jointly mediated the effect of language on risk and benefit judgments, providing direct evidence that foreign language influences risk and benefit judgments through affect. Based on the evidence of the role of affective in the studies, they argued that presenting stimuli in a foreign language elicited more positive affect in general than in the native language, which led to judgments of relatively lower risk and higher benefit.

In sum, using your native as compared to a foreign language has been found to reduce your aversive, emotional response towards stimuli, which in turn can impact how you evaluate its relative risks and benefits. Next, we will discuss how this response to using a foreign language may influence vaccination intentions and behavior.

Current Study

Here, we specifically explore whether language influences the perceptions of the risks and benefits of vaccination, which in turn influences willingness to vaccinate. Studies suggested that risk perception was closely related to vaccination intentions (Chapman & Coups, 2006; MacDonald et al., 2012). According to a meta-analysis conducted by Brewer et al. (2007), risk perception was found to be associated with vaccination behavior. In particular, the analysis indicated that the perceived risk likelihood and perceived risk severity were reliably associated with vaccination. They also found that the risk perception of some of the hazards can influence vaccination behavior to some extent. For the HPV vaccination, Newman et al. (2018) found that parents who did not vaccinate their children against HPV had a lower risk perception of cancers caused by HPV and higher risk perception of HPV vaccine side effects compared to parents who had vaccinated their children against HPV.

As previously introduced, people's overall affective evaluation of risk may change if they receive the information in their native or foreign language. This in turn may influence the perceived risks and benefits of getting vaccinating, specifically if they are focused on concerns about their safety and side effects. Here, I predict that the use of a foreign language will increase vaccine benefits and decrease its relative risks, which in turn may make individuals more willing to get vaccinated. To study this question, I conducted a study to examine the effect of foreign language use on HPV vaccination intentions by presenting vaccine information in different languages to participants. All experimental procedures and analyses were preregistered on Open Science Framework prior to any data being collected.

Method

Note*:* Data collection for this project is ongoing. The target sample for this study is around 500. For an ANOVA (fixed effects, special, main effects and interaction) using a small effect size f = 0.13 (d = 0.25), alpha = .05, power = .80, number of groups = 4 (2 [Language] x 2 [Gender]) and df = 1, we would need a minimum of 472 participants. However, the following write-up is based on our current sample of 40 participants at the time of this thesis.

Participants

We recruited 40 native Chinese adult speakers (M_{age} = 21.13 years, SD_{age} = 2.27, age range: 18 to 26 years) through the University of Chicago, Center in Beijing. Participants were eligible to take part in the research if they were (a) native Chinese adult speakers, (b) never vaccinated for HPV, (c) had not lived in an English-speaking country for more than a year prior to adulthood, (d) students at a US university who would be attending in person in Fall 2021. To verify they met the

requirement of (d), all the participants provided a valid .edu email.

Of all participants, 16 of them were randomly assigned to the native Chinese condition (M_{age} = 21.25 years, SD_{age} = 2.27, age range: 18 to 25 years), and 24 of them to the foreign English condition (M_{age} = 21.04 years, SD_{age} = 2.31, age range: 18 to 26 years). On average, participants reported an average score of 6.05 (1 = *not fluently*, 7 = *Very fluently*) on their skills in English and an average score of 6.88 on their skills in Chinese. Additionally, participants had started to learn English in a formal context by the age of 8.03 and lived in English-speaking countries for 8.18 months on average.

Materials

Materials were derived from the Centers for Disease Control and Prevention (CDC), which has a human papillomavirus (HPV) vaccine information statement on their online archive. This statement includes brief information on (a) the diseases that HPV can cause, (b) the likelihood of people being infected with HPV, (c) brief information on the HPV vaccine, (d) who is suitable for HPV vaccination, and (e) the likelihood of side effects and specific symptoms that can be caused by vaccination.

The research materials included two versions of the vaccine information statement with generally consistent contents but in different languages (both versions are provided by the CDC). Figure 1 presents the statement in English and Figure A1 presents the statement in Chinese. Both versions can be found in the Appendix.

All study materials were originally written in English. All materials, barring the CDC provided HPV vaccine information sheets, were translated into Chinese by the author as well as

another Chinese-English bilingual research assistant. Once translated, a separate Chinese-English bilingual research assistant reviewed and revised the materials. Finally, to ensure materials communicated the same information in both Chinese and English, the translated Chinese version was back-translated into English and final revisions were made to ensure the materials in both English and Chinese matched in content (Brislin, 1970).

