#### **CURRICULUM VITAE**

PERSONAL INFORMATION

Name: Szabolcs Számadó

*Birth date*: May 27, 1971

Nationality: Hungarian

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szamado.szabolcs@gtk.bme.hu



# SHORT INTRODUCTION

Szabolcs Számadó graduated at Eötvös University from biology and later earned his PhD at 2004. He is a theoretical biologist, his main research interest is the relation between the cost of signals and honesty, which he investigated with a range of tools including game theory and individual based modelling. His research includes a broad range of topics from the evolution of cooperation to the evolution of early human language. His latest interest is the role of reputation systems in the maintenance of cooperation and role of communication in the role maintenance of reputation. He published in top journals of the field (*Proceedings of the National Academy of Sciences, Philosophical Transactions of the Royal Society B*), he has more than 30 peer reviewed papers and more than 700 independent citations according MTMT.

### WORK INFORMATION

POSITION 1.: SENIOR RESEARCH FELLOW

*Institute*: Budapest University of Technology and Economics

Department: Department of Sociology and Communication

Address: 1111 Budapest, Egry J. u. 1.

Institute website: https://www.bme.hu/GTK-en?language=en

POSITION 2.: SENIOR RESEARCH FELLOW

Institute: Centre for Social Sciences, Hungarian Academy of Science

Department: CSS-RECENS

Address: 1014 Budapest, Tóth Kálmán u. 4.

Institute website: <a href="http://www.tk.mta.hu/en">http://www.tk.mta.hu/en</a>

# **SCIENTOMETRICS**

Google Scholar (2022. 02. 20.):

	all	Since 2017
citations	1610	626
h-index	19	14
i10-index	24	17

MTMT (2022. 02. 20.):

publications		citations	
	all	independent	all
Publications and citations	40	927	1048

Hirsch index: 16

Google Scholar: https://scholar.google.hu/citations?user=t9oS4oIAAAAJ&hl=en&oi=ao

ResearcherID: A-9804-2013: http://www.researcherid.com/rid/A-9804-2013)

Researchgate: <a href="https://www.researchgate.net/profile/Szabolcs\_Szamado">https://www.researchgate.net/profile/Szabolcs\_Szamado</a>

MTMT ID: 10019188:

https://m2.mtmt.hu/gui2/?type=authors&mode=browse&sel=10019188&view=dataSheet

# **EDUCATION**

1997- 2004 Eötvös Loránd University, Ph.D. in Ecology and Theoretical Biology, Title of Doctoral

Dissertation: "Reliable communication in animals, a game theoretical approach"

(written in English) Supervisor: Prof. Eörs Szathmáry

1991- 1996 Eötvös Loránd University, MSc in Biology. Diploma thesis: "Evolúció dinamikai

vizsgálatok" (Studies in Evolutionary Dynamics, written in Hungarian) Supervisor:

Prof. Eörs Szathmáry

## **EMPLOYMENT**

2019-present Budapest University of Technology and Economics, Department of Sociology and

Communication, Senior research fellow

2015-present Hungarian Academy of Sciences, Centre for Social Sciences, Senior research fellow

2017-2019 Hungarian Academy of Sciences, Centre for Ecological Research, Senior RF

2007-2016	MTA-ELTE Theoretical Biology and Evolutionary Ecology Research Group, Senior
	research fellow
2004-2007	ECAgents group, Collegium Budapest, Research fellow
1999-2002	MTA Research Group of Ecology and Theoretical Biology, Junior research fellow

# TEACHING (IN HUNGARIAN)

2019-present	Evolutionary Game Theory, Budapest University of Technology and Economics
2005-2021	Cultural Evolution, Eötvös Loránd University
2000-2021	Animal Communication: a game theoretical approach, Eötvös L. University
1999-2020	History of Biology, Eötvös Loránd University
1999-2003	Ecological Modelling, Eötvös Loránd University

### **REVIEWER**

Animal Behaviour, Behavioral Ecology, Biology Letters, Entropy, Evolution and Human Behaviour, Evolutionary Anthropology, Functional Ecology, Games, Journal of Theoretical Biology, PLoS one, Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, Royal Society Interface, Philosophical Transaction of the Royal Society B, Royal Society Open Science, Scientific Advances, Scientific Reports

