

Blind to the Consequences of Measurement?: Response Format Effects on Self-Reported Disability

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Study Background



When measuring the occurrence of a series of events or behaviors, two common response formats have been used to indicate event occurrence: **Multiple Response Formats (MRF)** and **Yes-No Formats (YNF)**.

Do you like any of the following flavors of ice cream? Please select **ALL** that apply.

- Vanilla
- Chocolate
- Strawberry
- Rocky-Road
- Mint Chocolate Chip
- None of the above

Do you like any of the following flavors of ice cream?

	Yes	No
Vanilla	<input type="radio"/>	<input type="radio"/>
Chocolate	<input type="radio"/>	<input type="radio"/>
Strawberry	<input type="radio"/>	<input type="radio"/>
Rocky-Road	<input type="radio"/>	<input type="radio"/>
Mint Chocolate Chip	<input type="radio"/>	<input type="radio"/>

Study Background



With **paper-pencil** surveys, YNF have been found to result in higher endorsement rates than MRF (Ericson & Nelson, 2007; Rasinski et al., 1994).

Similarly, in a series of five **online** experiments utilizing both U.S. and international samples of adults, Thomas and Klein (2006) found consistent evidence that **YNF led to higher endorsement rates** than MRF for a variety of topics:

- **Protest behaviors against companies**
- **Eating different food products**
- **Purchase of products at convenience stores**
- **Product ownership**

Study Background



In another study with one mail and two online surveys, Smyth et al. (2006) compared MRF and YNF using student samples at Washington State University.

Smyth et al. assessed attitudinal, factual, and behavioral issues regarding students' experiences with the university and **replicated the response format effects**, with YNF yielding higher endorsement rates than MRF.

Study Background

Disabilities and health-related impairments have been conceptualized and measured differently in national surveys, both at individual and household levels (e.g., National Health Interview Survey, Survey of Income and Program Participation, Census).

The prevalence of impairment as established by self-report surveys can often **significantly impact policy and resource allocation decisions.**

Therefore, we need to develop measurement formats that are both highly reliable and valid.

Study Background



Since we often need to screen for impairment in health-related surveys, we were interested in **how response formats might influence the prevalence of disabilities and impairment** by type of functioning and severity of impairment.

Specifically, many online surveys use MRF to quickly assess a wide range of characteristics, often to identify people of interest for future surveys, such as people with specific health-related conditions.

We suspected that the findings demonstrating higher endorsement rates for YNF would carry over to the study of disability prevalence.

Method

Method



Study 1:

Respondents included 40,717 U.S. adults recruited from Harris Poll Online, a non-probability opt-in panel provider. Respondents were sent an email invitation to participate in a web-based questionnaire. This study was fielded from November 2005 to June 2007.

Study 2:

Respondents included 2,342 adults from Ipsos's KnowledgePanel[®], the largest probability-based online panel in the U.S. This study was fielded from October 2019 to November 2019.

Method



In this experiment, respondents were randomly assigned to one of two response formats:

- **A Yes-No Format (YNF)**
- **A Multiple Response Format (MRF)**

Method



The YNF and MRF both used the following question stem and items:

Do you have any of the following conditions?

- 1) Blindness or a severe visual impairment in either eye**
- 2) Deafness or hard of hearing in either ear**
- 3) A long-lasting condition that substantially limits one or more basic physical activities, such as walking, climbing stairs, reaching, lifting, or carrying**
- 4) A long-lasting physical, mental, or emotional condition that increases the difficulty of learning, remembering, or concentrating**

Method



Study 1 utilized a **grid format** for the YNF, presenting the item to the left, with radio buttons to the right in columns with ‘Yes’ and ‘No’ labels.

Study 2 utilized a **banked format** for the YNF, which included ‘Yes’ and ‘No’ buttons horizontally arrayed underneath each item.

In both studies, the MRF had an additional respondent instruction following the question stem: **“Please select ALL that apply.”**

Additionally, the MRF had a final response of **“I have none of these”** for respondents who did not have any of the listed impairments.

After answering the initial impairment prevalence items, if respondents indicated that they had an impairment, they were asked follow-up questions to assess the **extent of their impairment** (for visual or auditory impairment, we also assessed the extent of impairment for left/right eye/ear).