Finally, the vaccine information statement and main variables of interest were presented as pictures to prevent either participants from using translation software or browsers from autogenerating translations while completing the survey.

Procedure

All participants were prescreened to ensure they qualified prior to entering the study. All eligible subjects received an email with a link and survey code following completing of the prescreen that could use to enter the main study survey. Once they clicked the survey link in the email, participants were prompted to enter the survey code from the email and reconfirm their assigned sex.

Once in the study, participants were first provided with the HPV vaccine information statement. The statement was split into four pages in a numbered order. While they could take as much time as they needed to review each page of the statement, participants had to wait at least 20 seconds before moving on to the next page to prevent intentional or unintentional skipping. After flipping through the whole statement, participants were then asked if they had read the human papillomavirus information. If they said “Yes”, they would be directed to the next section; if they said “No”, they had to re-read the statement and answer the question. Participants who select "No"

twice in a row were excluded from continuing to complete the survey.

Participants then completed two vaccine-related questions. Specifically, participants were asked to report the degree of interest in getting HPV vaccination after three months (0=*not at all*, 100=*absolutely*). Participants were also asked to report the chance of getting infected with HPV without vaccination (7-point scale: 1=*almost zero*, 7=*almost certain*). Participants then completed five measures which broadly captured their perception of HPV and HPV vaccine after reading the provided information. Specifically, participants needed to report their perceptions about the level of risk of getting HPV with and without vaccination (6-point scale: 1=*not at all risky;* 6=*very risky*), the degree to which they worry about getting HPV in their daily life (7-point scale: 1=*not at all worried;* 7=*very worried*), the perceived severity of HPV (7-point scale: 1=*not at all serious;* 7=*very serious*), and finally the level of trust in the HPV vaccine information provided in the survey (7-point scale: 1=*not at all trustworthy;* 7=*very trustworthy*).

Participants were then asked to answer two comprehension questions about the HPV vaccine based on the previous information statement. These two questions were whether the CDC recommends the HPV vaccine for both assigned sexes and whether there is any risk of side effects from the vaccine. Participants were excluded if they failed to answer these questions correctly (n=4).

Following the measures regarding their intentions to vaccinate, perception of HPV and the HPV vaccine, and the comprehension questions, we additionally captured individual differences measures on their overall vaccine and social attitude measures. The vaccine-related measures included questions about the extent to which they believed vaccines were worth promoting, trusted,

and whether vaccines were safe and effective (all 6-point scale; 1=*strongly disagree*, 6=*strongly agree*). The social attitude measures included questions about the extent to which parents, doctors, and the best female friend thought participants should get the HPV vaccine (all 5-point scale; 1=*not at all necessary*, 5=*very necessary*) and the extent to which participants would accept their advice as usual (all 5-point scale; 1=*not at all true*, 5=*very true*).

At the end of the survey, additional demographic information was collected on the language background, age, education, and marital status of participants. For language background, all participants reported when they first began learning English and how long they lived in an English-speaking country. They also reported their own estimate of their language skills in reading, writing, speaking, and listening in Chinese and English. The self-reported language skills were rated on a scale of 1 (*not fluently)* to 7 (*very fluently*) for each measure. At the end of the study, participants received a compensation of 40 RMB for their time.

Results

This write up is for the sole purpose of the thesis, and that once the data will be fully collected per the pre-registration, there will be a final report. All analyses were conducted using Welch's ANOVA to examine the main effects of Language (Native | Foreign) on intentions to vaccinate against HPV.

