

**Will an Enhanced Child Have Less Freedom? *A U.S. Nationally Representative
Survey Experiment***
by John H. Evans

Supplemental Materials

SURVEY

After in-depth interviews with the public I created a draft of the survey which was subject to cognitive testing (Collins 2014) with nine interviews. In January of 2023, 530 respondents from the Lucid platform were given the pilot survey (Coppock and McClellan 2019). After further modifications, a second pre-test of 612 Lucid respondents was fielded.

In April and May 2023, I fielded the final survey with NORC AmeriSpeak panel, which arguably produces the highest quality data in the U.S. The NORC sample is ultimately based upon random selection among Americans 18 years of age and older. I fielded it only to people who had internet access and who read English. All of the studies in the larger project were reviewed by the IRB as the author's university and found to be exempt.

The final sample had 3401 cases and used a weight so that the sample matched U.S. demographic characteristics such as age and gender, as well as religious identity and religious participation. Analyses used Stata 18 and take account of the complicated sampling strategy of NORC by adjusting for the primary sampling units and strata. For strata with a single sampling unit, I used the centered approach.

MANIPULATION CHECK ON THE VIGNETTE EXPERIMENT

Experimental design vignettes assume the respondent notices the experimental stimulus. For example, in the influencing the musical ability of the child vignette I use, the design assumes that the respondent mentally registers the fact that the child is the result of an embryo that was genetically manipulated.

To confirm the experimental manipulation was internalized, studies use manipulation checks, which mean, roughly, that the experimental manipulation was effective. Some studies use questions that ask to see if the respondent remembers fact claims in the vignette (Kane and Barabas 2019). Often it is not possible within the confines of short English statements to test the effectiveness of every factor in a vignette, and often we have to rely upon a question that a respondent is likely to answer in a particular way had they internalized the stimulus. A manipulation is considered to have occurred when the check is statistically significantly related to the factor in question (Mutz 2011, 85).

For the musical enhancement vignette, I asked "we now would like to know what stuck with you about the scenario. The parents knew they wanted a child with musical talents before the child was even born. True or False." While this is not an objective question, if the respondent was paying attention the answer should be "true" for those who saw genetic manipulation of an embryo, and "false" for those who raised the child and realized that they had great musical ability. It is not clear how those who saw that the parents gave the child extensive musical training should answer this question, so those who saw this factor were not analyzed.

Of those who saw genetic manipulation, 88.7% answered the manipulation check question correctly. Of those who saw that the parents had raised an inherently talented child, 74.3% answered correctly. Both of these are significant above the $p < .001$ level on a chi-square test. The conclusion is that this manipulation was internalized.

STATISTICAL ANALYSES

The response frequencies for the three dependent variables in the analysis are found in Table S1. Note that few respondents selected strongly agree for the first and third questions in Table 1 and few selected strongly disagree for the second, which can lead to statistical estimation problems. Therefore, following standard social science practice, I collapsed the strongly agree into the somewhat agree category for the first and third questions above, and the strongly disagree into the somewhat disagree for the second question.

Since respondents are randomly assigned to see a level in the vignette, there can be no confounding variables, and thus no need for statistical controls. Therefore, the statistics in vignette studies can be very simple (Mutz 2011, 123). I use regression analysis to compare the responses of those who saw the different levels. Each level is coded into a dichotomous variable. Since the possible responses to each of the questions after the vignette is a five step Likert scale, ordered logistic models (OLM) are the most appropriate. See Table S2 for the results.

OLM models assume a parallel regression or proportional odds, which is that the effect of a variable on the difference between the first possible response on the dependent variable and the rest of the possible responses is the same as the effect of the first and second combined on the remaining categories, and so on (Long and Freese 2014, 326). If this is not true, then the regular OLM coefficient is too much of a generalization and offers a potentially misleading interpretation. However, most OLM models violate this assumption for at least one variable (Long and Freese 2014, 331).

The easiest way to understand these models is that the responses to many 5-point Likert scales are actually like modeling a dichotomous variable. The independent variable in question may not predict each of the steps along the Likert scale but may strongly predict, for example, the difference between strongly agreeing and somewhat agreeing vs. all of the other less agreeing responses. I diagnose the parallel regression assumption using the `autofit` function ($p < .05$) of the `gsvy` version of the `gologit2` program in Stata18 (Williams 2006). The assumption is violated for the “child should not feel bad about giving up music” analysis, so I use the generalized OLM model (Williams 2016).

