The *Dr. Oz* Effect: How Talk Shows Affect Household Consumption and Healthy Behaviors

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Project Overview

Of the many financial decisions that households face, decisions regarding health have some of the biggest personal consequences. In light of a growing body of evidence that better information can reduce mistakes that low-income households make in financial decision-making (e.g. Campbell 2006), there are potentially significant welfare gains from policies that assist households in their health investments. Yet there has been relatively little empirical work on what information households use in health decision-making, or how changes in information exposure might affect their decisions.

This project considers an unconventional educational strategy – education through TV entertainment – to determine how household financial decisions regarding health respond to advice from a celebrity doctor: Mehmet Oz. We obtain exogenous variation in exposure to the *Dr. Oz* show by using randomness in channel positioning across markets. We then measure the impacts of that TV exposure on household consumption and time use.

We focus on the *Dr. Oz* show because it is the highest-rated health TV show with over 3 million viewers daily in recent years. The show is 44 minutes long (plus 16 minutes of ads) and airs five days a week – with about 160 new episodes per year. Among physicians and public-health experts, there is debate over the value of TV shows (and other media) in *Dr. Oz's* genre. These shows often suggest homeopathic remedies to treat health conditions instead of, or in addition to, traditional allopathic treatments. For example, Korownyk et al. (2014) found empirical scientific basis for only 46% of the remedies advocated by *Dr. Oz*. On the other hand, the *Dr. Oz* show may provide information on affordable substitutes to formal healthcare services, which could improve health outcomes for low-income households.

This project adds to the literature on the impacts of mass media on economic and social behaviors (see DellaVigna and La Ferrara (2015) for a review). In health economics, La Ferrara et al. (2012) find that soap operas influence the fertility choices of Brazilian women (see also Kearney and Levine (2014) for MTV's *16 and Pregnant*), and Vaughan et al. (2000) and Kennedy et al. (2004) find that soap opera storylines involving HIV increased the number of calls to an AIDS prevention hotline. Farrelly and Nonnemaker (2009) find that anti-smoking ads reduce smoking among teenagers. Outside of health economics, Kearney and Levine (2015) find that exposure to *Sesame Street* positively affects short-term and long-term human-capital outcomes. DellaVigna and Kaplan (2007) and Martin and Yurukoglu (2016) show that exposure to the Fox News Channel increases Republican vote shares (see also Gentzkow and Shapiro 2010; Snyder and Stromberg 2010). Card and Dahl (2011) find that domestic violence increases after unexpected losses in televised football games. Garthwaite (2014) shows that Oprah's book club endorsements increased book sales for selected titles.

Our project may have greater implications for household financial decisions than some of this previous work; households spend about 20% of their income on healthcare and food, and less than 1% on books, for example. Moreover, several government programs subsidize households' consumption of healthcare services and food (e.g., SNAP, WIC, Medicaid, Medicare, the ACA individual market), so household consumption of these items affects government

expenditures. Still, there has been little evidence on how households decide to allocate more or less resources toward health-related goods and activities (in the absence of relative price changes). We fill this gap by asking whether households change their consumption patterns or reallocate their time in response to the information relayed on health-related TV shows.

Empirical Approach

The project's identification strategy adopts an instrumental-variables approach based on Martin and Yurukoglu (2016). The instrument relies on exogenous variation in where the *Dr. Oz* show appears in the channel number lineup across zip codes, with the hypothesis being that people are more likely to watch the show when it airs on a low channel number. In the case of the Fox News Channel and other cable-news networks, Martin and Yurukoglu (2016) demonstrate a strong first stage impact of channel numbering on viewership.

To estimate the first stage, we are requesting grant funding to purchase the Nielsen Focus data. The Focus data includes channel listings by system and year, with associated zip codes, for the years 1998 through 2013. It also includes zip code level viewership, for network, cable, and satellite TV, for years 1998 through 2016.

Formally, our first-stage estimating equation is:

$$D_{ict} = \alpha_i + \alpha_{ct} + \gamma Z_{ict} + X_{ict}\beta + \eta_{ict} \tag{1}$$

where D_{ict} is the number of *Dr. Oz* viewers per capita for zip code i in county c at time t, α_i are zip code fixed effects, α_{ct} are county-year fixed effects, Z_{ict} is the channel number for *Dr. Oz*, and and η_{ict} is an error term. X_{ict} includes other covariates such the time of day the *Dr. Oz* show airs, the number of competing talk shows on TV at the same time, and other covariates describing zip code demographics and cable system characteristics. From Martin and Yurukoglu (2016) we expect a negative and significant estimate of γ.