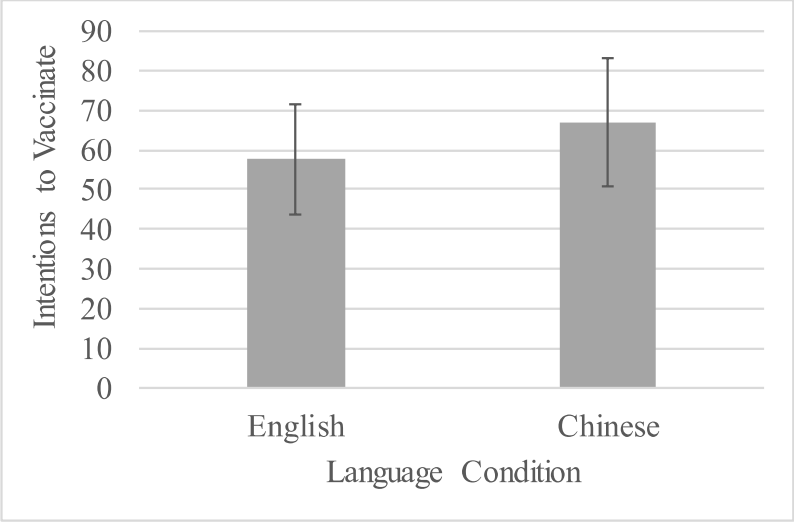
Vaccination Intention

I examined the effect of language on the extent of intentions to vaccinate by asking participants to report their intention to vaccinate in the next three months. The main effect of ANOVA is not significant ($F = 0.85$, $p = .362$, $d_{Cohen} = 0.29$). However, as Figure 1 shows,

participants in the foreign English condition indicated slightly lower intentions to get vaccinated (M = 57.63, 95% CI [43.68, 71.57]) than participants in the native Chinese condition (M = 67.0, 95% CI [50.82, 83.18]). As the data collection for this project is still ongoing, the current sample size is relatively small, which may be one reason for the lack of significant results. To further examine the data, power analyses were conducted. A post-hoc power analysis indicated that this study is greatly underpowered (*power* = .15). A a-priori power analysis (using the effect size d = 0.29 and a power of 80%) suggests a minimum of 352 participants will be needed to detect a language effect.

Figure 2

Mean intention to get vaccinated rating across language conditions.



Response to Vaccine Information

Along with vaccination intentions, we also examined how individuals responded to the

vaccine information across language conditions, specifically by examining the perceived risk of being infected with or without vaccination, the perceived feelings of worry associated with getting infected, and the perceived severity of infection.

For the perceived risk of getting infected if not vaccinated against HPV, although the main effect is not significant ($F(1, 37.47) = 0.02$, $p = .877$, $d = 0.05$), in the foreign English condition participants indicated slightly lower mean risks of getting infected if not vaccinated ($M = 3.25$, 95% CI [2.64, 3.86]) than participants in the native Chinese ($M = 3.31$, 95% CI [2.74, 3.89]). Additionally, for the perceived risks of getting infected if vaccinated against HPV, although the main effect is not significant ($F(1, 37.99) = 0.12$, $p = .727$, $d = 0.10$), in the foreign English condition participants here too indicated slightly lower risks of getting infected if not vaccinated ($M = 3.25$, 95% CI [2.64, 3.86]) than participants in the native Chinese ($M = 3.31$, 95% CI [2.74, 3.89]).

For the feelings of worry of getting infected, although the main effect is not significant ($F(1, 36.37) = 0.22$, $p = .641$, $d = 0.15$), in the foreign English condition participants indicated slightly lower worry ratings regarding HPV ($M = 2.58$, 95% CI [1.87, 3.30]) than participants in the native Chinese ($M = 2.81$, 95% CI [2.08, 3.55]). For the perceived severity of a HPV infection, again, although the main effect is not significant ($F(1, 36.37) = 0.04$, $p = .847$, $d = 0.07$), in the foreign English condition participants indicated slightly lower severity ratings ($M = 5.04$, 95% CI [4.41, 5.67]) than participants in the native Chinese ($M = 5.13$, 95% CI [4.48, 5.77]).

Discussion

The use of a foreign language may influence willingness to vaccinate. In this study,

although the effect was not significant, I found a trend that the use of a foreign language reduced people's intention to vaccinate, which is contrary to my prediction. Furthermore, the results of the study are consistent with the finding that presenting stimuli in a foreign language led to relatively low risk judgments (Hadjichristidis, Geipel, & Savadori, 2015). However, the current study indicated a tendency that the use of a foreign language reduced the perceived risk associated with HPV infection compared with native language use. Specifically, the perceived risk of being infected with or without vaccination, the perceived feelings of worry associated with getting infected, and the perceived severity of infection all decreased under foreign language conditions.