Publons: <a href="https://publons.com/researcher/649882/szabolcs-szamado">https://publons.com/researcher/649882/szabolcs-szamado</a>

# GRANTS

2019-2021 OTKA K 132250; 24463 thousands FT, principal investigator

2016-2019 OTKA K 112929; 23000 thousands FT, principal investigator

2014-2016 OTKA K 112929; 23000 thousands FT, investigator

2014-2017 OTKA K 108974; 5900 thousands FT, principal investigator

2005-2009 OTKA K 49692; 8700 thousands FT, investigator

2001-2003 OTKA K 35223; 4200 thousands FT, investigator

#### WORKSHOPS AS ORGANISER

- The Language of Cooperation: Reputation and Honest Signaling, Organizers: Daniel Balliet, Francesca Giardini, Karoly Takacs, Szabolcs Számadó, Eleanor Power. 2 - 6 September 2019 Oort, Lorentz Center, Leiden, The Netherlands
- 2. Workshop on Gossip, Reputation, and Honesty. Organizers: Szabolcs Számadó and Károly Takács; 17-18 May, 2018, Center for Social Sciences, Budapest, Hungary
- 3. When (if ever) do signals need to be costly to be honest? Organizers: Szabolcs Számadó and Dustin Penn, Behaviour 2017, a joint meeting of the 35th International Ethological Conference (IEC) and the 2017 Summer Meeting of the Association for the Study of Animal Behaviour (ASAB), July 30 to August 4, 2017, Estoril, Portugal.

#### THEMED ISSUE AS LEADING GUEST EDITOR

'The language of cooperation: reputation and honest signalling' compiled and edited by Szabolcs Számadó, Daniel Balliet, Francesca Giardini, Eleanor A. Power and Károly Takács

22 November 2021. Philosophical Transactions of the Royal Society B, Volume 376, Issue 1838.

#### **PUBLICATIONS**

# TEN MOST IMPORTANT PAPERS:

- Wu\*, J., <u>Számadó\*</u>, S., Barclay, P., Beersma, B., Dores Cruz, T. D., Iacono, S. L., ... & Van Lange, P. A. (2021). Honesty and dishonesty in gossip strategies: a fitness interdependence analysis. *Philosophical Transactions of the Royal Society B*, 376(1838), 20200300.
- Barclay, P., Bliege Bird, R., Roberts, G., & <u>Számadó</u>, S. (2021). Cooperating to show that you care: costly helping as an honest signal of fitness interdependence. *Philosophical Transactions of the Royal Society B*, 376(1838), 20200292.
- 3. Penn, DJ & <u>Számadó</u>, Sz (2020) The Handicap Principle: how an erroneous hypothesis became a scientific principle. *Biological Reviews* 95 (1), 267-290.
- 4. <u>Számadó</u>, Sz., Czégel, D. & Zachar, I. (2019) One problem, too many solutions: How costly is honest signalling of need? *PLOS one*, **14**(1): e0208443.
- 5. <u>Számadó</u>, Sz. (2011) The cost of honesty and the fallacy of the handicap principle. *Anim.Behav.* **81**, 3-10.

- Boza, G. <u>Számadó</u>, Sz. (2010) Beneficial laggards: multilevel selection, cooperative polymorphism and division of labour in Threshold Public Good Games. *BMC Evolutionary Biology*. 10, 336.
- 7. <u>Számadó</u>, Sz. & Szathmáry, E. (2006) Selective scenarios for the emergence of natural language. *Trends Ecol. Evol.* **21(10)**, 555-561.
- 8. Bergstrom, C.T., <u>Számadó</u>, Sz. and Lachmann, M. (2002) Separating equilibria in continuous signalling games. *Philisophical Transactions of the Royal Society, London B.* **357**, 1595-1606.
- 9. Lachmann, M., <u>Számadó</u>, Sz. and Bergstrom, C.T. (2001) Cost and Conflict in Animal Signals and Human Language. *Proc.Natl.Acad.Sci.USA* **28**, 13189-13194.
- 10. <u>Számadó</u>, Sz. (1999) The Validity of the Handicap Principle in Discrete Action-Response games. *Journal of Theoretical Biology*, **198**, 593-602.

Impact factor: 72,46.

