

Research Initiative Update

Neuroeconomics

CCSN Research Initiatives were created to organize Center members into interdisciplinary groups that address “big questions” in the areas of cognitive and social neuroscience. Members of each initiative strive to employ complementary methodologies and identify opportunities for new research programs. Luigi Zingales, Robert C. McCormack Professor of Entrepreneurship and Finance and David G. Booth Faculty Fellow, was interviewed about the Neuroeconomics research initiative.

What projects are you currently exploring as part of the Neuroeconomics Research Initiative?

With Paola Sapienza, a colleague at Northwestern University, I am working to identify which characteristics of MBA students at the University of Chicago and Northwestern University lead to their later success. We have collected a variety of experimental, biological, survey, and behavioral data. For example, we asked the MBA students to play a game to determine their risk aversion, and also measured their levels of testosterone and cortisol. As this is the class of 2008, we have data on their real world experience: the careers they pursued, the positions they took, and the salaries they earned. We plan to follow this class through their careers to track their outcomes. In one instance, we are examining the connection between their risk aversion and their life choices.

This study of risk aversion is interesting because we find a correlation between the type of career a person chooses and his or her level of risk aversion. People who seem to be more risk averse are less likely to go into finance, a high payoff and high liability career. The financial crisis afforded us a special opportunity to examine this, as we were able to look at an individual's financial portfolio before and after the crisis. For the group of MBA students we studied, we saw no significant difference in risk aversion before and after the recent financial crisis.

However, in another study, we looked at similar data for a panel of clients at a large Italian bank. With the Italian subjects, we found a significant increase in risk aversion

following the financial crisis. This might be attributable to differences in financial education and sophistication between the samples. One explanation may be that if a person loses wealth or becomes poor, they become more risk averse. However, our data shows that a change in wealth does not seem to be driving this phenomenon. This spike in risk aversion with the Italian clients seems to be more emotional than mental, and may reflect changes in the study participants' trust in markets and larger financial systems. Determining where this response originates in the body and the brain could have significant implications for how people respond to risk, and consequently the financial markets.

How does biology influence risk aversion?

In the study with MBA graduates, we looked at the relationship between level of testosterone and risk aversion. To measure risk aversion in this study, we asked participants to play a specific game. For fifteen rounds, the participants were asked to choose between receiving a guaranteed dollar amount that slowly increased each round, and participating in a lottery where either zero or two hundred dollars was paid out each time. At the end of the experiment, they would receive a payment randomly selected from one of their fifteen choices. The very risk-averse would be more inclined to choose the guaranteed amount, and the risk-tolerant would choose the lottery. As a result, a person who was more comfortable with risk would decide to switch from choosing the lottery to the guaranteed dollar amount later (i.e., for a higher amount of the guaranteed amount). We looked to see if this measurement of risk aversion was related to salivary testosterone. Interestingly, we found that this measure was correlated for women (the higher the level of testosterone, the lower

the risk aversion) but not for men.

This difference could be due to the fact that men have a higher baseline level of testosterone, or to the fact that testosterone plays a different role in men and women. Men and women with similar levels of testosterone do not have different levels of risk aversion. Thus, the level of testosterone could explain the well-established finding that women, in this case, are less risk averse.

What questions would you like to answer with future research?

One potentially fascinating question is the extent to which different parts of the brain activate in making these decisions about risk and also trust. In a study conducted with John Cacioppo, Director of the Center for Cognitive and Social Neuroscience, we began the process of answering this question. First, we wanted to determine what factors influence a person's trust of other people. In our experiment, we asked subjects to play a traditional trust game. In this game, the first participant gives money to the second participant. If the first participant sends the second \$1, the second participant receives \$3. The second participant then can decide to send some money back to the first participant. Whatever they do not send back, they keep. Economists anticipate that since the second participant makes the last decision and the anonymous game is not repeated, the second participant should keep whatever money they receive. Surprisingly, among our MBAs, two-thirds of the participants send money back to the first participant. We believe this is driven by a feeling of reciprocity, but there is much debate over the cause of this pattern. By matching the behavior in this game and the actual donations made to the business school at the end of the program, we find that the pattern of reciprocity is correlated with the

amount donated.

We would like to look at these and other patterns using fMRI technology and continue to look at hormones and physiological changes. Traditional economists assume individuals behave rationally, or (in neurologic terms, they only use the rational part of the brain). As our knowledge of the brain advances, we discover that different parts of the brain are used for different functions and not all of them behave according to the principle of rationality assumed by economists. The exciting question is: how do these different biological, rational, emotional, and social components work together? What triggers these interactions? What takes precedent in decision-making? I think we are far away from having sort of a general theory, but greater understanding is an exciting goal. ■

BELOW: Professor Luigi Zingales



UPCOMING EVENTS

Upcoming Lectures

Donald W. Fiske Distinguished Lecture

10 March 2011
4:30-6:00PM

Social Sciences Research Building
Room 122

John A. Bargh
Yale University
Physical Priming of Psychological States

Research in Progress Seminars

The Center faculty also participate in workshops, brown bags, and research in progress seminars. To be added to the email list for announcements of talks and events, email Anna Gomberg, agomberg@uchicago.edu.

2011 CCSN Speaker Series

The Center for Cognitive and Social Neuroscience, in collaboration with other departments, centers, institutes, and programs, sponsors presentations by visiting scholars. Upcoming speakers include:

7 April 2011
4:00- 5:30 PM
Harper Memorial Library
Room 140 (tent.)
Tomáš Paus, University of Toronto

21 April 2011
4:00- 5:30 PM
Harper Memorial Library
Room 140 (tent.)
Lisa Parr, Emory University

28 April 2011
4:00- 5:30 PM
Harper Memorial Library
Room 140 (tent.)
Emily Falk, University of Michigan

5 May 2011
4:00- 5:30 PM
Harper Memorial Library
Room 140 (tent.)
Stephanie Ortigue, Syracuse University

26 May 2011
4:00- 5:30 PM
Harper Memorial Library
Room 140 (tent.)
Morten Christiansen, Cornell University