In an Era of Enhanced Cybersecurity: The Effect of Confidentiality Pledges and Penalty Language on Survey Response

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Disclaimer

This presentation is intended to promote the exchange of ideas among researchers and policy makers. The views expressed are part of ongoing research and analysis and do not necessarily reflect the position of the U.S. Department of Education or the U.S. Census Bureau.
Background
Russian Hackers Broke Into Federal Agencies, US Officials Suspect

In one of the most sophisticated and perhaps largest hacks…email systems were breached…
Cybersecurity Enhancement Act of 2015

Department of Homeland Security (DHS) may monitor data transmitted to, from, and stored, on Federal agency computers for viruses, malware, and other threats.
Education Sciences Reform Act (20 U.S.C. § 9573)

Part F, Sec. 183(d)(6) VIOLATIONS: Any person who uses any data provided by the Director, in conjunction with any other information or technique, to identify any individual student, teacher, administrator, or other individual who knowingly discloses, publishes, or uses such data for a purpose other than a statistical purpose, or who otherwise violates subparagraph (A) or (B) of subsection (c)(2), shall be found guilty of a Class E felony and imprisoned for not more than five years, or fined as specified in Section 3571 of title 18, United States Code, or both.
Confidentiality Pledges

• Explore how to convey this new law while maintaining transparency and survey response.

• Department of Homeland Security monitors are not bound by confidentiality pledges.
Previous Cognitive Research and Other Pretests

• Cognitive interviews
• Non-probability web survey results
• Analysis of paradata
Preliminary Evidence

• Informing respondents about the new law unlikely to affect response rates.

• Homeland Security version of pledge communicated intent of new law better.

• Penalty language was clear, straightforward, and favorable.
Limitations

• Small and volunteer samples

• Procedures and content varied across agencies

• Considerable technological and political change in the world
Pledge Placement

All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).
"Getting Started" information was not on navigational path.

SOURCE: Jenkins, 1997
Previous Experimental Research

Alternative Pledge Wordings

- Control
- Homeland Security & Penalty
- Federal Staff & Penalty

Alternative Pledge Placements

- Login Screen
- Separate Screen

SOURCE: Redline et al., 2018
All of the information you provide may be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).
Homeland Security & Penalty

All of the information you provide may be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573). By law, any NCES employee or NCES contractor who willfully discloses any identifiable information about you or your school is subject to a jail term of up to 5 years, a fine of up to $250,000 or both. Electronic transmission of your information will be monitored for viruses, malware, and other threats by Homeland Security in accordance with the Cybersecurity Enhancement Act of 2015.

SOURCE: Redline et al., 2018
Homeland Security & Penalty

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SOURCE: Redline et al., 2018
Federal Staff & Penalty

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SOURCE: Redline et al., 2018
Placement: Login Screen

Get Started!

Study ID

Password

Show me what I typed

Login

NCES is authorized to conduct B&I 15/17 by the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9640) and to collect students’ education records from education agencies or institutions for the purposes of evaluating federally supported education programs under the Family Educational Rights and Privacy Act (FERPA, 34 CFR §§ 99.31(a) (3)(i) and 99.35). The data are being collected for NCES by RTI International, a U.S.-based nonprofit research organization.

All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9670 and 6 U.S.C. §151).

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0026. The time required to complete this information collection is estimated to average approximately 30 minutes per response, including the time to review instructions, gather the data needed, and complete and review the information collection. If you have any comments concerning the accuracy of the time estimate, suggestions for improving this survey, or any comments or concerns regarding the status of your individual submission of this survey, please write directly to The 2015/17 Baccalaureate and Beyond Longitudinal Study (B&B 15/17), National Center for Education Statistics, Potomac Center Plaza, 550 12th St. SW, Room 4004, Washington, DC 20202, OMB Clearance No. 1850-0026 Expiration Date: 5/31/2020.

