

Cues vs Incentives: Experimental Evidence on Habit Formation

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The problem

Evidence suggests that a substantial portion of the poor want to save, have funds available to save, but struggle to save (e.g. Collins et al. 2009, Duflo, Kremer and Robinson 2010). Being unable to save suggests that either the poor lack access to somewhere safe to save, or – like most people – find it difficult to put their savings plans into action (we will call this a self-management problem, as in Baumeister et al. 1994). The first problem seems relatively easy to solve – give people access to safe bank accounts. Dupas and Robinson (2010) show that this strategy can lead to surprising progress on poverty reduction. The second problem, while holding equal potential for pulling people out of poverty, may be more difficult to solve.

This project aims to assess the role of habits in allowing people to overcome self-management problems and to build a stock of saving for investment or buffering. It seems reasonable to think that people might form a habit of saving that allows them to overcome a problem of inattention, or that they may reduce a habit of consumption by showing themselves that they need to consume less (weaning in the terminology of Rozen 2010). There is, however, no existing evidence on habit formation in savings. Past studies have not been well designed to study this issue, either because deposits have not been made regularly (thus removing the possibility of creating automaticity) or have been triggered by an externally supplied trigger (Karlan et al. 2010). If habit formation is possible, then short-term interventions may have a large effect on long-term savings patterns.

The innovation

Our project innovates in two ways. First, it will be the first study that compares the effectiveness of two divergent strategies to encourage the formation of habits. Evidence from economics suggests that in some contexts temporary incentives can lead to changes in behavior that persist after incentives are no longer paid (Charness and Gneezy 2009; Volpp et al 2009). Our study will provide evidence about whether an obvious policy instrument, direct incentives, can generate a habit of saving that overcomes their self-management problem.

While incentives have been effective in some cases in generating changes in behavior that persist after incentives stop, in other cases, individuals treated with incentives quickly converge back to pre-treatment levels (Volpp et al 2008a; Volpp et al 2008b). Therefore, our study will also examine whether a “cue” based savings strategy, informed by research in psychology, will be more effective than incentives to save in generating lasting habits. Habit learning refers to a process by which individuals repeat the same behavior and that behavior, through repetition, becomes associated with a cue (Wood, Neal and Quinn 2006). Once a habit is formed, the cue naturally triggers the behavior (Wood and Neal 2009), even without conscious motivation toward a goal (Neal et al 2012). Within this psychological framework of habit learning, the approach of incentivizing savings may not generate lasting changes in habits, particularly if repeated behaviors become associated with incentives that are only temporary. However, providing a consistent context where behavior can be repeated and associated with a contextual cue may generate habits that last (Wood et al 2014). Our study will provide evidence about whether training individuals to develop a contextual cue for savings is effective in generating persistent savings habits.

Second, we will implement the first study design that can determine that it is not possible to form a habit of a particular behavior. While other studies have shown that a particular incentive or treatment

was not effective in forming an changes in behavior that persist over long periods of time (e.g. Charness and Gneezy 2009) these studies leave open the possibility that a stronger incentive paid for a longer time would have lead to a more persistent change in behavior. If we are to make progress in understanding where incentives can help form habits we need an approach that can rule out the possibility of habit formation for a particular behavior, otherwise we must search over an extremely large set of possible interventions. Our study design leverages ideas from psychology in order to provide one way to approach this question.

Experimental Design

In order to pursue the objective of providing direct evidence about the relative effectiveness of incentives and habit training, we are conducting a field experiment in Tamale, a medium-size city in Northern Ghana. We have enrolled 600 individuals in mobile-phone-based savings accounts, which provide more financial security than local banks and offer the opportunity for researchers to track information about all savings deposits and withdrawals. We have completed a baseline surveys and randomized these individuals into a 2 x 2 design, where half of the individuals are randomly assigned to receive bi-weekly incentives for increasing the balance of their savings account (to be paid over a period of three months) and half of the individuals are independently assigned to cue training. This study design allows for a direct comparison of the effectiveness of incentives and cue training on generating lasting savings habits.

The training will start with an explanation of the role of cues, including examples of contextual cues. Individuals will be asked to identify a contextual cue that they would associate with putting aside money for savings. We will then return on a bi-weekly basis to measure habit using the self-reported habit index developed by Lally et al (2010), which measures whether a habit has been formed. We will track savings behavior for all study individuals over the period of the three months of incentive payment and for three months after incentives are no longer being paid.

