# Abigail Barr: Curriculum Vitae

ADDRESS: School of Economics, University of Nottingham, University Park,

Nottingham, NG7 2RD, UNITED KINGDOM

CONTACT: T: 0115 95 15472 F: 0115 95 14159 E: abigail.barr@nottingham.ac.uk

**DATE OF BIRTH:** 11 December, 1965

### **TERTIARY EDUCATION**

Oct. 1993 - Sept. 1996: **D. Phil. in Economics**, St. Antony's College, University of Oxford

Thesis title: Entrepreneurial networks and economic growth

Sept. 1987 - Sept. 1988: M.A. in Economics, University of Warwick

Thesis title: The concept of capacity in SAM based models

Prize: The Examiners' Prize for the best overall performance

Sept. 1984 - July 1987: **B.A. in Economics with Econometrics**, 1st, University of Sheffield

Prize: The Tassie Medallion for best overall performance

### **EMPLOYMENT**

Aug. 2016 - present: **Professor of Economics**, School of Economics, University of Nottingham

Aug. 2013 - July 2016: Associate Professor and Reader, School of Economics, University of

Nottingham

Sept. 2011 - July 2013: Associate Professor, School of Economics, University of

Nottingham

Sept. 2010 - Aug. 2011: Researcher, Oxford Department of International Development,

University of Oxford (details of funding below)

Feb. 1998 - Aug. 2010: Researcher, Centre for the Study of African Economies, University of

Oxford (details of funding below)

Sept. 1997 - Feb. 1998: Visiting Professor, Department of Economics, University of Addis Ababa

(secondment funded by a technical assistance grant from the European

Union)

Sept. 1996 - Sept. 1997: Researcher, Centre for the Study of African Economies, University of

Oxford (details of funding below)

Oct. 1993 - Sept. 1996: **Research Student,** University of Oxford (funded by ESRC)

May 1991 - May 1993: **Economic Advisor,** Bank of Papua New Guinea, Papua New Guinea

Nov. 1988 - Nov. 1990: Overseas Development Institute Fellow, Department of Finance and

Planning, Papua New Guinea

### **JOURNAL ARTICLES**

Barr, A. T. Owens, A. Perera 'Risk taking and sharing when risk exposure is interdependent', *Journal of Economic Behavior and Organization*, 176, 445-460, August 2020.

Barr, A., L. Miller, P. Ubeda 'The effect of education, income inequality and merit on inequality acceptance', Journal of Economic Psychology, on-line May 2020.

- Barr, A., M. Dekker, W. Janssens, B. Kebede, B. Kramer 'Cooperation in Polygynous Households', American Economic Journal: Applied Economics, 11(2), 266-83, April 2019.
- Demel, S, A. Barr, L. Miller, and P. Ubeda 'Commitment to political ideology is a luxury only students can afford: A distributive justice experiment', *Journal of Experimental Political Science*, 6, 33-42, spring 2019.
- Barr, A., T. Lane, D. Nosenzo 'On the social inappropriateness of discrimination', *Journal of Public Economics*, 164, 153-164, August 2018.
- Barr, A. and G. Michailidou 'Complicity without connection or communication', *Journal of Economic Behavior and Organization*, 142, 1-10, October 2017.
- Barr, A, L. Miller, and P. Ubeda 'Moral Consequences of Becoming Unemployed', *Proceeding of the National Academy of Sciences*, 113(17), 4676–81, April 2016.
- Barr, A., J. Burns, L. Miller, and I. Shaw 'Economic status and acknowledgement of earned entitlement', *Journal of Economic Behavior and Organization*, 118, 55–68, October 2015.
- Barr, A., M. Dekker and M. Fafchamps 'The formation of community based organizations: An analysis of a quasi-experiment in Zimbabwe', *World Development*, 66(1), 131–15, February 2015.
- Barr, A., T. Packard, and D. Serra 'Participatory Accountability and Collective Action: Experimental evidence from Albania', *European Economic Review*, 68, 250-269, May 2014.
- Barr, A., M. Dekker and M. Fafchamps 'Bridging the gender divide: An experimental analysis of group formation in African villages', *World Development*, 40(10), 2063-2077, October 2012.
- Barr, A., M. Dekker and M. Fafchamps 'Who shares risk with whom under different enforcement mechanisms?' *Economic Development and Cultural Change*, 60(4), 677-706, July 2012.
- Attanasio, O., A. Barr, J.C. Cardenas, G. Genicot and C. Meghir 'Risk Pooling, Risk Preferences, and Social Networks', *American Economic Journal: Applied Economics*, 4(2), 134-67, April 2012.
- Henrich, J., Boyd, R., McElreath, R., Gurven, M., Richerson, P. J., Ensminger, J., Alvard, M., Barr, A., Barrett, C., Bolyanatz, C. F., Cardenas, J-C., Fehr, E., Gintis, H. M., Gil-White, F., Gwako, E. L., Henrich, N., Hill, K., Lesorogol, C., Patton, J. Q., Marlowe, F. W., Tracer, D. P., & Ziker, J. (2012) 'Culture does account for variation in game behaviour', *Proceedings of the National Academy of Sciences*, 109(2), E32-E33, January 2012.
- Barr, A., D. Serra and P. Serneels 'Intrinsic motivations and the non-profit health sector: Evidence from Ethiopia', *Personality and Individual Differences* 51(3), 309-314, August 2011.
- Barr, A. and D. Serra 'Corruption and Culture: An experimental analysis', *The Journal of Public Economics* 94(11-12), 862-869, December 2010.
- Barr, A. and D. Clark 'Do the poor adapt to low income, minimal education and ill-health?' *Journal of African Economies*, 19(3), 257-293, June 2010.
- Henrich, J., J. Ensminger, R. McElreath, A. Barr, C. Barrett, A. Bolyanatz, J. C. Cardenas, M. Gurven, E. Gwako, N. Henrich, C. Lesorogol, F. Marlowe, D. Tracer and J. Ziker 'Markets, religion, community size and the evolution of fairness and punishment', *Science*, 327(5972), 1467-1468, 19 March 2010.
- Barr, A. and D. Serra 'The effects of externalities and framing on bribery in a petty corruption experiment', *Experimental Economics*, 12(4), 488-503. December 2009.
- Barr, A., M. Lindelow & P. Serneels 'Corruption in public service delivery: An experimental analysis', *Journal of Economic Behavior and Organization*, 72(1), 225-39, October 2009.
- Barr, A. and P. Serneels 'Reciprocity in the Workplace', Experimental Economics, 12(1), 99-112, March 2009.