SOURCE: Redline et al., 2018
All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).
B & B Response Rates (Base Weighted), by Wording and Placement

<table>
<thead>
<tr>
<th>Wording</th>
<th>Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>57.9</td>
</tr>
<tr>
<td>Homeland &amp; Penalty</td>
<td>59.5</td>
</tr>
<tr>
<td>Federal &amp; Penalty</td>
<td>58.9</td>
</tr>
<tr>
<td>Login</td>
<td>58.3</td>
</tr>
<tr>
<td>Separate</td>
<td>58.3</td>
</tr>
</tbody>
</table>
B & B Time in Seconds (Base Weighted), by Wording

NOTE: Analysis was conducted using a natural log scale and converted to seconds here.
Summary of Background Findings

• Informing respondents about the new law unlikely to affect response rates.

• Homeland Security version of pledge communicated intent of new law better.

• Penalty language was clear, straightforward, and favorable.

• Evidence that respondents skim (or read) the pledges, paying a little more attention to the Homeland Security & Penalty Pledge.
Methodology
Modified National Teacher and Principal Survey (NTPS)

To Minimize Impact and Cost:

• Principal Questionnaire
  2017-18 School Year

Selected Because:

• Potential for confidentiality concerns
• Requests personal information
Two-Factor Experiment

Alternative Cybersecurity Wordings

- Control
- Homeland Security
- Federal Staff

Alternative Penalty Language

- Absence
- Presence
Dear School Principal/Administrator,

You have been selected to complete the 2017–18 National Teacher and Principal Survey (NTPS). Principal Survey Reminder: The NTPTS is a tertiary survey of information about teachers and principals in K–12 schools across the United States. The NTPTS data are used by policymakers and researchers to understand the professional background, working conditions, and working environment of teachers and principals in the United States.

Your participation in this important survey helps provide accurate data for schools’ experience as school administrators. Each response is kept strictly confidential and will not be distributed to the general public. The NTPTS is administered by the National Center for Education Statistics (NCES), the statistical agency within the U.S. Department of Education. The center serves as the primary source for education statistics in the United States.

Please complete the questionnaire within one week and return it to the U.S. Census Bureau using the secured postage-paid envelope.

Please be assured that both the U.S. Department of Education and the U.S. Census Bureau, the agency that collects data on behalf of NCES, take every possible action to protect the confidentiality of survey participants. All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9982). Federal law prohibits any other dissemination of identifiable information about you or your school. A list of individuals who respond to the survey will be kept for a period of up to 5 years, a time of up to $500,000, or both. Employees handling of your information will be monitored for errors, misuse, and other abuses by Federal employees and contractors in accordance with the Cybersecurity Enhancement Act of 2015.

Your participation is voluntary, but your responses are necessary to make the results of this survey accurate and timely.

Thank you in advance for your participation in this important survey.

Sincerely,

Peggy O. Carr, Ph.D.
Chief, National Center for Education Statistics (NCES)
U.S. Department of Education

NATIONAL CENTER FOR EDUCATION STATISTICS
January 16, 2018

60008000000083-15-01

SCHOOLS3001-000001
SCHOOL NAME/LINK (SCHOOL NAME/LINK)
CITY/STATE/ZIP

Frequently Asked Questions

What is the purpose of the NTPTS?
The purpose of the National Teacher and Principal Survey (NTPTS) is to provide policymakers and researchers with relevant and timely data on the characteristics and conditions of American public school teachers and principals. The data are used to inform policy decisions by providing comprehensive and statistically representative data on the characteristics of schools, principals, teachers, and students. The data also inform the NTPTS components, which enables researchers to examine the relationships among these elements of the education system. For example, researchers can study teacher turnover by using information not only provided by teachers, but also from their principals.

The NTPTS has been designed with input from state and local education agencies, school administrators, teachers, and other groups that are concerned with issues facing education and data users. For more information about the NTPTS, please visit our website at https://nces.ed.gov/npts.

How are the NTPTS data used?
The data from the NTPTS are used by Congress, the U.S. Department of Education, state education agencies, public school districts, and education research organizations to:

1. Evaluate the efforts of school workforces to develop, implement, and monitor educational policies and practices.
2. Assess school staffing practices and personnel policies; and
3. Aid in the Department of Education’s program planning in the areas of teacher shortage incentives, training opportunities, and teacher education.

Why is my school’s participation important?
This survey is one of the primary sources for information about K–12 schools in the U.S. Only a small percentage of survey sites are selected to participate; therefore, your participation is important for the survey to be successful.

How long does it take to complete the NTPTS Principal Questionnaire?
We estimate that the questionnaire will take approximately 15 minutes to complete.