To understand whether it is possible to form a habit of savings in this context we leverage research in psychology, which implies that the SRHI reaches a maximum given sufficient repetition. We call this level maximum habituation, and a second aim of the study is to show that repetition beyond maximum habituation does not lead to any greater degree of habit formation. If we can show this is true, then an individual that reaches maximum habituation but still does not maintain the behavior in the long run cannot form an ongoing habit. This strategy forms the core of our attempt to provide a design that can show that it is not possible to form a habit of a particular behavior.

We expect our study will provide important evidence about whether it is possible to use savings incentives to generate lasting savings habits, whether habit learning can be taught and which of the two strategies is most effective in generating habits that persist.

Requested funding and timeline

Our ongoing study is being conducted in collaboration with Innovations for Poverty Action Ghana. We will begin payment of study incentives during the first week of June 2014. We are seeking additional funding of \$17,070 from the NBER, which would allow us to conduct a third round of surveys three months after the end of the intervention. This surveying is essential to understand whether habits persist in the long run. We expect to be able to complete the second round of data collection (covering the period of incentive payment) by September 2014 and the third and final round of data collection by November 2014.

References

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- Volpp K., A. Troxel, M. Pauly, H. Glick, A. Puig, D. Asch, et al.** 2009. A Randomized, Controlled Trial of Financial Incentives for Smoking Cessation. *New England Journal of Medicine*, 360 (699-709).
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Bi-Weekly Survey Cost

				Total US\$	Assumptions
	Cost	Unit	Number of units		
Survey wages	19	day	240	\$ 4,560	Assuming 3 surveys a day and a team of 8 surveyors working over 25 days plus 5 days of training
Surveyor food, communication, transport	10	day	240	\$ 2,400	Assuming 3 surveys a day and a team of 8 surveyors working over 25 days plus 5 days of training
Auditor wages	25	day	30	\$ 750	1 auditor working during survey period
Auditor food, communication, transport	10	day	30	\$ 300	1 auditor working during survey period
Team leader wages	21	day	60	\$ 1,260	2 team leaders working over 25 days plus 5 days of training
Team leader food, communication, transport	10	day	60	\$ 600	2 team leaders working over 25 days plus 5 days of training
Respondent compensation	2	unit	600	\$ 1,200	Gift for survey respondents (block of soap)
Project Coordinator	2000	month	2	\$ 4,000	Project Coordinator salary (including benefits)
Space for training	500	unit	1	\$ 500	Space for surveyor training
Data entry costs	2.5	unit	600	\$ 1,500	Costs of data entry
Total Direct Cost					
Total Costs				\$ 17,070	

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Education

California Institute of Technology, Pasadena, CA
MS in Social Sciences 2007
PhD in Social Sciences 2010
Yale University, New Haven, CT: Visiting Assistant in Research, 2007-2008
Wesleyan University, Middletown, CT: BA 2003, Major: College of Social Studies

Experience

Harvard School of Public Health, Assistant Professor of Global Health Economics, Global Health and Population Department, 2011-current
Harvard School of Public Health, Postdoctoral Fellow at the Center for Population and Development Studies, 2009-2011
Innovations for Poverty Action, Project Coordinator, Lima, Peru, 2004 – 2005
Federal Reserve Bank of New York, Research Associate, New York, NY, 2003- 2004

Professional Affiliations

Abdul Latif Jameel Poverty Action Lab, Research Affiliate, 2013 – current
Ideas 42, Research Affiliate, 2011 - current
Harvard Center for Population and Development Studies, 2011 - current
Innovations for Poverty Action, Research Affiliate, 2009 – current

Research and Teaching Fields

Applied Microeconomics, Behavioral Economics, Health Economics, Development Economics, Experimental Economics

Publications

Fink, G., **McConnell, M.** and Vollmer, S. (2014). Testing for Heterogeneous Treatment Effects in Experimental Data: False Discovery Risks and Correction Procedures. *Journal of Development Effectiveness*, forthcoming.