In the generalized model for the “child genetically modified” variable, the column in Table S2 reports the coefficient representing the difference between neither agree nor disagree and somewhat disagree/strongly disagree. Seeing genetic does not differentiate between the other steps, but dichotomously differentiates between disagreement and neutrality/agreement. The full generalized ordered logit results are shown in Table S3.

Work Cited

- Collins, D. 2014. *Cognitive Interviewing Practice*. 1st edition. Los Angeles: SAGE Publications Ltd.
- Coppock, A., and O. A. McClellan. 2019. Validating the demographic, political, psychological, and experimental results obtained from a new source of online survey respondents. *Research & Politics* 6(1). SAGE Publications Ltd: 2053168018822174. doi: 10.1177/2053168018822174.

- Kane, J. V., and J. Barabas. 2019. No Harm in Checking: Using Factual Manipulation Checks to Assess Attentiveness in Experiments. *American Journal of Political Science* 63(1): 234–249. doi: <https://doi.org/10.1111/ajps.12396>.
- Long, J. S., and J. Freese. 2014. *Regression Models for Categorical Dependent Variables Using Stata*. 3rd ed. College Station, Texas: Stata Press.
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- Williams, R. 2016. Understanding and interpreting generalized ordered logit models. *The Journal of Mathematical Sociology* 40(1). Routledge: 7–20. doi: 10.1080/0022250X.2015.1112384.

Table S1.
Weighted Frequencies of Willingness to Limit Freedom of Enhanced Child

	Parents should be dismayed if child gives up music.	Child should not feel bad about giving up music.	Failure of child to get into music school is parents' fault.
Strongly agree	3%	51%	2%
Somewhat agree	6%	28%	4%
Neither agree nor disagree	20%	14%	27%
Somewhat disagree	27%	4%	28%
Strongly disagree	45%	2%	39%

Table S2.
Ordered Logit Coefficients for Child with Enhanced Musical Ability Vignette

Variables	Parents should be dismayed if child gives up music.	Parents should be dismayed if child gives up music.	Child should not feel bad about giving up music.^	Child should not feel bad about giving up music.^	Failure of child to get into music school is parents' fault.	Failure of child to get into music school is parents' fault.
Child raised and has musical talent		0.019 (0.11)		-.018 (.11)		-.027 (.10)
Child extensively trained in music	-.019 (0.11)		.018 (.11)		.027 (.10)	
Child genetically modified for music	0.565*** (0.12)	0.583*** (0.11)	-.443***^ (.15)	-.461***^ (.14)	.766*** (.13)	.739*** (.11)
/cut1	-0.113 (0.08)	-0.0948 (0.07)	2.63 *** (.15)	2.65*** (.14)	-.248 (.08)	-0.275*** (.07)
/cut2	1.034*** (0.08)	1.053*** (0.08)	1.39*** (.10)	1.41*** (.10)	.891*** (.08)	0.864*** (.07)
/cut3	2.512*** (0.11)	2.531*** (0.09)	-.037 (.07)	-.018 (.08)	3.097 *** (.14)	3.07*** (.13)
Observations	3392	3392	3385	3385	3392	3392
F value	17.04***	17.04***	5.68***	5.68***	23.75***	23.75***

Notes: ***= p< .001, **=p<.01, *=p<.05. (Linearized standard errors in parentheses). ^ = This column reports a generalized ordered logit model. All but the “child genetically modified” variable are parallel so the consistent results across steps of the dependent variable are reported for the other variables. For the “child genetically modified” variable, this column reports the coefficient representing the difference between neither agree nor disagree and somewhat disagree/strongly disagree. Seeing genetic does not differentiate between the other steps, but dichotomously differentiates between disagreement and neutrality/agreement.

Table S3.
Generalized Ordered Logit Coefficients

Variables	Child should not feel bad about giving up music.	Child should not feel bad about giving up music.
<u>Strongly and somewhat disagree</u>		
Child raised and has musical talent		-.018 (.11)
Child extensively trained in music	.018 (.11)	
Child genetically modified for music.	-.211 (.24)	-.229 (.22)
Constant	2.63***	2.65***
<u>Neither agree nor disagree</u>		
Child raised and has musical talent		-.018 (.11)
Child extensively trained in music	.018 (.11)	
Child genetically modified for music	-.443** (.15)	-.461** (.14)
Constant	1.39***	1.41***
<u>Somewhat agree</u>		
Child raised and has musical talent		-.018 (.11)
Child extensively trained in music	.018 (.11)	
Child genetically modified for music	.002 (.11)	-.016 (.11)
Constant	-.037	-.018
Observations	3385	3385
F value	5.68***	5.68***

Notes: ***= p< .001, **=p<.01, *=p<.05. (Linearized standard errors in parentheses.)