Will my data remain confidential?
Please be assured that both the U.S. Department of Education and the U.S. Census Bureau take strict precautions to protect the confidentiality of survey participants. All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. § 9982). Federal law prohibits any other dissemination of identifiable information about you or your school. A list of individuals who respond to the survey will be kept for a period of up to 5 years, a time of up to $500,000, or both. Employees handling of your information will be monitored for errors, misuse, and other abuses by Federal employees and contractors in accordance with the Cybersecurity Enhancement Act of 2015.

Your participation is voluntary, but your responses are necessary to make the results of this study accurate and timely.

Who authorizes this survey?
The National Center for Education Statistics (NCES), within the U.S. Department of Education, is authorized to conduct this survey by the Education Sciences Reform Act of 2002 (20 U.S.C. § 9128). The U.S. Census Bureau will administer this survey on behalf of NCES. The Office of Management and Budget (OMB) approved this survey. The OMB control number is 1547-0003 and this survey is approved for collection in accordance with the Paperwork Reduction Act of 1995.

NTPT-15-01

IES Institute for Education Sciences

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Beginning and End of Questionnaire

11. CONTACT INFORMATION

11.1. Please PRINT your name, your home address, your work, cell, and your telephone number, and your work or your student's school as requested. (The information you provide may be re-used for statistical tabulation purposes and may also be provided, as required by law, to other Federal agencies and to other Federal, State, and/or local agencies or organizations conducting similar surveys.)

a. First name

Middle name

Last name

Suffix

b. Street address

c. City

d. State

e. ZIP Code

f. Work phone number

Area code

Number

g. Cell phone number

Area code

Number

h. Home phone number

Area code

Number

i. Work e-mail address

j. Home e-mail address
Data Collection & Sample

• Collection ran from 1/19/2018 to 3/9/2018

• 2017-18 Public School Universe served as frame

• 4134 schools selected and randomly assigned to treatments

• Equal allocation between treatment groups (689 each)
Analysis and Results
Analysis

- Response Rates are the number of complete and partial interviews divided by the number of eligible units (AAPOR RR2)
- Fully saturated two-way logit model fit to the response data
NTPS Response Rates, by Wording and Penalty Language

<table>
<thead>
<tr>
<th>Wording</th>
<th>Control</th>
<th>Homeland</th>
<th>Federal</th>
<th>No Penalty</th>
<th>Penalty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>43.3</td>
<td>43.8</td>
<td>43.4</td>
<td>43.0</td>
<td>44.0</td>
</tr>
</tbody>
</table>

80%
Conclusions and Future Research
Dual Objectives

• Disseminate the highest quality data for evidence-based policy making (Commission on Evidence-Based Policymaking 2017).

• Give respondents meaningful control over their own information (Groves et al. 2004).
Decision-making Criteria

If informing respondents leads to a decrease in response rates, then must balance competing objectives.

If not, the decision seems clear: respondents should be given the most informative confidentiality pledge.
Recommend Homeland Security Version

- Informing respondents rather than simply noting the cybersecurity law’s legal citation had no statistically significant effect on response rates.

- Does not matter whether cybersecurity monitors are referred to as “Homeland Security” or as “Federal employees and contractors.”

- Of three pledges studied, the Homeland Security version allows for informed decisions, with no measurable deleterious effect on response rates.
Include Penalty Language

• Favorable reactions to the penalty language from the cognitive interviews were not realized in this experiment.

• Still, the penalty language does provide more transparency regarding what occurs with respondents’ data and should be added to the pledge, since this language was not shown to have a deleterious effect.
Future Research

• Explicate how respondents navigate survey materials and how this affects their reading of and reaction to confidentiality pledges

• Sensitive data

• Analyze respondents’ answers, especially contact information
Thank you!
cleo.redline@ed.gov
Timing Measure in B & B

Proxy measure

- Could not capture time on login screen
- Could not capture time on separate screen only
- So captured time after logging in to end of security question

Time (in seconds)
- Limited to respondents who started online
- Trimmed and took log
B & B Log of Time in Seconds (Base Weighted), by Wording

Control vs. Homeland *p<.05

Control vs. Federal n.s.

Homeland vs Federal n.s.