McConnell, M. Behavioral Economics and Aging. (2013). *Journal of the Economics of Ageing*, 1-2: 83-89

Sinclair, B., & **McConnell, M.** and Green, D. (2012). Detecting Spillover Effects: Design and Analysis of Multilevel Experiments. *American Journal of Political Science*, 56(4): 1055-1069.

Linardi, S., & **McConnell, M.** (2011). No Excuses for Good Behavior: Volunteering and the Social Environment. *Journal of Public Economics*, 95(5-6): 445-454.

Goeree, J. K., **McConnell, M.**, Mitchell, T. Tromp, T., & Yariv, L. (2010). The 1/d Law of Giving. *American Economic Journal: Microeconomics*, 2(1): 183–203.

Chou, E., **McConnell, M.**, Nagel, R., & Plott, C. (2009). The control of game form recognition in experiments: understanding dominant strategy failures in a simple two person ‘guessing game’. *Experimental Economics*, 12(2), 159-179.

Teaching Experience

Instructor, Behavioral Economics and Global Health, Harvard School of Public Health, Spring 2 2014

Instructor, Economics of Global Health, Harvard University, Spring 2014

Instructor, Introduction to Economics with Applications to Global Health, Harvard School of Public Health, Spring 2 2012, Fall 2 2012, Fall 2 2013

Instructor, Quantitative Methods for Impact Evaluation, Harvard School of Public Health, Spring 2013 (taught jointly with Jessica Cohen)

Teaching Assistant, Quantitative Methods for Impact Evaluation, Professor Jessica Cohen, Harvard School of Public Health, 2010

College of Social Studies External Examiner, Wesleyan University, 2008

Teaching Assistant, Introduction to Economics, Professor Charles Plott, California Institute of Technology, 2006, 2008

Teaching Assistant, Organization Design, Professor Colin Camerer, California Institute of Technology, 2007

Awarded Grants

Robert Wood Johnson Foundation Amount: \$200,000
Title: “Decision Fatigue in the Emergency Department and the Use of Hospital Services”
Co-PIs: Margaret McConnell and Jeremiah Schuur (Brigham and Women’s)
Dates: 11/1/2013-10/31/2015
M.McConnell: 10% effort (2 years)

Gates Foundation Amount: \$9,703,284
Title: “Financing the Delivery of Efficient, Effective, and Equitable Primary Health Care Systems in Africa”
PI: Peter Berman
Dates: 8/1/2013-7/31/2018
M.McConnell: 25% effort (first 2 years), 20% effort (next 3 years)

Gates Foundation Saving Lives at Birth/Burke Fellowship Amount: \$105,555
Title: “Do Financing and Fathers Lead to Better Birth Preparedness and Safer Motherhood?: Proposal for a Randomized Controlled Trial in Nairobi, Kenya”
PI: Jessica Cohen
Dates: 12/1/2012-11/30/2014

M.McConnell: 15% effort (2 years)

National Institutes of Health Amount: \$1,249,785
Title: “Nudging Doctors to Collaborate with Pharmacists to Improve Medication Adherence”
PI: Ira Wilson (Brown University)
Dates: 9/1/2010-8/31/2013
M. McConnell: 10% effort

Lab for Economic Applications and Policy Amount: \$10,000
Title: “Negotiating Delivery: Can Spousal Involvement Improve Maternal Health?”
PI: Jessica Cohen and Margaret McConnell
Dates: 9/2010-9/2012

Yale Savings and Payments Research Fund Amount: \$150,000
Title: “Incentives and Habit Formation”
Co-PIs: Gharad Bryan (LSE) and Margaret McConnell
Dates: 1/2012-12/2013

Program on the Global Demography of Aging
Title: “Pilot for an intervention to measure and correct visual acuity among older people in India and to measure the effects on social and economic wellbeing”
Co-PIs: David Bloom and Margaret McConnell
Dates: 8/2014-7/2015

Harvard Sustainability Science Program Amount: \$10,000
Title: “Identifying Barriers to Investments in Health: Making the transition from biofuel to gas cooking in Ghana”
PI: Margaret McConnell
Dates: 1/2012-12/2013

Russell Sage Foundation Amount: \$5,000
Title: “Encouraging Investments in Health Technology”
PI: Margaret McConnell
Dates: 7/31/2009-7/31-2011

Hewlett Foundation Amount: \$10,340
Title: “What Motivates Volunteers?”
PI: Sera Linardi and Margaret McConnell
Dates: 9/2007-9/2008

