Promoting the COVID-19 Vaccine Second Dose in Odisha, India:
The Role of Humor, Collectivistic Appeal, and Gender

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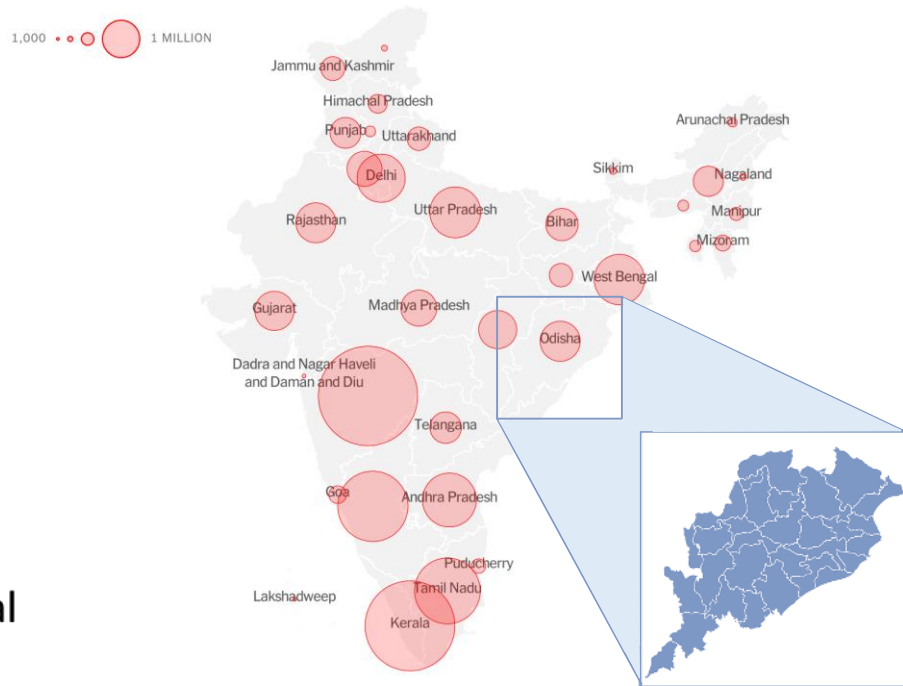
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Background

- India: < **42 million** COVID-19 cases[1]
  - < **509,000** COVID related deaths[1]

- Odisha: < **1 million** COVID-19 cases[5]
  - < **9,000** COVID related deaths[5]

- **Largest gap in the world** between 1st and 2nd COVID-19 vaccine doses[2]
  - 1st dose: **90%** of Indian adults[3]
  - 2nd dose: **60%** of Indian adults[4]

- Young people
  - **One third** of India's population[6]
  - Lower vaccination rates than the general population[7]
  - Use technology to organize for social change[8]

Total cases

1,000 · · ○ ◯   1 MILLION

Jammu and Kashmir
Himachal Pradesh
Punjab Uttarakhand
Delhi
Rajasthan
Uttar Pradesh
Bihar
Arunachal Pradesh
Sikkim
Nagaland
Manipur
Mizoram
West Bengal
Gujarat
Madhya Pradesh
Odisha
Dadra and Nagar Haveli and Damán and Diu
Telangana
Goa
Andhra Pradesh
Puducherry
Lakshadweep
Tamil Nadu
Kerala

Research Questions

► How do **collectivistic and individualistic appeals**, **humor**, and **protagonist gender** affect vaccination attitudes, beliefs, and intentions?
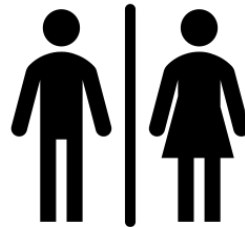
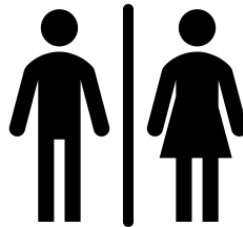# Research Questions

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  ► Can collectivism/individualism and humor be manipulated?

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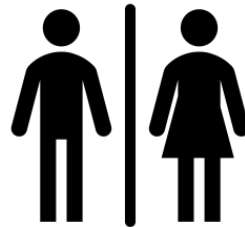   ► Can collectivism/individualism and humor be manipulated?

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▶ How do **collectivistic and individualistic appeals, humor**, and **protagonist gender** affect vaccination attitudes, beliefs, and intentions?
  ▶ Can collectivism/individualism and humor be manipulated?
  ▶ Is a collectivistic appeal more effective than an individualistic appeal?
▶ How does humor affect vaccine messaging?