One possible reason why my prediction was inconsistent with the current result was that I did not consider the effect of foreign language use on the perceived risks of HPV infection. My prediction was primarily based on the impact of foreign language use on perceived risks and benefits of the HPV vaccine. However, according to the results of this study, the use of a foreign language may instead reduce the perceived risk of HPV infection. According to Brewer et al. (2007), when people's perceived risk of infection decreased, their intentions to get vaccinated might decrease. The finding may explain the trend observed in this study. It is worth noting that the current results of the study did not reject that the use of a foreign language will increase vaccine benefits and decrease its relative risks, which in turn may make individuals more willing to get vaccinated. In other words, foreign language use might have an effect on both the perceived risks of HPV vaccine and HPV infection, although the two effects may appear to have opposite roles for vaccination intentions. However, based on the current results, the impact of foreign language use on reducing the perceived risk of HPV infection might be more significant.

As the data collection for this study is still ongoing, the number of samples analyzed so far is relatively insufficient. This is one limitation of the current study. Inadequate sample size may fail to capture smaller effects, and hence insignificant results may lead to an inadequate examination of the hypothesis and limit the validity of the analysis. Therefore, it is essential first to continue collecting samples to reach the target sample size.

Another possible limitation is that the independent variable in this study (language) may restrict further analysis of the effect of foreign language use on vaccination intentions. Since the information of HPV vaccine and HPV infection were presented together in the same language for one participant, the current experiment was difficult to detect independent effects of foreign language use on perceived risks of HPV infection and vaccine side effects. Future research could improve the presence of material to restrict the possible impact of language on just risks of HPV or vaccination separately. Concretely, the language of HPV infection-related information and the language of HPV vaccine-related information can be designed as two independent variables for the experiment to investigate their respective effects on vaccination intention.

In conclusion, although the effect was not significant, the experiment showed that the use of a foreign language might have a tendency to reduce people's intention to get vaccinated. The reason for this result may be that the use of a foreign language reduces the perceived risk of HPV infection. Considering that the use of a foreign language could influence judgments and decision making, it would be worthwhile to explore the impact of foreign language use on vaccination intention in the future in order to apply it to improve vaccination rates.

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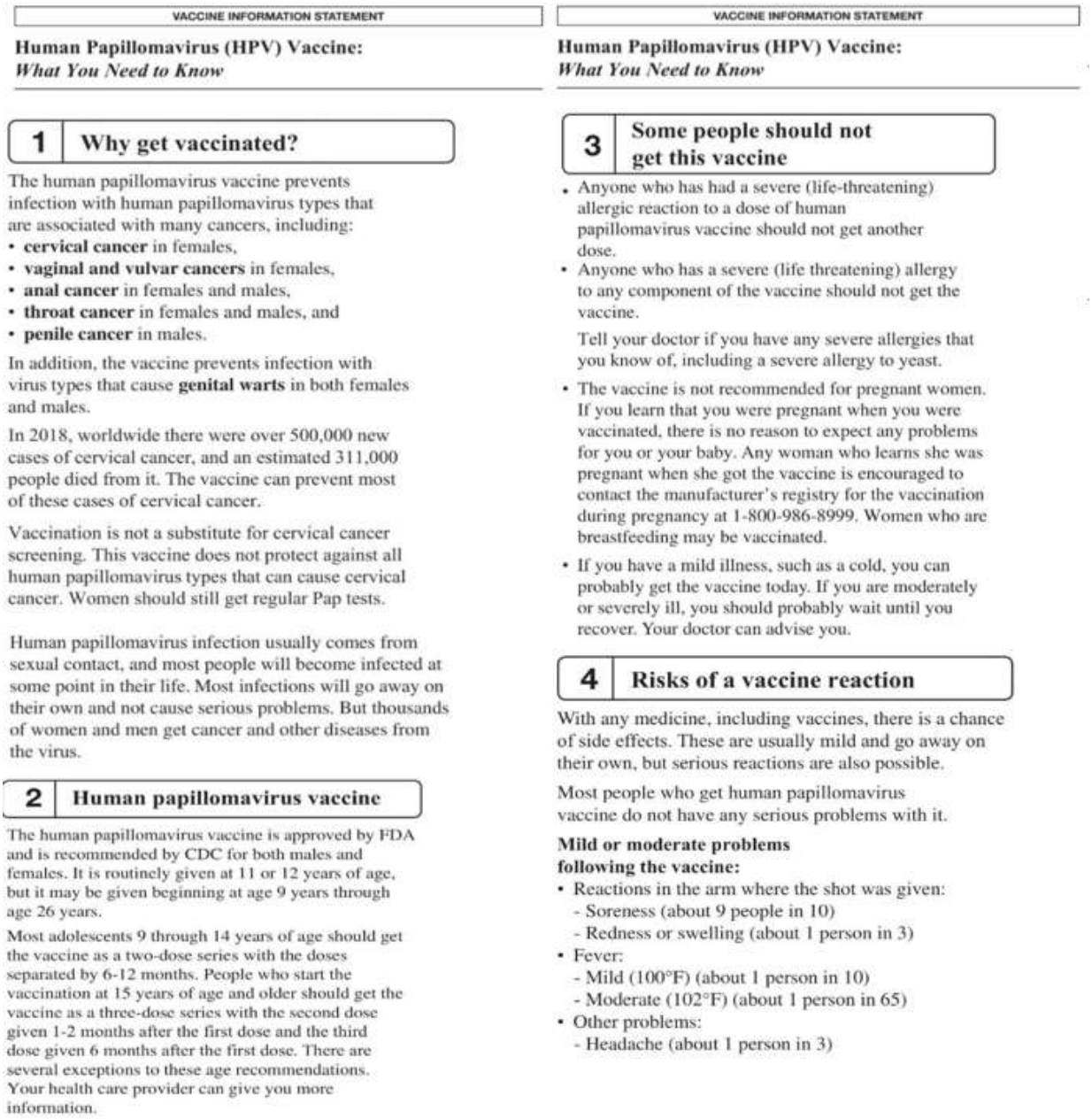
Appendix

