

## **Appendix**

There are two supplemental tables presented here. The first, Table A.1, compares the items in the modified Carolina HPV Immunization Attitudes and Beliefs Scale (CHIAS) to those included in the original CHIAS and describes the factor profiles of both measures.

Table A.2 provides a comparison of the baseline demographic characteristics of the nationally representative population who participated in the modified CHIAS to the original CHIAS study population.

**Table A.1.**Comparison of the modified CHIAS to the original CHIAS.

Modified CHIAS	Associated Factor	Factor Loading <sup>a</sup>	Original CHIAS	Associated Factor	Factor Loading <sup>a</sup>
<b>Parental attitudes and beliefs<sup>b</sup></b>			<b>Parental attitudes and beliefs<sup>b</sup></b>		
I worry that the HPV vaccine might cause short term problems like fever or discomfort.	Harms/ ineffectiveness	0.62	The HPV vaccine might cause short term problems, like fever or discomfort.	Harms	0.66
I worry that the HPV vaccine is being pushed to make money for drug companies and/or doctors.	Harms/ ineffectiveness	0.89	The HPV vaccine is being pushed to make money for drug companies.	Harms	0.63
I worry the HPV vaccine may cause health problems for my daughter in the future.	Harms/ ineffectiveness	0.92	The HPV vaccine might cause lasting health problems.	Harms	0.60
I think that the HPV vaccine is unsafe.	Harms/ ineffectiveness	0.89	I think the HPV vaccine is unsafe.	Harms	0.52
I think that my daughter is too young to get a vaccine for a sexually transmitted infection like HPV.	Harms/ ineffectiveness	0.80	[Child's name] is too young to get a vaccine for a sexually transmitted infection like HPV.	Harms	0.52

**Table A.1 (cont.).** Comparison of the modified CHIAS to the original CHIAS.

Modified CHIAS	Associated Factor	Factor Loading <sup>a</sup>	Original CHIAS	Associated Factor	Factor Loading <sup>a</sup>
<b>Parental attitudes and beliefs<sup>b</sup></b>			<b>Parental attitudes and beliefs<sup>b</sup></b>		
The HPV vaccine is so new that I want to wait a while before deciding if my daughter should get it.	Harms/ ineffectiveness	0.57	The HPV vaccine is so new that I want to wait a while before deciding if my daughter should get it.	Uncertainty	0.80
I think that giving my daughter a new vaccine is like performing an experiment on her.	Harms/ ineffectiveness	0.93	--		
HPV vaccination is not really necessary because Pap smears can be done to make sure cervical cancer doesn't develop.	Harms/ ineffectiveness	0.61	--		
--			If a teenage girl gets the HPV vaccine, she may be more likely to have sex.	Harms	0.55
The HPV vaccine is effective in preventing cervical cancer. <sup>c</sup>	Harms/ ineffectiveness	0.61	How effective do you think the HPV vaccine is in preventing cervical cancer? <sup>d</sup>	Effectiveness	0.79

**Table A.1 (cont.).** Comparison of the modified CHIAS to the original CHIAS.

Modified CHIAS	Associated Factor	Factor Loading <sup>a</sup>	Original CHIAS	Associated Factor	Factor Loading <sup>a</sup>
<b>Parental attitudes and beliefs<sup>b</sup></b>			<b>Parental attitudes and beliefs<sup>b</sup></b>		
--			How effective do you think the HPV vaccine is in preventing genital warts? <sup>d</sup>	Effectiveness	0.85
It is hard to find a provider or clinic where I could afford the HPV vaccine.	Barriers	0.91	How hard do you think it would be to find a provider or clinic where you can afford the vaccine? <sup>f</sup>	Barriers	0.84
It is hard to find a provider or clinic that would be easy to get to for getting the HPV vaccine for my daughter.	Barriers	0.93	How hard do you think it would be to find a provider or clinic that is easy to get to? <sup>f</sup>	Barriers	0.69
It is hard to find a provider or clinic where I don't have to wait for a long time to get an appointment for my daughter to be vaccinated.	Barriers	0.93	How hard do you think it would be to find a provider or clinic where you don't have to wait long to get an appointment? <sup>f</sup>	Barriers	0.61

**Table A.1 (cont.).** Comparison of the modified CHIAS to the original CHIAS.

Modified CHIAS	Associated Factor	Factor Loading <sup>a</sup>	Original CHIAS	Associated Factor	Factor Loading <sup>a</sup>
<b>Parental attitudes and beliefs<sup>b</sup></b>			<b>Parental attitudes and beliefs<sup>b</sup></b>		
--			How hard do you think it would be to find a provider or clinic that has the vaccine available? <sup>f</sup>	Barriers	0.65
--			I am concerned that the HPV vaccine costs more than I can pay.	Barriers	0.62
My daughter's doctor recommends the HPV vaccine. <sup>c</sup>	Social Norms	0.85	--		
--			I don't have enough information about the HPV vaccine to decide whether to give it to [child's name].	Uncertainty	0.82
Other parents in my community are getting their daughters the HPV vaccine. <sup>c</sup>	Social Norms	0.83	Other parents in my community are getting their daughters the HPV vaccine. <sup>c</sup>	Uncertainty	0.54