Manuscripts Under Submission

“Getting to the Top of Mind: How Reminders Increase Savings” with Dean Karlan, Sendhil Mullainathan and Jonathan Zinman, *NBER Working Paper 16205*, revise and resubmit *Management Science*

Abstract

Limited attention models generate the distinct prediction that reminders can affect

behavior, but there is relatively little evidence on whether and how reminders are effective in economic domains. We provide evidence, from three different field experiments, that reminders increase savings balances and goal attainment. Reminders that mention both financial incentives and specific goals are especially effective. Other content variation and timing variation does not matter as much. These results do not map neatly into existing models of limited attention. We provide a simple model of limited attention where relative differences in attention toward current and future expenses can explain how reminders could increase savings rates. Our results suggest that reminders that increase the salience of the benefits of saving are particularly effective. The simple model of limited attention proposed here identifies a role for lack of attention as a barrier to saving for the future, in addition to the rational inattention and inattention to prices or attributes that have been modeled in prior work.

“Personal Motivation: An Experiment on Individual Savings”

Abstract

This study provides experimental evidence about the barriers to adoption of formal savings in Africa. In collaboration with a large commercial bank, I conduct an experiment designed to measure the relative importance of convenience and information on the adoption of formal savings. When individuals can open an account at their place of business they are much more likely to open an account. Novel information about the benefits of savings has a slight but insignificant negative effect on account opening. While over half (55%) of individuals report an interest in opening an account when initially approached, only 2% of individuals are using the accounts 2 months later. I explore several potential explanations for the differences between individuals' self-reports of interest in the accounts and their later behavior. I argue that individuals' behavior in the experiment is consistent with social pressure to conform to the encouragement to open an account and some projection bias in predicting their future behavior. The results illustrate that for individuals struggling to save, encouraging enrollment in formal finance may be less effective than tools that help individuals follow through with self-reported savings intentions.

“Hey Look at Me: The Effect of Giving Circles on Giving” with Dean Karlan, *NBER*

Working Paper 17737

Abstract

Theories abound for why individuals give to charity. We conduct a field experiment with a Yale service club and find that the promise of public recognition increases giving. Some may claim that they give when offered public recognition in order to motivate others to give too, rather than for the more obvious expected private gain from increasing one's social standing. To tease apart these two theories, we also conduct a laboratory experiment with undergraduates, and find no evidence to support the alternative, altruistic, influence motivation. We conclude that donations increase after promises of public recognition primarily because of individuals' desire to improve their social image.

Manuscripts in Preparation

“Framing, Noisy Learning and the Adoption of Preventative Health Technologies” with Guenther Fink

Abstract

Despite ample evidence about the benefits of prevention, many individuals choose not to invest in prevention or do not consistently prevent. We conducted a laboratory experiment to better understand how individuals' willingness to invest changes over time and under different levels of underlying risk. We find that independent of the risk environment, the best predictor of prevention is subjects' recent past experiences, which can only partially be explained by learning about the effectiveness of the prevention technology. We introduce typical "public health messages" designed to encourage investment in prevention, varying whether the messages contain additional information. We show that these health messages have an effect on preventive behavior, even when they provide no additional information. Furthermore, the framing of health advice interacts with underlying risk. In risky environments, strongly worded messages work best while in less risky environments, more balanced messages work better.

"To Charge or Not to Charge: Evidence from a Health Products Experiment in Uganda" with Greg Fisher, Dean Karlan and Pia Rafferl

Abstract

For health products in developing countries, the question of whether to charge or not to charge is critical for accomplishing common policy objectives of wide, appropriate and sustainable distribution and usage. Competing philosophical arguments and limited empirical answers have led to constant debate. Theory, and then empirical tests, can provide a way forward. We setup a randomized trial in Northern Uganda to test a theory focused on price expectations and learning across three health products specifically chosen for their likely differences in the scope for learning. In line with prior studies, when the product has potential for positive learning, we find that future demand is not altered by a free distribution. However, for products without scope for positive learning, future demand is lower after a free distribution than after a distribution at market prices.