Our main outcomes are constructed from microdata on household purchases. This comes from the Nielsen market scanner data from the Chicago Kilts Center, which we have access to via the Princeton libraries. The market scanner data is high-frequency data on prices and purchases for millions of product categories (see Ng 2015). Since we know the topics that were discussed on the *Dr. Oz* show from the Nielsen Focus data's show descriptions, we can test whether people are more likely to buy products that were discussed on the show (e.g., vitamins, supplements, and grocery items) after the show aired. We can also test whether people are less likely to buy unhealthy items such as cigarettes and alcohol. An advantage of the scanner data is the comprehensive view of household consumption baskets, meaning that we can look for substitution effects across different categories of spending.

Thus, our second stage estimating equation is:

$$Y_{ict} = \alpha_i + \alpha_{ct} + \rho\hat{D}_{ict} + X_{ict}\beta + \epsilon_{ict} \tag{2}$$

where Y_{ict} is per capita dollars spent on "healthy" or "unhealthy" items (according to *Dr. Oz*) for zip code i in county c at time t, ϵ_{ict} is an error term, and the other terms are the same as in equation (1). The identification assumption is that conditional on the fixed effects and covariates, the channel position Z_{ict} affects the outcome Y_{ict} only through *Dr. Oz* viewership D_{ict}. We also assume instrument relevance, where the rule of thumb requires an F-statistic greater than 10 when testing the statistical significance of γ in equation (1). We will use two-way clustering of standard errors by county and year.

References

Campbell, J. (2006) "Household Finance." Journal of Finance 61(4), 1553-1604.

Card, D., and Dahl, G.B. (2011) "Family Violence and Football: The Effect of Unexpected Emotional Cues on Violent Behavior." Quarterly Journal of Economics 126, 1-41.

DellaVigna, Stefano, and Eliana La Ferrara. (2015) "Economics and social impacts of the mass media." NBER Working Paper 21360.

DellaVigna, Stefano, and Ethan Kaplan. (2007)"The Fox News effect: Media bias and voting." Quarterly Journal of Economics 122.3: 1187-1234.

Farrelly, M.C., Nonnemaker, J., Davis, K.C. and Hussin, A. (2009) "The Influence of the National truth Campaign on Smoking Initiation." American Journal of Preventive Medicine, 36(5):379-84.

Garthwaite, Craig L. (2014) "Demand spillovers, combative advertising, and celebrity endorsements." American Economic Journal: Applied Economics 6.2.

Gentile, D. A., Oberg, C., Sherwood, N.E., Story, M., Walshe D.A., and Hogan, M. (2004) "Well-Child Visits in the Video Age: Pediatricians and the American Academy of Pediatrics' Guidelines for Children' s Media Use." Pediatrics 114(5), 1235-1241.

Gentzkow, Matthew, and Jesse M. Shapiro. (2010) "What drives media slant? Evidence from US daily newspapers." Econometrica 78.1: 35-71.

Kearney, M.S., and Levine, P.B. (2014) "Media Influences on Social Outcomes: The Impact of MTV's 16 and Pregnant on Teen Childbearing." NBER Working Paper No. 19795.

Kearney, M.S., and Levine, P.B. (2015) "Early Childhood Education by MOOC: Lessons from Sesame Street." NBER Working Paper No. 21229.

Kennedy, M. G., O'Leary, A., Beck, V., Pollard, W. E., and Simpson, P. (2004) "Increases in Calls to The CDC National STD and AIDS Hotline Following AIDS-related Episodes in a Soap Opera." Journal of Communication 54(2), 287-301.

Korownyk, Christina, et al. (2014) "Televised medical talk shows—what they recommend and the evidence to support their recommendations: a prospective observational study." BMG 349.

La Ferrara, E., Chong, A., and Duryea, S. (2012) "Soap Operas and Fertility: Evidence from Brazil." American Economic Journal: Applied Economics 4(4), 1-31.

Martin, Gregory J., and Ali Yurukoglu. (2016) "Bias in Cable News: Real Effects and Polarization."

Ng, Serena. (2015) "Opportunities and challenges: Lessons from analyzing terabytes of scanner data." Columbia University Working Paper.