\* shared first authors

#### JOURNAL ARTICLES:

- 1. Giardini, F., Balliet, D., Power, E. A., <u>Számadó</u>, S., & Takács, K. (2021). Four Puzzles of Reputation-Based Cooperation. *Human Nature*, 1-19.
- 2. <u>Számadó</u>, S. (2021). Pre-hunt charade as the cradle of human musicality. *Behavioral and Brain Sciences*, 44.
- 3. Penn, D. J., & <u>Számadó</u>, S. (2021). Commentary: why are no animal communication systems simple languages?. *Frontiers in Psychology*, 12.
- 4. <u>Számadó</u>, S., Balliet, D., Giardini, F., Power, E. A., & Takács, K. (2021). The language of cooperation: reputation and honest signalling. *Philosophical Transactions of the Royal Society B*, 376(1838), 20200286.
- Wu, J., <u>Számadó</u>, S., Barclay, P., Beersma, B., Dores Cruz, T. D., Iacono, S. L., ... & Van Lange,
   P. A. (2021). Honesty and dishonesty in gossip strategies: a fitness interdependence analysis.
   Philosophical Transactions of the Royal Society B, 376(1838), 20200300.
- 6. Barclay, P., Bliege Bird, R., Roberts, G., & <u>Számadó</u>, S. (2021). Cooperating to show that you care: costly helping as an honest signal of fitness interdependence. *Philosophical Transactions of the Royal Society B*, 376(1838), 20200292.
- 7. Samu, F., <u>Számadó</u>, S., & Takács, K. (2020). Scarce and directly beneficial reputations support cooperation. Scientific reports, 10(1), 1-12.

- 8. Penn, DJ & <u>Számadó</u>, Sz (2020) The Handicap Principle: how an erroneous hypothesis became a scientific principle. Biological Reviews 95 (1), 267-290.
- 9. <u>Számadó</u>, Sz., Czégel, D. & Zachar, I. (2019) One problem, too many solutions: How costly is honest signalling of need? *PLOS one*, **14**(1): e0208443.
- 10. Garay, J., <u>Számadó</u>, S., Varga, Z., & Szathmary, E. (2018). Caring for parents: an evolutionary rationale. *BMC Biology*, **16**(1), 53.
- 11. Zachar, I., Szilágyi, A., <u>Számadó</u>, S., & Szathmáry, E. (2018). Reply to Garg and Martin: The mechanism works. *Proceedings of the National Academy of Sciences*, 201805021.
- 12. Zachar, I., Szilágyi, A., <u>Számadó, Sz.</u>, & Szathmáry, E. (2018). Farming the mitochondrial ancestor as a model of endosymbiotic establishment by natural selection. *Proceedings of the National Academy of Sciences*, **115**(7), E1504-E1510.
- 13. <u>Számadó, Sz.</u>, & Penn, D. J. (2018). Does the handicap principle explain the evolution of dimorphic ornaments? *Animal Behaviour* **138**, e7.
- 14. Garay, J., Csiszár, V., Móri, T. F., Szilágyi, A., Varga, Z., & <u>Számadó, Sz</u>. (2018). Juvenile honest food solicitation and parental investment as a life history strategy: A kin demographic selection model. *PLOS one*, **13**(3), e0193420.
- 15. <u>Számadó</u>, S. (2017). When honesty and cheating pay off: the evolution of honest and dishonest equilibria in a conventional signalling game. *BMC Evolutionary Biology*, **17**(1), 270.
- Számadó, Sz., Szalai, F. & Scheuring, I. (2016) Deception Undermines the Stability of Cooperation in Games of Indirect Reciprocity. *PLOS one*. doi:10.1371/journal.pone.0147623
- 17. <u>Számadó</u>, Sz. (2015) Attention Seeking Displays. *PLOS one* **10**(8): e0135379. doi:10.1371/journal.pone.0135379
- 18. <u>Számadó</u>, Sz. & Penn, D.J. (2015) Why does costly signalling evolve? Challenges with testing the handicap hypothesis, *Animal Behaviour*. **110**, December 2015, Pages e9-e12. http://dx.doi.org/10.1016/j.anbehav.2015.06.005
- 19. <u>Számadó</u>, Sz. (2012) The rise and fall of handicap principle: a commentary on the "Modelling and the fall and rise of the handicap principle" *Biol. Philos.* **27**, 279-286. doi: 10.1007/s10539-011-9299-6
- 20. <u>Számadó</u>, Sz. (2011) Pre-Hunt Communication Provides Context for the Evolution of Early Human Language. *Biological Theory*. **5**, 366-382.
- 21. <u>Számadó</u>, Sz. (2011) Long-term commitment promotes honest status signalling. *Animal Behaviour*. **82** 295-302.
- 22. <u>Számadó</u>, Sz. (2011) The cost of honesty and the fallacy of the handicap principle. *Anim.Behav.* **81**, 3-10.