"Nudging Doctors to Address Non-Adherence: A Randomized Field Experiment" with Bill Rogers, Emilia Simeonova and Ira Wilson

Abstract

We conduct a randomized trial of a program designed to provide physicians with information about patients' non-adherence and access to the assistance of a pharmacist to call non-adherent patients. We vary whether pharmacist action occurs by default (when physicians take no action) or only when physicians take action. We provide evidence that the architecture of doctor's choices determines whether patients taking medication for chronic illness hypertensive medication are contacted when they become non-adherent. When they pharmacist call was triggered automatically, patients were more likely to be contacted than when physicians had to click one extra button in order to trigger the pharmacist action. The evidence suggests that the structure of physicians' choices is important because physicians become inattentive to patients' non-adherence over time.

"Savings and Temptation Spending: An Experiment in the Bolivian Amazon" with Ricardo Godoy, Dean Karlan, and Jonathan Zinman

Abstract

While numerous studies have shown that improving access to savings has positive impacts on households' financial well-being, few studies have considered how channeling money toward savings impacts health and health spending. We conduct a randomized experiment in the Amazon in Bolivia evaluating the impact of providing lockboxes designed to help households save. We find that individuals with savings boxes increase their available savings balances. However, households with savings boxes also increased their consumption of alcohol (especially for men) and their blood pressure. We provide a discussion of whether these results are consistent with theoretical models of poverty traps.

“Social Ties and Truthful Reporting of Sensitive Health and Financial Information” with Dean Karlan, and Pia Raffler

Abstract

We conduct an evaluation of Grameen Foundation's “Community Knowledge Worker Program” in Uganda designed to collect information directly from communities by employing “knowledge” workers selected from communities. Working with local NGOs, we obtained records of local service delivery of bednets, agricultural inputs and financial loans. We randomly assign individuals to be surveyed by either a local community knowledge worker or a rigorously trained surveyor recruited and monitored by a research firm, Innovations for Poverty Action. We find that survey respondents are more likely to accurately reveal that they have received agricultural inputs when the surveyor is a local knowledge worker, while they are more likely to report receipt of health products and financial loans when the surveyor is a professional surveyor.

“Peer Pressure in the Presence of Positive Social Externalities”

Abstract

Across a variety of situations, individuals may benefit when their peers make investments, such as improvements in health behaviors. One way to encourage investments with positive returns is peer-to-peer communication. However, theory suggests that if there are positive social externalities to action, the effectiveness of peer-to-peer communication may be undermined. I consider a model of communication in the presence of investment opportunities with uncertain returns and positive social externalities. The model predicts that welfare improving communication is possible only when individuals can communicate by sending a costly signal. I test this model with a laboratory experiment. While the model predicts that individuals need to “burn money” in order to effectively communicate, in our experiments individuals over-communicate when messages are free and under-communicate when they are costly. Therefore, we do not see welfare improvements from the introduction of costly communication.

Ongoing Experiments

“Incentives to Save for Habit Formation: A Field Experiment in Ghana” with Gharad Bryan

“Behavioral Economics and Demand for Maternal Health Services: A Series of Experiments in Kenya” with Jessica Cohen

“Mental Accounting in the Field: An Experiment with Labeled Savings Accounts in Ghana” with Dean Karlan, Edward Kutsoati, Margaret McMillan and Chris Udry