**Table A.1 (cont.).** Comparison of the modified CHIAS to the original CHIAS.

Modified CHIAS	Original CHIAS
<b>Vaccination Intention<sup>g</sup></b>	<b>Vaccination Intention<sup>h</sup></b>
I intend to get my daughter vaccinated against HPV in the next 6 months.	How likely are you to vaccinate your daughter in the next year?
I will never get my daughter vaccinated against HPV.	How likely are you to vaccinate your daughter in the next year if the vaccine were free?
--	How likely are you to vaccinate your daughter in the next year if the vaccine protected against cervical cancer only?
--	How likely are you to vaccinate your daughter in the next year if the vaccine required only 1 shot?

Abbreviations: CHIAS, Carolina HPV Immunization Attitudes and Beliefs Scale; HPV, human papillomavirus.

<sup>a</sup> Loadings for items used to calculate factor scores.

<sup>b</sup> Unless otherwise specified, all items used a 4-point scale: "strongly disagree", "disagree", "agree", and "strongly agree". Higher values indicated stronger agreement with the statement, corresponding to lower support for vaccines.

<sup>c</sup> Items were reverse-coded, such that higher values correspond to less support for vaccines.

<sup>d</sup> These items were measured using a 3-point scale ("not hard at all", "hard", "very hard") that was rescaled to a 1-4 range.

<sup>f</sup> These items were measured using a 4-point scale: "slightly effective", "moderately", "very", and "extremely effective".

<sup>g</sup> All items used a 5-point scale: “strongly disagree”, “disagree”, “neutral”, “agree”, and “strongly agree”. Higher values indicated stronger agreement with the statement.

<sup>h</sup> Response options for the 4 items were “definitely won’t”, “probably won’t”, “probably will”, and “definitely will”. Primary outcome was measured as the mean of the responses to the 4 items, and higher values indicated greater intention to vaccinate.

**Table A.2.** Comparison of the demographic characteristics of the nationally representative U.S. population in the NPCH to the original CHIAS study population.

	NPCH Survey*	NPCH Survey*	CHIAS Study
	Mothers <sup>a</sup>	Mothers whose daughter has not received any doses of HPV vaccine <sup>b</sup>	Parents <sup>c</sup>
<i>n</i>	228	138	783
Gender			
Female	100%	100%	94%
Race/ethnicity			
Non-Hispanic white	52%	48%	69%
Non-Hispanic black	16%	15%	23%
Hispanic or other	32%	37%	7%
Area of residence <sup>d</sup>			
Metropolitan area	84%	82%	51%
Non-metropolitan area	16%	18%	49%
Respondent's education			
High school or less	54%	56%	22%
Some college or greater	46%	44%	78%
Household income <sup>f</sup>			
< \$50,000	61%	54%	33%
≥ \$50,000	39%	46%	63%

**Table A.2 (cont).** Comparison of the demographic characteristics of the nationally representative U.S. population in the NPCH to the original CHIAS study population.

	NPCH Survey*	NPCH Survey*	CHIAS Study
	Mothers <sup>a</sup>	Mothers whose daughter has not received any doses of HPV vaccine <sup>b</sup>	Parents <sup>c</sup>
Age (yr.), mean (S.D.)			
Mother/Parent	40.3 (6.8)	40.6 (7.1)	43.1 (7.2)
Daughter	13.9 (2.1)	13.4 (2.2)	14.7 (2.5)

Abbreviations: CHIAS, Carolina HPV Immunization Attitudes and Beliefs Scale; HPV, human papillomavirus; NPCH, National Poll on Children's Health survey; S.D., standard deviation.

\* Weighted % of nationally representative population in NPCH derived using probability sampling weights.

<sup>a</sup> All female caregivers participating in the NPCH survey with at least one daughter between ages 11 and 17 years.

<sup>b</sup> Female caregivers participating in the NPCH survey who had not yet vaccinated their youngest daughter against HPV.

<sup>c</sup> Population of male and female caregivers who had not yet vaccinated their daughter aged 10-18 years or did not know if their daughter had been vaccinated against HPV.

<sup>d</sup> Area of residence was defined as rural or urban (using the United States Census classification) in the CHIAS study.

<sup>f</sup> In the CHIAS study, 4% of participants had missing household income data.