Each impairment severity question had a four-category response format:

- 1) Not at all impaired
- 2) Some visual impairment
- 3) Severe visual impairment
- 4) Blind

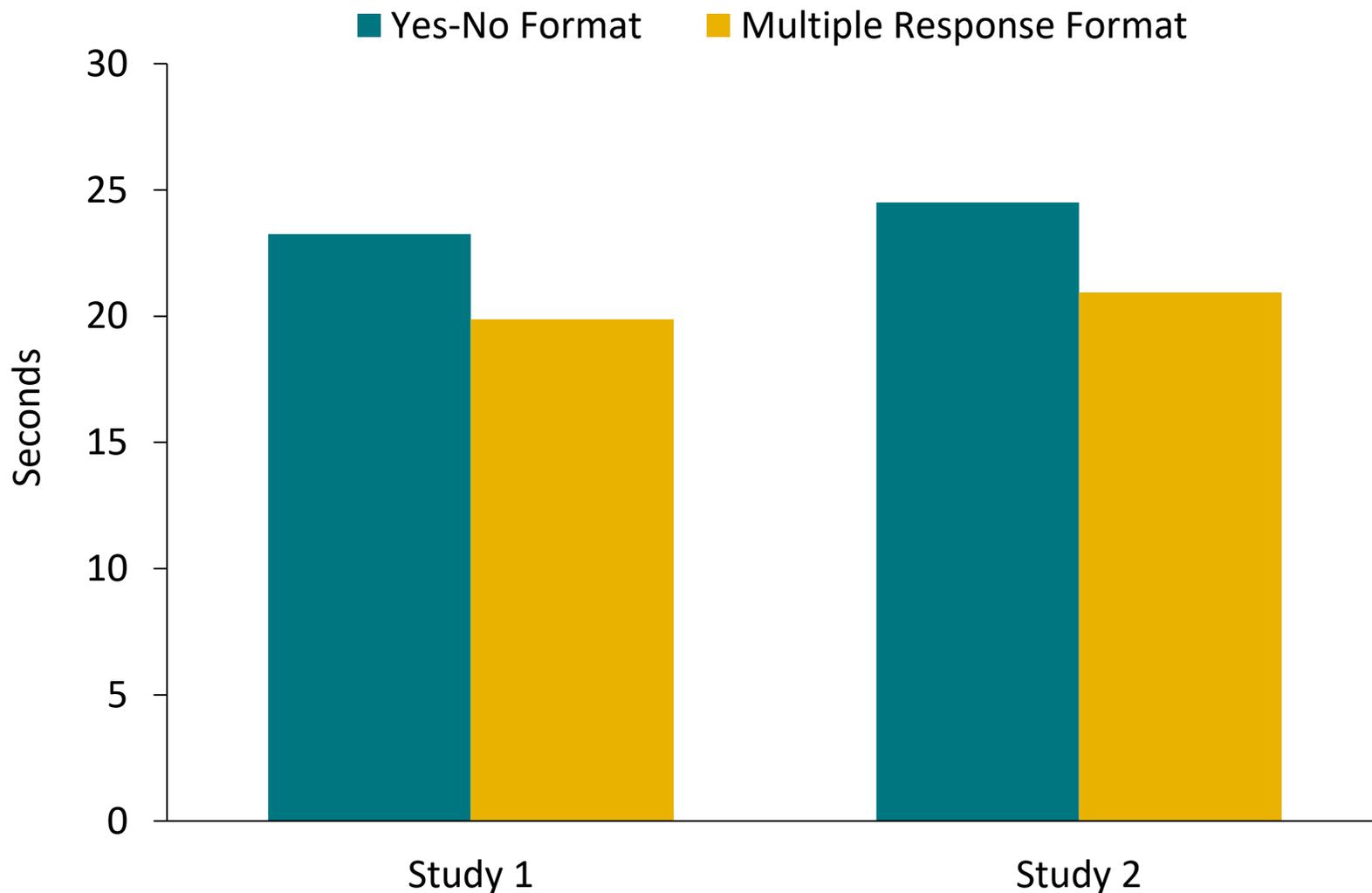
- 1) No hearing loss
- 2) Some hearing loss
- 3) Severe hearing loss
- 4) Totally deaf

- 1) Not at all impaired
- 2) Some physical impairment
- 3) Severe physical impairment
- 4) Total loss of function of the affected area(s)

- 1) No difficulty at all
- 2) Slight/Mild difficulty learning, remembering, or concentrating
- 3) Moderate difficulty learning, remembering, or concentrating
- 4) Severe difficulty learning, remembering, or concentrating