Snyder, James M., and David Stromberg. (2010) "Press coverage and political accountability." Journal of Political Economy 118.2: 355-408.

Vaughan, P., Rogers, E., Singhal, A., and Swalehe, R. (2000) "Entertainment-education and HIV/AIDS Prevention: A Field Experiment in Tanzania." Journal of Health Communications 5(1), 81-100.

Budget

We request a total project budget of $20,000. The budget has two components: a proprietary data purchase and compensation for a research assistant.

First, we request $15,000 to purchase access to the Nielsen Focus data. This data set includes channel listings by system and year, with associated zip codes, for the years 1998 through 2013. It also includes zip-code level viewership, for network, cable, and satellite, for the years 1998 through 2016. The full price of the data set is $35,000. We have a commitment by Professor Daniel L. Chen of Toulouse School of Economics (daniel.chen@iast.fr) to provide $20,000 toward this purchase. Prof. Chen will provide documentation of this commitment from a TSE grants officer. Therefore we request $15,000 to cover the rest of the purchase cost.

Second, we request $5,000 to compensate a part-time research assistant to work on data preparation. The research assistant will undertake the labor-intensive process of aggregating the large-N Neilson scanner data sets by year and zip code to merge with the ratings data. We anticipate hiring a RA at $25 per hour, for 8 hours per week, for 25 weeks: $\$25 \times 8 \times 25 = \$5,000$.

The goal of the project is to produce at least one published paper. The results may be relevant to researchers interested in the role of mass media and advertising on household financial decisions. The results may be useful for policymakers tasked with regulating cable television, advertising, and conflict-of-interest disclosures in mass media markets. Our merged panel data set on *Dr. Oz* viewership, household consumption of health and food products, and healthy behaviors will be made available online for future researchers to use.

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Research Appointments

University of Warwick

Assistant Professor, Department of Economics, 2016- (on leave until 2017).

Princeton University

Postdoctoral Research Fellow, Center for the Study of Democratic Politics, 2016-2017.

Education

Columbia University

Ph.D	2016	Economics
J.D.	2010	Law

University of Amsterdam

LLM	2010	International Criminal Law

University of Texas at Austin

B.A.	2007	Plan II Honors, Economics, Government, and Philosophy

Research Interests

Law and Economics, Political Economy, Applied Microeconomics, Machine Learning

Peer-Reviewed Publications

"Elections and divisiveness: Theory and evidence" (with Massimo Morelli and Richard Van Weelden), *Journal of Politics* (forthcoming).

"Intrinsic motivation in public service: Theory and evidence from state supreme courts" (with Bentley MacLeod), *Journal of Law and Economics* (November 2015).

"On the behavioral economics of crime" (with Frans van Winden), *Review of Law and Economics*, vol. 8 no. 12 (June 2012).

Working Papers

"The political economy of tax laws in the U.S. states" (job market paper).

"The performance of elected officials: Evidence from state supreme courts" (with Bentley MacLeod).

"Sequential decision-making with group identity" (with Jessica Van Parys).

"The impacts of legal schools of thought" (with Daniel Chen and Suresh Naidu).

"Religious freedoms , church-state separation, and religiosity: Evidence from randomly assigned judges" (with Daniel Chen).

"Aging and retirement in a high-skill group: The case of state supreme court judges" (with Bentley MacLeod).

"Local public finance and discriminatory policing: Evidence from traffic stops in Missouri" (with Jeffrey Fagan and Allison Harris).
"Property taxes and local labor markets: Evidence from staggered property reassessments."
"The making of international tax law: Empirical evidence from treaty text" (with Omri Marian).

Other Publications

"New Policing, New Segregation: From Ferguson to New York" (with Jeffrey Fagan), *Georgetown Law Journal* (forthcoming).

Grants

Columbia Program for Economic Research Seed Grant (with Suresh Naidu), "Laws, Contracts, and Performance: Evidence from Collective Bargaining Agreements," $6,500 (2014-2015) (resulting in NSF Grant SES-1459932, $160,000).
Columbia PER Seed Grant (with Bentley MacLeod), "Employment Conditions and Judge Behavior," $6,000 (2012-2013) (resulting in NSF Grant SES-1260875, $228,000).
Columbia Experimental Lab in the Social Sciences Research Grant (with Jessica Van Parys), "Bayesian Communication with Group identity," $1,000 (2013).