Figure 1

English version of the Vaccine Information Statement



VACCINE INFORMATION STATEMENT

Human Papillomavirus (HPV) Vaccine:
What You Need to Know

1 Why get vaccinated?

The human papillomavirus vaccine prevents infection with human papillomavirus types that are associated with many cancers, including:

- **cervical cancer** in females,
- **vaginal and vulvar cancers** in females,
- **anal cancer** in females and males,
- **throat cancer** in females and males, and
- **penile cancer** in males.

In addition, the vaccine prevents infection with virus types that cause **genital warts** in both females and males.

In 2018, worldwide there were over 500,000 new cases of cervical cancer, and an estimated 311,000 people died from it. The vaccine can prevent most of these cases of cervical cancer.

Vaccination is not a substitute for cervical cancer screening. This vaccine does not protect against all human papillomavirus types that can cause cervical cancer. Women should still get regular Pap tests.

Human papillomavirus infection usually comes from sexual contact, and most people will become infected at some point in their life. Most infections will go away on their own and not cause serious problems. But thousands of women and men get cancer and other diseases from the virus.

2 Human papillomavirus vaccine

The human papillomavirus vaccine is approved by FDA and is recommended by CDC for both males and females. It is routinely given at 11 or 12 years of age, but it may be given beginning at age 9 years through age 26 years.

Most adolescents 9 through 14 years of age should get the vaccine as a two-dose series with the doses separated by 6-12 months. People who start the vaccination at 15 years of age and older should get the vaccine as a three-dose series with the second dose given 1-2 months after the first dose and the third dose given 6 months after the first dose. There are several exceptions to these age recommendations. Your health care provider can give you more information.

VACCINE INFORMATION STATEMENT

Human Papillomavirus (HPV) Vaccine:
What You Need to Know

3 Some people should not get this vaccine

- Anyone who has had a severe (life-threatening) allergic reaction to a dose of human papillomavirus vaccine should not get another dose.
- Anyone who has a severe (life threatening) allergy to any component of the vaccine should not get the vaccine.

  Tell your doctor if you have any severe allergies that you know of, including a severe allergy to yeast.
- The vaccine is not recommended for pregnant women. If you learn that you were pregnant when you were vaccinated, there is no reason to expect any problems for you or your baby. Any woman who learns she was pregnant when she got the vaccine is encouraged to contact the manufacturer's registry for the vaccination during pregnancy at 1-800-986-8999. Women who are breastfeeding may be vaccinated.
- If you have a mild illness, such as a cold, you can probably get the vaccine today. If you are moderately or severely ill, you should probably wait until you recover. Your doctor can advise you.

4 Risks of a vaccine reaction

With any medicine, including vaccines, there is a chance of side effects. These are usually mild and go away on their own, but serious reactions are also possible.