Results

Results – Time to Complete



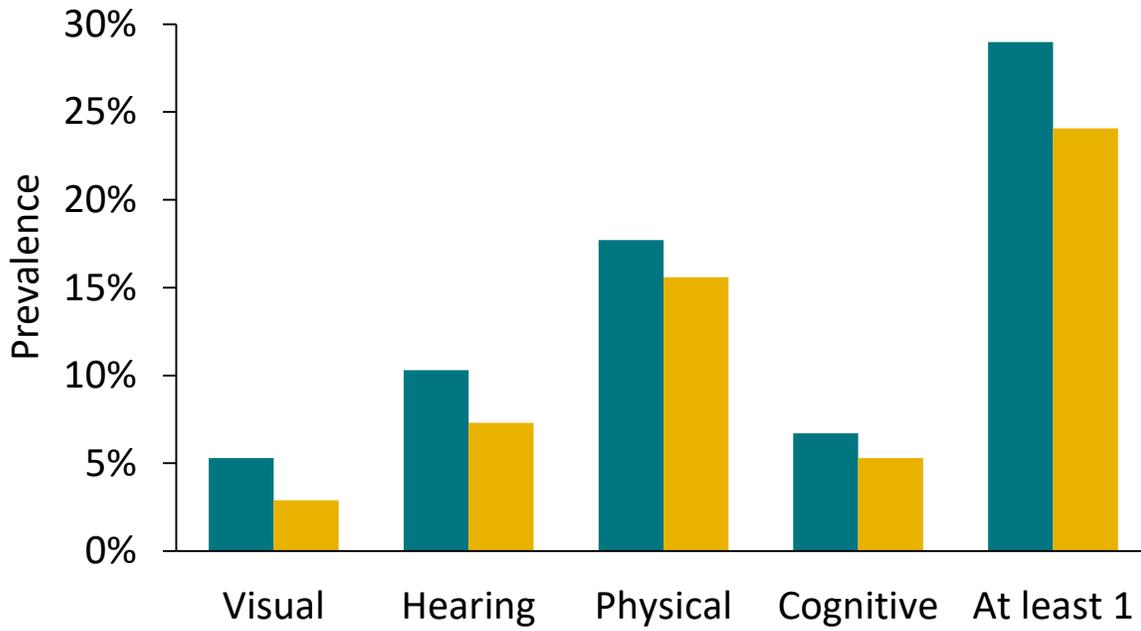
In both studies, those in the YNF took **more time to complete** than those in the MRF.

Results – Prevalence

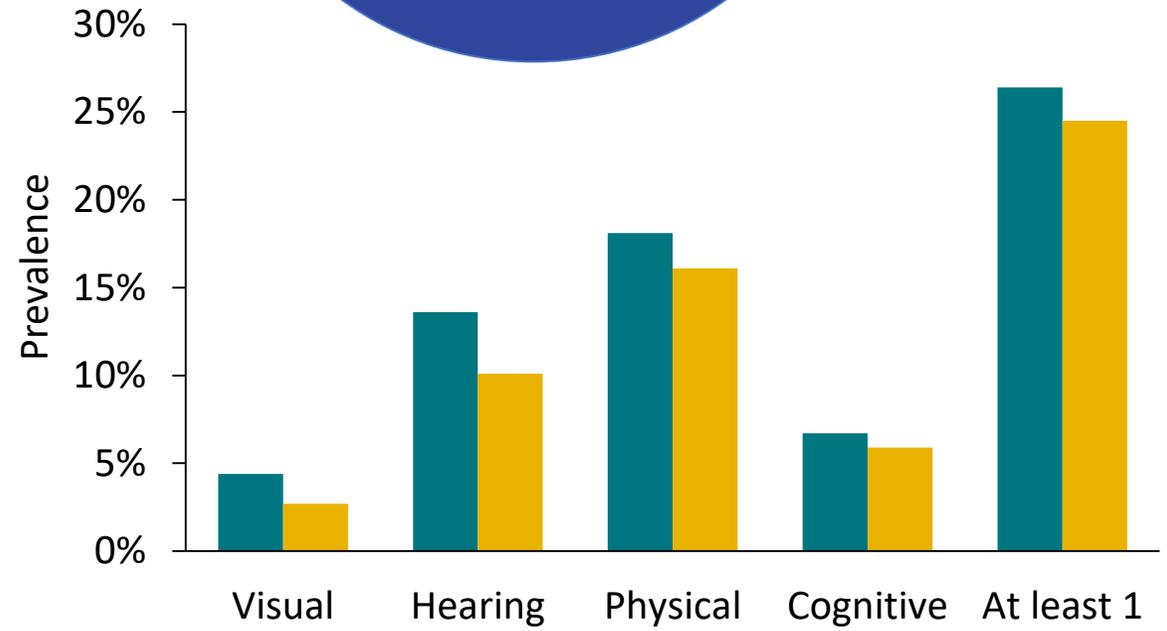


■ Yes-No Format ■ Multiple Response Format

The YNF led to **higher prevalence rates** across all four types of impairment and with at least one type of impairment.