- 23. Boza, G. <u>Számadó</u>, Sz. (2010) Beneficial laggards: multilevel selection, cooperative polymorphism and division of labour in Threshold Public Good Games. *BMC Evolutionary Biology*. **10**, 336.
- 24. Szalai, F. & <u>Számadó</u>, Sz. (2009) Honest and cheating strategies in a simple model of aggressive communication. *Animal Behaviour*, **78**, 949-959.
- 25. Szathmáry, E. & Számadó, Sz. (2008) Language: a social history of words. Nature. 456, 40-41.
- Számadó, Sz. (2008) How threat displays work: species-specific fighting techniques, weaponry and proximity risk. *Animal Behaviour*, 76, 1455-1463.
- 27. <u>Számadó</u>, Sz., Szalai, F. and Scheuring, I. (2008) The effect of dispersal and neighbourhood in games of cooperation. *Journal of Theoretical Biology*, **253**, 221-227.
- 28. <u>Számadó</u>, Sz. & Szathmáry, E. (2006) Selective scenarios for the emergence of natural language. *Trends Ecol. Evol.* **21(10)**, 555-561.
- 29. <u>Számadó</u>, Sz. (2003) Threat displays are not handicaps. *Journal of Theoretical Biology* **221**, 327-348
- 30. Gyarmathy, V. A., Neaigus, A. & <u>Számadó</u>, Sz. (2003) HIV risk behavior history of prison inmates in Hungary. *Aids Education and Prevention Volume*. **15**, 561-569.
- 31. Bergstrom, C.T., <u>Számadó</u>, Sz. and Lachmann, M. (2002) Separating equilibria in continuous signalling games. *Philisophical Transactions of the Royal Society, London B.* **357**, 1595-1606.
- 32. Gyarmathy VA, Thomas RP, Mikl J, McNutt LA, Morse DL, DeHovitz J, Ujhelyi E, <u>Számadó</u>, Sz. (2002) Sexual activity and condom use among Eastern European adolescents-the Study of Hungarian Adolescent Risk Behaviours. *Int J STD AIDS*. **13(6)**, 399-405
- 33. Gyarmathy VA, McNutt LA, Molnár A, Morse DL, DeHovitz J, Ujhelyi E, <u>Számadó</u>, Sz. (2002) Evaluation of a comprehensive AIDS education curriculum in Hungary the role of good educators. *Journal of Adolescence*, **25**, 495-508
- 34. Lachmann, M., <u>Számadó</u>, Sz. and Bergstrom, C.T. (2001) Cost and Conflict in Animal Signals and Human Language. *Proc.Natl.Acad.Sci.USA* **28**, 13189-13194.
- 35. <u>Számadó</u>, Sz. (2000) Cheating as a Mixed Strategy in a Simple Model of Aggressive Communication. *Animal Behaviour*, **59**, 221-230.
- *36.* <u>Számadó</u>, Sz. (1999) The Validity of the Handicap Principle in Discrete Action-Response games. *Journal of Theoretical Biology*, **198**, 593-602.

#### **BOOK CHAPTERS:**

- Számadó, Sz. & Szathmáry E. (2012) Evolutionary Biological Foundations of the Origin of Language: The co-evolution of language and brain. In: Maggie Tallerman & Kathleen R.
   Gibson (eds). The Oxford Handbook of Language Evolution. Oxford University Press, Oxford.
- 2. <u>Számadó</u>, Sz., Hurford, J., Bishop, D., Deacon, T., d'Errico, F., Fischer, J., Okanoya, K., Szathmáry, E. and White, S. (2009) What Are the Possible Biological and Genetic Foundations for Syntactic Phenomena?. In: Bickerton, D., and E. Szathmáry, eds. *Biological Foundations and Origin of Syntax*. Strüngmann Forum Report, vol. 3. Cambridge, MA: The MIT Press.
- Szathmáry, E., Szatmáry, Z., Ittzés, P., Gergő, O., Zachár, I., Huszár, F., Fedor, A., Varga, M. & Számadó, S. (2006) In silico evolutionary developmental neurobiology and the origin of natural language. In: (Lyon, C., Nehaniv, C. L. & Cangelosi, A., eds) *Emergence of Communication and Language*. Springer, Artington.