Fellowships and Awards

Russell Sage Foundation Summer Institute in Computational Social Science (2017)
Research Fellowship, Columbia University Department of Economics (2015-2016)
C. Lowell Harriss Dissertation Fellowship, Lincoln Institute of Land Policy (2014-2015)
NSF Graduate Research Fellowship (2011-2014)
Faculty Fellowship, Columbia University Department of Economics (2010-2011, 2014-2015)
Harlan Fiske Stone Scholar, Columbia Law School (2008-2010)

Teaching Appointments

New York University
Project Advisor, Machine Learning and Computational Statistics (Spring 2017)
Columbia University
Adjunct Professor, Master's Program Thesis Course (Spring/Summer 2017)
Instructor, Law and Economics (undergraduate) (Summer 2014)
TA, Perspectives on Economic Studies (PhD), Profs. Joe Stiglitz and Jeff Sachs (Spring 2013)
TA, Political Economy (undergraduate), Prof. Massimo Morelli (Fall 2012)

Software Development

Free Law Project (courtlistener.com)
Columbia Econ TextLab (textlab.econ.columbia.edu)

Referee Service

Journal of Public Economics, Macroeconomic Dynamics, *Scandinavian Journal of Economics*

Seminar and Conference Presentations

2017

- Israel Law and Economics Association
- Princeton Public Law Working Group
- Association for the Study of Religion, Economics, and Culture
- Northwestern University Colloquium on Law and Economics
- ETH Zurich Center for Law & Economics

2016

- Bocconi University Department of Economics
- Princeton Center for Study of Democratic Politics
- Conference on Empirical Legal Studies in Europe
- American Law and Economics Association

2015

- Southern Economics Association
- Georgetown Symposium on Race and Policing
- Columbia Frontiers of Urban Economics Conference
- NYU Colloquium on Law, Economics, and Politics
- American Political Science Association
- Society of Labor Economists
- Society for Institutional & Organizational Economics
- American Law and Economics Association
- Princeton CSDP Workshop on the Political Economy of Bureaucrats

2014

- Latin-American Workshop in Law and Economics
- NBER Law and Economics Summer Institute
- LSE-NYU Conference on Political Science and Political Economy

2013

- Conference on Empirical Legal Studies
- American Law and Economics Association

2012

- International Atlantic Economic Conference

2009

- Heidelberg "Beyond the Economics of Crime" Conference

Expert Testimony

Statistical Analysis for DOJ Civil Rights Investigation into Ferguson Police Department, 207-42-6 (2015).

Professional Licenses

Attorney at Law, State of New York (2010-)

Administrative Service

Organizer, Columbia University Political Economy Seminar (2013-2014).
President, Columbia University Association of Graduate Economics Students (2012-2013).
Undergraduate Curriculum Adviser, Columbia Economics Department (2011-2014).
Representative, Columbia Law School Student Senate (2007-2009).

References

W. Bentley MacLeod (dissertation sponsor), Professor of Economics, Law, and International/Public Affairs, Columbia University, +1 (310) 571-5083, bentley.macleod@columbia.edu

Suresh Naidu, Assistant Professor of Economics and International/Public Affairs, Columbia University, +1 (212) 854-0027, sn2430@columbia.edu

Massimo Morelli, Professor of Political Science and Economics, Bocconi University, +39 02 5836 5495, massimo.morelli@unibocconi.it

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Employment

Assistant Professor, Department of Economics at Hunter College, August 2016–present.

Adjunct Assistant Professor, The Dartmouth Institute, July 2016–present.

Postdoctoral Fellow, The Dartmouth Institute for Health Policy and Clinical Practice, 2015–2016.

Education

Ph.D. Economics, Columbia University, 2015.

B.A./M.A. Economics, University of Georgia, 2009.

B.A. Political Science, University of Georgia, 2009.

Publications

Physician Practice Style Variation– Implications for Policy (with Jonathan Skinner). 2016. *JAMA Internal Medicine*. doi: 10.1001/jamainternmed.2016.4433

Variation in Physician Practice Styles Within and Across Emergency Departments. 2016. *PLoS ONE*, 11(8), 1–19. doi: 10.1371/journal.pone.0159882

Provider Practice Style and Patient Health Outcomes: The Case of Heart Attacks (with Janet Currie & W. Bentley MacLeod). 2016. *Journal of Health Economics*, 47, 64–80.