Research Questions

▶ How do **collectivistic and individualistic appeals, humor**, and **protagonist gender** affect vaccination attitudes, beliefs, and intentions?
  ▶ Can collectivism/individualism and humor be manipulated?
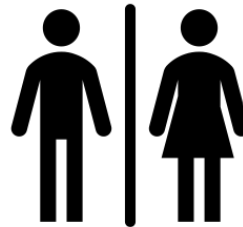 ▶ Is a collectivistic appeal more effective than an individualistic appeal?
  ▶ How does humor affect vaccine messaging?
▶ How does the protagonist's gender affect audience acceptance of vaccination messages?

Methodology: Online Experiment (between-subjects design)

► **2 (appeal: individualistic or collectivistic)**   **x**

             2 (tone: humor or non-humor)   **x**

                 2 (protagonist gender: male or female)
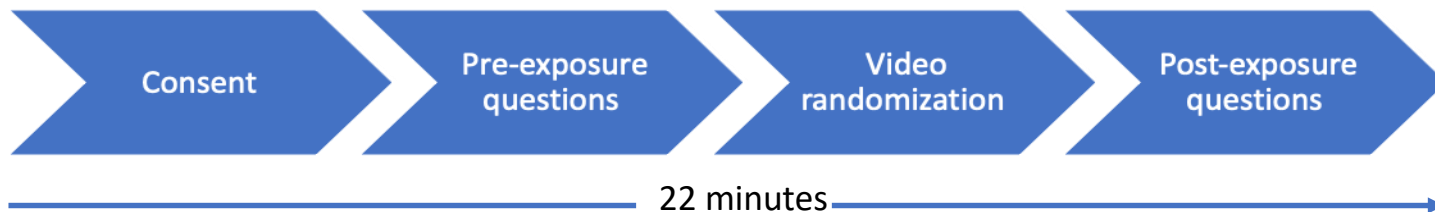
Consent → Pre-exposure questions → Video randomization → Post-exposure questions

22 minutes

Video Production

	Experimental Design
Gender	Protagonist role filled by Munna (male) or Mini (female). Same script.

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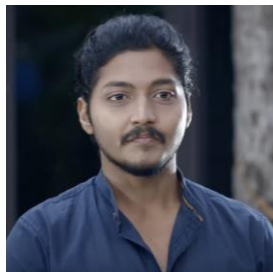
	Experimental Design
Gender	Protagonist role filled by Munna (male) or Mini (female). Same script.
Humor/ Serious	Similar content, humor added through delivery, word choice, and use of dialect. Subtle soundtrack differences.
Individual/ Collective	Script either emphasizes vaccination to benefit self or to benefit family/community.

Link to video

[Video sample: Collectivistic, Humor, Female Protagonist](#)

Recruitment

Incentive of ₹200 PhonePe/Google Pay upon completion of survey.

Description of the Sample

N = 2,349			
Female	73%	**Age**	
Education		< 20 yrs	21.2%
Primary	5.1%	20-25 yrs	32.0
Secondary	10.2	25-30 yrs	27.2
Post-secondary	30.3	> 30 yrs	19.7
Some college	16.7		
College grad	37.7		

COVID Vaccination Status

1st dose	99.6%
2nd dose	95.6%
Booster	18.6%

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Can collectivistic orientation, humor, and protagonist gender be manipulated? Did the manipulations work?

► **Collectivistic vs. individualistic orientation**
  ► *"The video showed the __benefits__ of taking action, __responsibility__ for taking action, and __importance__ of COVID-19 vaccines were for families or communities (as opposed to individuals).*

  ► *0=individuals…… 3 = collectives*

  ► M_{indiv} = 0.92 (*SD* = 1.17), M_{collec} = 2.27 (*SD* = 1.05), $\underline{t}$ = 29.42, *p* < .001

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▶ **Protagonist gender**
  ▶ Male protagonist (78.6% accurate), female protagonist (72.1% accurate), X^2 = 13.67, *p* < .001