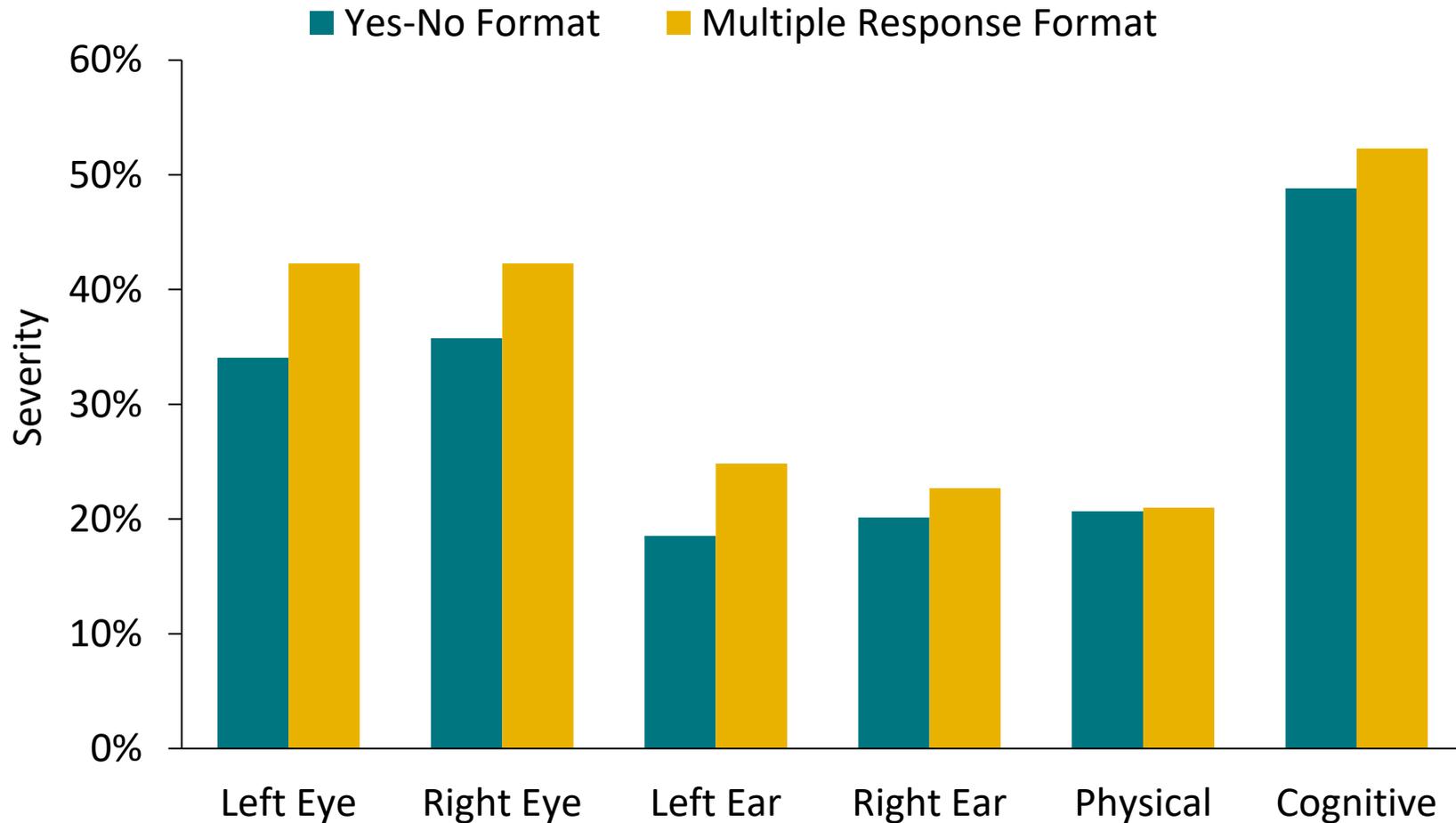


Study 1



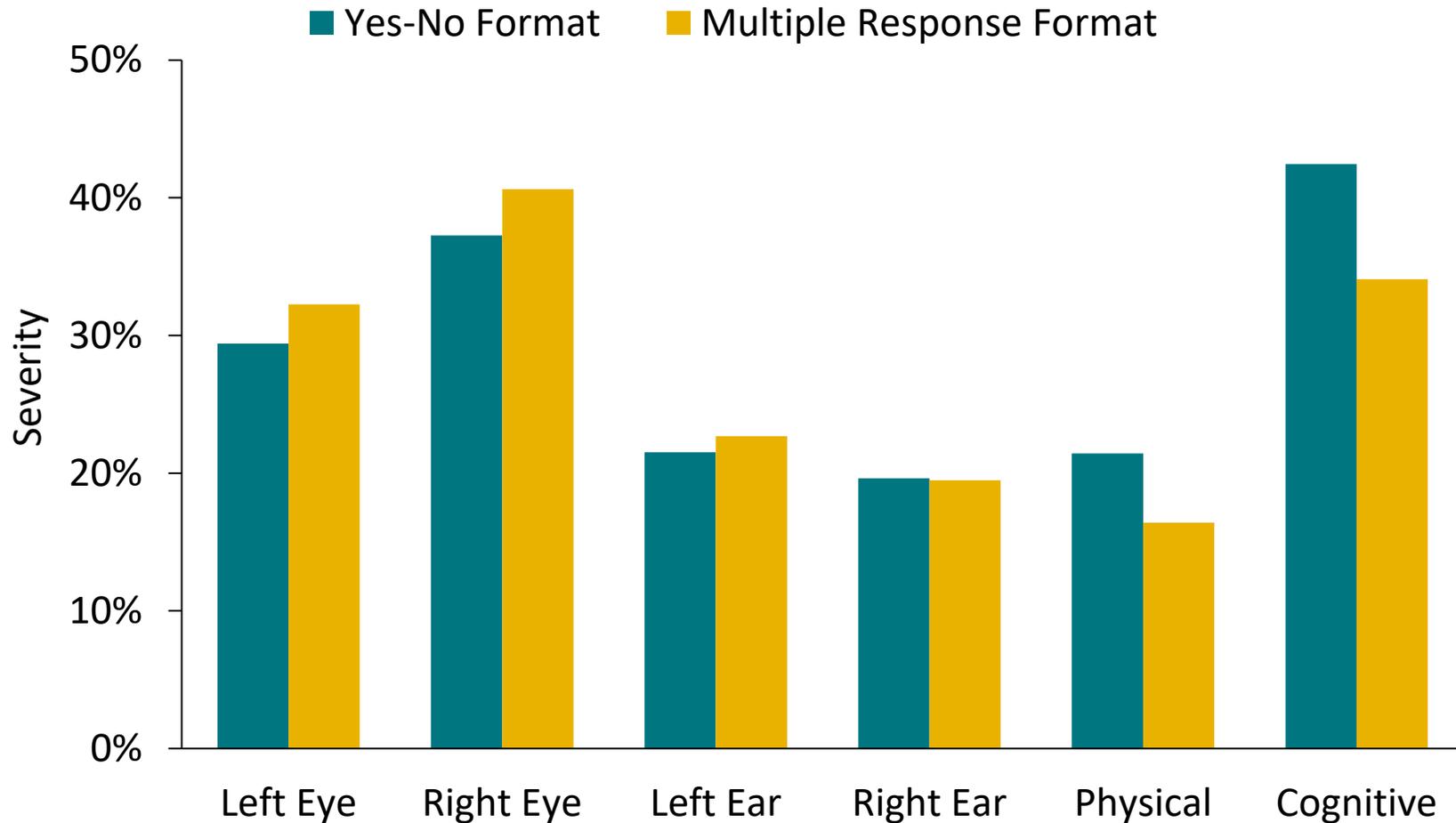
Study 2

Results – Severity of Impairment (Study 1)



Respondents were somewhat more likely to indicate a severe impairment when using the MRF compared to the YNF.

Results – Severity of Impairment (Study 2)



We found minor differences in severity due to response format, but the pattern did not fully replicate Study 1.

Discussion

Discussion

We replicated past research results for topics as diverse as consumer purchases, product ownership, and employment. We found consistent and significant effects for response format: a **YNF led to higher prevalence estimates** than a MRF.

The key experimental findings were replicated in both an opt-in sample and a probability-based sample.

The effects of response format were quite dramatic for the **lowest prevalence impairment**—for visual impairment, a YNF yielded a 83% higher prevalence (5.3% vs. 2.9%) in Study 1 and a 63% higher prevalence in Study 2 (4.4% vs. 2.7%).

Discussion

One caveat of this study is that disability prevalence can be affected by mode of survey administration:

- **Those with visual disabilities may be less likely to complete visually administered questionnaires (online or paper)**
- **Those with auditory disabilities may be less likely to complete orally administered questionnaires (telephone or in-person)**

Our future research is also comparing the use of filter questions with YNF versus going straight to a graded impairment scale without a filter.

Thank you!

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