Conference and Seminar Presentations

- New York University Economics Department Seminar*, New York, NY, April 2014
Global Health and Innovation Conference, New Haven, CT, April 2014
University of Wisconsin Agricultural Economics Department Seminar, Madison, WI, March 2014
Wharton Business School Seminar, Philadelphia, PA, February 2014
Robert Wood Johnson Foundation Behavioral Economics Conference, Philadelphia, PA, December 2013
Harvard Business School Seminar, Cambridge, MA, October 2013
IZA/WZB Workshop: Field Days 2013: Experiments Outside the Lab, Berlin Germany, August 2013
Microsoft Research, Cambridge, MA, May 2013
Evidence on Innovation in Financial Capability, Innovations for Poverty Action, Lima, Peru May 2013
Princeton Conference on Foreign Aid, Princeton, NJ, April 2013
Southern Methodist University Seminar, Dallas, TX, March 2013
Social Dilemmas, California Institute of Technology, Pasadena, CA February 2013
Harvard Center for Population and Development Studies Seminar, Cambridge, MA December 2012
University of Pittsburgh Seminar, University of Pittsburgh, Pittsburgh, PA, December 2012.
American Society of Health Economics, Minneapolis, Minnesota, June 2012
Fletcher School of Law and Diplomacy Seminar Series, Tufts University, Somerville, Massachusetts, April 2012
Helping the Poor Save More: Innovations for Poverty Action: Policy Outreach Conference, ISSEI, Accra, Ghana, March 2012
Northeast Universities Development Consortium Conference, Yale University, New Haven, CT, November 2011
Case Western Reserve University Seminar, Case Western Reserve University, Cleveland, ID, October 2011
Northeast Universities Development Consortium Conference, MIT, Cambridge, MA, November 2010
Microfinance Impact and Innovation Conference, Financial Access Initiative, New York, New York, October 2010
Advances in Field Experiments, University of Pennsylvania Wharton School, Philadelphia, PA, October 2010
National Conference on Health Communication, Marketing and Media, Atlanta, GA, August 2010
NBER Summer Institute, Cambridge, MA, July 2010
Consumer Finance Workshop, Federal Reserve Bank of Boston, May 2010
Microfinance USA 2010, San Francisco, CA, May 2010
Iowa State Department of Economics Seminar, Iowa State University, Ames, Iowa, April 2010
Harvard Sustainability Fellows Seminar, Harvard University, Cambridge, MA, October 2009
XVIII International Tor Vergata Conference on Money Banking and Finance, University of Rome Tor Vergata, Rome, Italy, December 2009

North American Meetings of the Economic Science Association, Tucson, Arizona, October 2006, 2007, 2008, 2009, 2010
Current State of Philanthropy, Middlebury College, Middlebury, Vermont, April 2009
College of Social Studies Monday Lunch Seminar, Wesleyan University, Middletown, Connecticut, November 2007
Yale University Labor-Public Finance Lunch, Yale University, New Haven, CT, September 2007
Asia-Pacific Meeting of the Economic Science Association, Shanghai, China, August 2007
London Conference on Laboratory Experiments and the Field, London, England, June 2007
Caltech Brownbag Series, Pasadena, California, June 2007
Caltech Mini-Conference on Social Networks, Pasadena, California, May 2007

Conference and Workshop Participation

Robert Wood Johnson Foundation Applying Behavioral Economics to Perplexing Problems in Health and Health Care Conference, Philadelphia, PA 2013
American Economic Association, Discussant, 2008, 2009, 2010, 2011, 2012, 2013
Consumer Financial Protection Bureau Innovation Meetings, June 2012
American Economic Association, Discussant, 2008, 2009, 2010, 2011, 2012
NBER Summer Institute, July 2009.
Innovations for Poverty Action – Financial Access Initiative – Yale University Microfinance Conference, October 2008.
Russell Sage Foundation Summer Institute in Behavioral Economics, Trento, Italy, Summer 2008.
Designing, Conducting and Analyzing Field Experiments, Yale University, July 2006.

Reviewing Activities

Econometrica, 2012, 2013, 2014
Journal of Public Economics, 2009, 2010, 2011, 2012, 2013, 2014
Experimental Economics, 2009, 2010, 2011, 2012, 2013, 2014
American Economic Review, 2012, 2014
Journal of Development Economics, 2012
Review of Economics and Statistics, 2011
American Economic Journal – Applied Economics, 2011
Economic Development and Cultural Change, 2011, 2012
Management Science, 2010, 2011, 2012
Malaria Journal 2012, 2013
American Journal of Political Science, 2013
Labour Economics, 2013
Journal of Human Resources, 2013
Economic Inquiry, 2011, 2013, 2014
American Political Science Review, 2011, 2013
Social Networks, 2011
Journal of Economic Behavior and Organization, 2009
The Berkeley Economic Journal of Economic Analysis and Policy, 2009
Games and Economic Behavior, 2008
Journal of Political Economy, 2007

Journal of Economic History, 2007
Review of Economic Design, 2007

Media

Interview on *Consumer Talk* with Michael Finney on KGO San Francisco, February 2010

“A Jewish Mother in Your Cell Phone: How Nagging Text Messages Can Make You Healthier and Richer,” Daniel Gross, *Slate Online Magazine*, November 10, 2009

Interview, *El Mercurio*, Santiago, Chile, January 27, 2013