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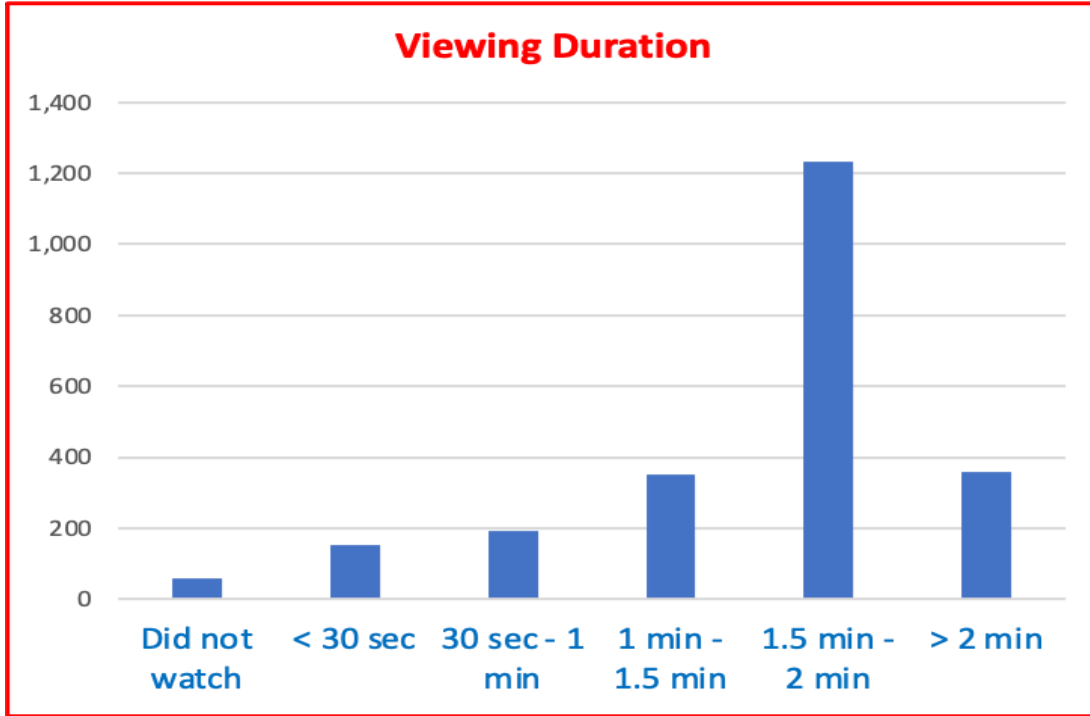▶ Collectivistic-oriented video perceived as more collectivistic than individualistic-oriented video

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▶ Protagonist gender correctly identified

Viewing Duration

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(Bar chart showing viewing duration with categories: "Did not watch" ≈ 60, "< 30 sec" ≈ 150, "30 sec - 1 min" ≈ 195, "1 min - 1.5 min" ≈ 355, "1.5 min - 2 min" ≈ 1,230, "> 2 min" ≈ 360. Y-axis from 0 to 1,400.)

- Male viewer > female viewers
- People with less education > people with higher education
- No difference by age or experimental condition

(Video duration: 1 min 55 sec)

Outcomes, after Exposure to Video

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  ► 5-point scale
  ► α = .95 (pre), α = .89 (post)
  ► Pre: M = 4.23 (0.81) to Post: M = 4.17 (0.75), t = 4.95, p < .001
    ● Reduction in acceptance: 32%
    ● No change in acceptance: 47%
    ● Improvement in acceptance: 21%

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    ● Improvement in acceptance: 21%
▶ Predictors of improvement in acceptance
  ● Male viewers (p < .05)
  ● Not having a skeptical attitude (p < .001)
  ● Watching the video more often (p < .05)
  ● Watching the humorous video (p < .001)

Discussion

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▶ **Humorous appeal appears the best strategy for reducing skepticism**

Thank You !

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Works Cited

1. Dong E, Du H, Gardner L. An interactive web-based dashboard to track COVID-19 in real time. *The Lancet Infectious Diseases*. 2020;20(5):533-534. doi: 10.1016/S1473-3099(20)30120-1

2. Mukherji B. 100 million Indians have skipped their second vaccine dose, leaving the country vulnerable to a third COVID wave. *Fortune*. https://fortune.com/2021/11/02/india-covid-vaccine-covishield-skip-second-dose-third-wave-cases/. Published November 2, 2021. Accessed January 26, 2022.

3. Menon S. Covid-19: How India missed its vaccination target. *BBC News*. https://www.bbc.com/news/world-asia-india-55571793. Published December 31, 2021. Accessed January 21, 2022.

4. Indian Council of Medical Research. *India COVID-19 Vaccine Tracker*. Ministry of Health and Family Welfare; 2021. Accessed January 12, 2022. https://analytics.icmr.org.in/public/dashboard/149a9c89-de6d-4779-9326-5e8fed3323b6

5. Ministry of Electronics & Information Technology. *MyGov- #IndiaFightsCorona COVID-19*. Government of India; 2022. https://www.mygov.in/covid-19/

6. Agarwal SK, Naha M. *COVID-19 Vaccine Hesitancy in India: An Exploratory Analysis*. Public and Global Health; 2021. doi:10.1101/2021.09.15.21263646

7. Smith M, Heyward G, Kasakove S. Why Young Adults Are Among the Biggest Barriers to Mass Immunity. *The New York Times*. https://www.nytimes.com/2021/06/28/us/covid-vaccine-immunity.html. Published June 28, 2021. Accessed July 8, 2021.

8. Thackeray R, Hunter M. Empowering Youth: Use of Technology in Advocacy to Affect Social Change. *Journal of Computer-Mediated Communication*. 2010;15(4):575-591. doi:10.1111/j.1083-6101.2009.01503.x

Image: Tracking Coronavirus in India: Latest Map and Case Count. *The New York Times*. https://www.nytimes.com/interactive/2021/world/india-covid-cases.html. Published February 16, 2022. Accessed February 16, 2022.