# LECTURES:

- One problem, too many solutions: How costly is honest signalling of need? Számadó Sz., Czégel D. & Zachar I. European Conference on Behavioural Biology 9 - 12 August 2018, Liverpool UK
- Számadó Sz. Honesty and Gossip. Workshop on Gossip, Reputation, and Honesty 17-18 May,
   2018, Center for Social Sciences, Budapest, Hungary
- 3. Számadó, Sz. (2018) Caring for parents: an evolutionary rationale. *13th Conference of the European Human Behaviour and Evolution Association*, 4th-7th April, 2018, Pécs, Hungary
- 4. Számadó, Sz. (2017) The 'Trade-Off Principle' as an alternative to the 'Handicap Principle', at Symposium 10 When (if ever) do signals need to be costly to be honest? Organizer(s): Szabolcs Számadó and Dustin Penn, Behaviour 2017, a joint meeting of the 35th International Ethological Conference (IEC) and the 2017 Summer Meeting of the Association for the Study of Animal Behaviour (ASAB), July 30 to August 4, 2017, Estoril, Portugal.
- 5. Számadó, Sz. (2017) *The origin of natural language (invited plenary lecture)*. Fourth International Conference in Code Biology, Kőszeg (Hungary), 22-26 May 2017
- 6. Számadó, Sz. (2014) The complexity of human cooperation and the five "rules". *RECENS / CEU CNS seminar series*. 29 April 2014. CEU, Budapest, Hungary
- 7. Számadó, Sz. (2014) Az emberi nyelv korai evolúciója: a kezdetek kezdete. Nyelvkeletkezés és evolúció. *A Társas-Kognitív Nyelvészeti Kutatócsoport 2014. évi tavaszi előadás-sorozata*, 3.

- Előadás. (in Hungarian, "The Evolution of Early Human Language", Seminars of the Social-Cognitive Linguistics Research Group) 31 March 2014. Debrecen, Hungary.
- 8. Számadó, Sz. (2013) The cost of honesty and the fallacy of the handicap principle. *Konrad Lorenz Institute of Ethology Seminar Series*. 6 March 2013. Vienna, Austria.
- 9. Számadó, Sz. (2013) Pre-Hunt Communication Provides Context for the Evolution of Early Human Language. *RECENS seminars*, PTI. 19 February 2013. Budapest, Hungary.
- 10. Számadó, Sz. (2013) Állati kommunikáció: az őszinteség ára. "Ökológus Tea" szemináriumok at the Department of Ecology and Plant Taxonomy, ELTE. (in Hungarian, "Animal communication: the cost of honesty") 18 February 2013. Buidapest, Hungary.
- Számadó, Sz. (2012) Az állai kommunkáció őszintesége. Evolúció a géneken túl, előadás sorozat. (in Hungarian, "Cost of Honesty") SZTE Genetikai Tanszék. 16 November, 2012. Szeged, Hungary.
- 12. Számadó, Sz. (2012) The Cost of Honesty and the Fallacy of the Handicap Principle. *New Developments in Signaling and Game Theory 2012*. October 14-19, 2012. Ascona, Switzerland
- 13. Számadó, Sz. (2012) The evolution of attention seeking displays. *Evolution:* 1<sup>st</sup> *joint Congress on Evolutionary Biology*. July 6-10, 2012. Ottawa, Ontario, Canada.
- Számadó, Sz. (2011) The cost of honesty. KLI Brown Bag Discussions. 17 November, 2011.
   Altenberg, Austria
- 15. Számadó, Sz. (2010) Állati kommunikáció: az őszinteség ára (in Hungarian, "Animal communication: The cost of honesty."). *VÖCS lectures*. 8 December 2010. Debrecen, Hungary
- 16. Számadó, Sz. (2010) Hot spots of cooperation. *TECT-INCORE final School, "Cooperators since life began"*, 11-15 September 2010. Dobogókő, Hungary.
- 17. Számadó, Sz. (2006) Honest and dishonest communication: A game theoretical approach. *Fellow Lecture held at Collegium Budapest*. Budapest, Hungary.
- 18. Számadó, Sz. (2004) Evolution of language from the perspective of a biologist "Symbols and Connections", 29-31 October 2004. Velence, San Servolo, Italy.
- Számadó, Sz. (1998) Basic Questions in Memetics: Life-cycle, Reproduction and Resources. 15<sup>th</sup>
   International Congress on Cybernetics, Symphosium on Memetics, 24-28 August 1998, Namur,
   Belgium.
- 20. Számadó, Sz. (1998) Cheating Animals and the Validity of the Handicap Principle. *Collegium Budapest, Fellow Lectures*, Budapest, 18 May 1998
- 21. Számadó, Sz. (1997) A Two-stage Model of Animal Fighting. *Illrd Meeting of PhD Students in Evolutionary Biology*, University of Barcelona, Barcelona, 26-28 Februar 1997

# PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY B

**BIOLOGICAL SCIENCES** 

# The language of cooperation: reputation and honest signalling

A theme issue compiled and edited by Szabolcs Számadó, Daniel Balliet, Francesca Giardini, Eleanor A Power and Károly Takács

Published October 2021



# About this issue

Large-scale non-kin cooperation is a unique ingredient of human success. This type of cooperation is challenging to explain in a world of self-interested individuals. This theme issue promotes an interdisciplinary approach that allows us to explore and to understand the evolution and the maintenance of reputation systems, with emphasis on gossip and honest signalling. The articles in this special issue draw our attention to the complexities of the workings of reputation systems, asking: (i) What are the necessary conditions for reputation-based systems? (ii) What is the content and context of reputation systems? (iii) How can reputations promote cooperation? And (iv) What is the role of gossip in maintaining reputation systems and thus cooperation?

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Front image: Women discuss the day's events whilst walking through fallow fields in Tamil Nadu, India. Credit: Eleanor Power.

Introduction: The language of cooperation: reputation and honest signalling Szabolcs Számadó, Daniel Balliet, Francesca Giardini, Eleanor A Power and Károly Takács

The psychological foundations of reputation-based cooperation Héctor M Manrique et al.

Are some cultures more mind-minded in their moral judgements than others? H Clark Barrett and Rebecca R Saxe

The complexity of human cooperation under indirect reciprocity Fernando P Santos, Jorge M Pacheco and Francisco C Santos

The benefits of being seen to help others: indirect reciprocity and reputation-based partner choice Gilbert Roberts et al.

Reputation and socio-ecology in humans Angelo Romano et al.

The content and structure of reputation domains across human societies: a view from the evolutionary social sciences Zachary H Garfield et al.

Gossip and reputation in everyday life Terence D Dores Cruz et al.

Competitive gossip: the impact of domain, resource value, resource scarcity and coalitions
Nicole H Hess and Edward H Hagen

When does reputation lie? Dynamic feedbacks between costly signals, social capital and social prominence
Marion Dumas, Jessica L Barker and Eleanor A Power

Parochial cooperation and the emergence of signalling norms Wojtek Przepiorka and Andreas Diekmann

Is it costly to deceive? People are adept at detecting gossipers' lies but may not reward honesty

Miguel A Fonseca and Kim Peters

Gossip and competitive altruism support cooperation in a Public Good game Francesca Giardini, Daniele Vilone, Angel Sánchez and Alberto Antonioni

Evaluating mechanisms that could support credible reputations and cooperation: cross-checking and social bonding Flóra Samu and Károly Takács

Honesty and dishonesty in gossip strategies: a fitness interdependence analysis Junhui Wu et al.

Networks of reliable reputations and cooperation: a review Károly Takács et al.

Direct punishment and indirect reputation-based tactics to intervene against offences Catherine Molho and Junhui Wu

Reputation and punishment sustain cooperation in the optional public goods game Shirsendu Podder, Simone Righi and Francesca Pancotto

The effects of reputation on inequality in network cooperation games Milena Tsvetkova

Cooperating to show that you care: costly helping as an honest signal of fitness interdependence

Pat Barclay, Rebecca Bliege Bird, Gilbert Roberts and Szabolcs Számadó