Most people who get human papillomavirus vaccine do not have any serious problems with it.

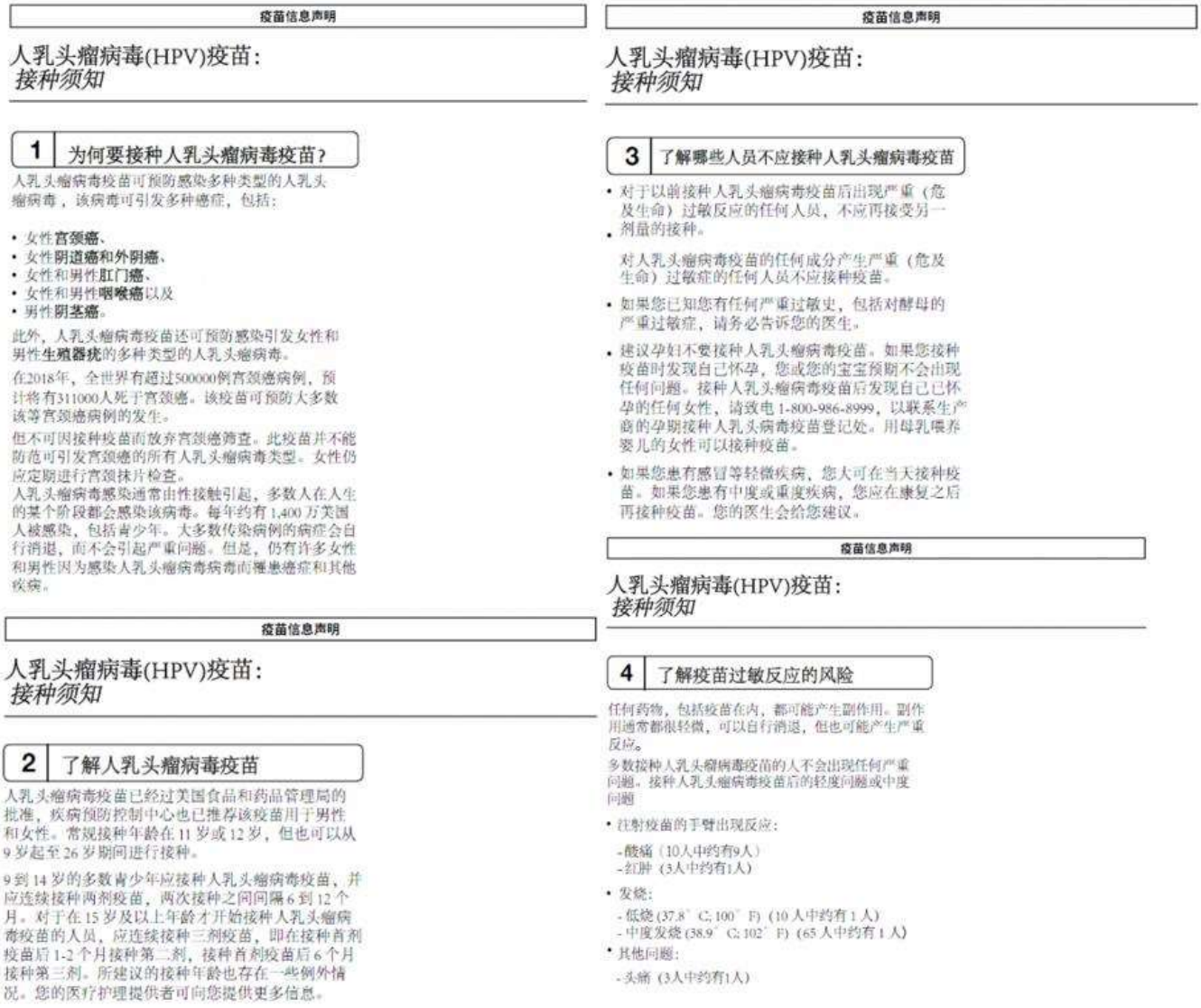
Mild or moderate problems following the vaccine:

- Reactions in the arm where the shot was given:
  - Soreness (about 9 people in 10)
  - Redness or swelling (about 1 person in 3)
- Fever:
  - Mild (100°F) (about 1 person in 10)
  - Moderate (102°F) (about 1 person in 65)
- Other problems:
  - Headache (about 1 person in 3)

Note. Nearly half of the participants read this version in the study.