Noncognitive Skills and the Gender Disparities in Test Scores and Teacher Assessments: Evidence from Primary School (with Christopher Cornwell and David Mustard). 2013. *Journal of Human Resources*, 48(1), 238–266.

The New SAT and Academic Performance at a Flagship Public University (with Christopher Cornwell and David Mustard). 2011. SAT Wars, chapter 8. Ed: Joseph Soares. New York: Teachers College Press, 127–136.

Working Papers

The Long-Run Effects of Mandated Managed Care on Healthcare Utilization

The Association between Growth in Medicare Expenditures and Health Outcomes for Elderly Patients with Acute Myocardial Infarction: 1999-2014 (with Donald Likosky, Jonathan Skinner, Weiping Zhou, William Borden, and Milton Weinstein) (submitted)

Sequential Decision-Making with Group Identity (with Elliott Ash) (submitted)

Work in Progress

Measuring the Value of High-Quality Primary Care: Evidence from Medicare (with Itzik Fadlon)

Network Assortativity of Physicians Who Account for Extreme Amounts of Medicare Spending (with James O'Malley, Thomas Bubolz, and Jonathan Skinner)

The Evolution of Clinical Ability and Practice Style: Evidence from a Cohort of Newly Certified Internal Medicine Physicians, 2002-15 (with Weifeng Weng, Jonathan Skinner, Brenda Sirovich, and Rebecca Lipner)

All Politics is Local? Evidence from Foreclosures and Political Participation

Grants and Awards

PSC-CUNY Cycle 47 Traditional A Award, 2016-2017.

NBER Pilot to Re-Use Medicare Claims Data (with Itzik Fadlon), 2016-present.

RAND Summer Institute, 2015.

NBER Postdoctoral Fellowship in Aging (declined), 2015-2016.

External Grants & Awards in Graduate School: R36 AHRQ Grants for Health Services Research Dissertation Program, NSF SBE Doctoral Dissertation Research Improvement Grant, NSF Graduate Research Fellowship Program in Economics, Jacob K. Javits Graduate Fellowship, by 2015.

Columbia University Grants & Awards: GSAS Faculty Fellowship, Lewis A. Sanders Endowed Fellowship in Economics, Columbia Experimental Lab in the Social Sciences Research Grant (with Elliott Ash), Economics Department Wueller Best Dissertation Proposal (runner-up), Applied Microeconomics Research Grants, by 2015.

University of Georgia Grants & Awards: Summa Cum Laude; Phi Beta Kappa; Marshall Scholarship Finalist; 1st prize UGA Honors Senior Thesis; 2nd prize UGA Libraries Senior Thesis; UGA Hamilton-Lokey Graduate Fellowship; UGA International Research Symposium; Georgia HOPE Scholarship; International Baccalaureate Diploma; by 2009.

Presentations

2016: The Dartmouth Institute for Health Policy and Clinical Practice

2015: Analysis Group, Congressional Budget Office, Cornerstone Research, The Dartmouth Institute, Duke Fuqua, Emory HPM, Hunter College, Mathematica, NERA, RAND, Southern Economic Association Meetings, University of Florida, University of Georgia, University of Miami, Weill Cornell, Yale HPM

2010: American Economic Association Meetings, Society of Labour Economists Conference, Association for Education Finance and Policy

2009: Wake Forest University Rethinking Admissions Conference, Association for Education Finance and Policy

Teaching

Course evaluations, syllabi, and lecture slides are available upon request.

Master's Linear Econometric Analysis, Hunter College, Fall 2016.

Undergraduate Introduction to Econometrics, Hunter College, Fall 2016–present.

Undergraduate Health Economics, Hunter College, Spring 2017.

Teaching assistant for Undergraduate Econometrics, Undergraduate Public Economics, and Undergraduate Labor Economics, Columbia University, 2012.

Service

Reviewer for American Economic Journal: Economic Policy, Economics and Human Biology, Economics of Education Review, Health Affairs, Inquiry, Journal of Human Capital, New England Journal of Medicine

Faculty Mentor in the Bronx Science Behavioral & Social Science Research Program, 2015–2016.

Academic Advisor to undergraduate students, Columbia University, 2012–2014.

President and Class Representative to the Association of Graduate Economics Students (AGES), Columbia University, 2009–2014.

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