Figure A1

Chinese version of the Vaccine Information Statement.



疫苗信息声明

人乳头瘤病毒(HPV)疫苗：
接种须知

1 为何要接种人乳头瘤病毒疫苗？

人乳头瘤病毒疫苗可预防感染多种类型的人乳头瘤病毒，该病毒可引发多种癌症，包括：

- 女性**宫颈癌**、
- 女性**阴道癌和外阴癌**、
- 女性和男性**肛门癌**、
- 女性和男性**咽喉癌**以及
- 男性**阴茎癌**。

此外，人乳头瘤病毒疫苗还可预防感染引发女性和男性**生殖器疣**的多种类型的人乳头瘤病毒。

在2018年，全世界有超过500000例宫颈癌病例，预计将有311000人死于宫颈癌。该疫苗可预防大多数该等宫颈癌病例的发生。

但不可因接种疫苗而放弃宫颈癌筛查。此疫苗并不能防范可引发宫颈癌的所有人乳头瘤病毒类型。女性仍应定期进行宫颈抹片检查。

人乳头瘤病毒感染通常由性接触引起，多数人在人生的某个阶段都会感染该病毒。每年约有1,400万美国人被感染，包括青少年。大多数传染病例的病症会自行消退，而不会引起严重问题。但是，仍有许多女性和男性因为感染人乳头瘤病毒病毒而罹患癌症和其他疾病。

疫苗信息声明

人乳头瘤病毒(HPV)疫苗：
接种须知

2 了解人乳头瘤病毒疫苗

人乳头瘤病毒疫苗已经过美国食品和药品管理局的批准，疾病预防控制中心也已推荐该疫苗用于男性和女性。常规接种年龄在11岁或12岁，但也可以从9岁起至26岁期间进行接种。

9到14岁的多数青少年应接种人乳头瘤病毒疫苗，并应连续接种两剂疫苗，两次接种之间间隔6到12个月。对于在15岁及以上年龄才开始接种人乳头瘤病毒疫苗的人员，应连续接种三剂疫苗，即在接种首剂疫苗后1-2个月接种第二剂，接种首剂疫苗后6个月接种第三剂。所建议的接种年龄也存在一些例外情况。您的医疗护理提供者可向您提供更多信息。

疫苗信息声明

人乳头瘤病毒(HPV)疫苗：
接种须知

3 了解哪些人员不应接种人乳头瘤病毒疫苗

- 对于以前接种人乳头瘤病毒疫苗后出现严重（危及生命）过敏反应的任何人员，不应再接受另一剂量的接种。

  对人乳头瘤病毒疫苗的任何成分产生严重（危及生命）过敏症的任何人员不应接种疫苗。
- 如果您已知您有任何严重过敏史，包括对酵母的严重过敏症，请务必告诉您的医生。
- 建议孕妇不要接种人乳头瘤病毒疫苗。如果您接种疫苗时发现自己怀孕，您或您的宝宝预期不会出现任何问题。接种人乳头瘤病毒疫苗后发现自己已怀孕的任何女性，请致电1-800-986-8999，以联系生产商的孕期接种人乳头病毒疫苗登记处。用母乳喂养婴儿的女性可以接种疫苗。
- 如果您患有感冒等轻微疾病，您大可在当天接种疫苗。如果您患有中度或重度疾病，您应在康复之后再接种疫苗。您的医生会给您建议。

疫苗信息声明

人乳头瘤病毒(HPV)疫苗：
接种须知

4 了解疫苗过敏反应的风险

任何药物，包括疫苗在内，都可能产生副作用。副作用通常都很轻微，可以自行消退，但也可能产生严重反应。

多数接种人乳头瘤病毒疫苗的人不会出现任何严重问题。接种人乳头瘤病毒疫苗后的轻度问题或中度问题

- 注射疫苗的手臂出现反应：
  - 酸痛（10人中约有9人）
  - 红肿（3人中约有1人）
- 发烧：
  - 低烧(37.8° C; 100° F)（10人中约有1人）
  - 中度发烧(38.9° C; 102° F)（65人中约有1人）
- 其他问题：
  - 头痛（3人中约有1人）

Note. Nearly half of the participants read this version in the study.