- Barr, A. and G. Genicot 'Risk sharing, commitment and information: An experimental analysis', *Journal of the European Economic Association*, 6(6), 1151–85, December 2008.
- Marlowe, F., J. Berbesque, A. Barr, C. Barrett, A. Bolyanatz, J. C. Cardenas, J. Ensminger, M. Gurven, E. Gwako, J. Henrich, N. Henrich, C. Lesorogol, R. McElreath, D. Tracer & J. Ziker 'More 'altruistic' punishment in larger societies', *Proceedings of the Royal Society: Biological Sciences*, 275(1634), 587-90, March 2008.
- Serneels, P., M. Lindelow, J. Montalvo and A. Barr 'For public service or money: Understanding geographical imbalances in the health workforce', *Health Policy and Planning*, 22(3), 128-38, May 2007.
- Henrich, J., R. McElreath, A. Barr, J. Ensminger, C. Barrett, A. Bolyanatz, J. C. Cardenas, M. Gurven, E. Gwako, N. Henrich, C. Lesorogol, F. Marlowe, D. Tracer, J. Ziker 'Costly Punishment across human societies', *Science*, 312(5781), 1767-70, June 2006.
- Barr, A. and M. Fafchamps 'A client-community assessment of the NGO sector in Uganda', *Journal of Development Studies*, 42(4), 611-39, May 2006.
- Henrich, J., R. Boyd, S. Bowles, C. Camerer, E. Fehr, H. Gintis, R. McElreath, M. Alvard, A. Barr J. Ensminger, N. Henrich, K. Hill, F. Gil-White, M. Gurven, F. Marlowe, J. Q. Patton, and D. Tracer "Economic Man' in Cross-cultural Perspective: Behavioral experiments in 15 small-scale societies', Behavioral and Brain Sciences, 28(6), 795-855, December 2005.
  - Republished in (1) Data Collection, edited by W. P. Vogt, in the SAGE Benchmarks in Social Research Methods series (2) Judgment and Decision-making, edited by N. Chater, Sage Publications (3) Recent Developments in Behavioral Economics, edited by S. Maital. International Library of Writings in Economics.
- Barr, A., M. Fafchamps and T. Owens 'The governance of non-governmental organizations in Uganda', *World Development*, 33(4), 657-79, April 2005.
- Barr, A. 'Forging Effective New Communities: The evolution of civil society in Zimbabwean resettled villages', *World Development*, 32(10), 1753-66, October 2004.
- Barr, A. 'Trust and Expected Trustworthiness: Experimental evidence from Zimbabwean villages', *Economic Journal*, 113(489), 614-30, July 2003.
- Barr, A. and A. Oduro 'Ethnic Fractionalization in an African Labour Market', *Journal of Development Economics*, 68(2), 355-79, August 2002.
- Barr, A. 'The Functional Diversity and Spillover Effects of Social Capital', *Journal of African Economies*, 11(1), 90-113, March 2002.
- Barr, A. 'Social Capital and Technical Information Flows in the Ghanaian Manufacturing Sector', Oxford Economic Papers, 52, 539-59, July 2000.
- Jones, P., A. Barr 'Learning by doing in sub-Saharan Africa: Evidence from Ghana', *Journal of International Development*, 8(3) 445-466, 1996.

# **BOOK CHAPTERS**

- Ensminger, J., A. Barr, and J. Henrich 'Cross-cultural experimental methods, Sites, and variables' in J. Ensminger and J. Henrich (eds), *Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective*, New York: The Russell Sage Foundation Press, January 2014.
- Henrich, J. J. Ensminger, A. Barr, R. McElreath 'Major empirical results: Markets, religion, community size, and the evolution of fairness and punishment' in J. Ensminger and J. Henrich (eds), Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective, New York: The Russell Sage Foundation Press, January 2014.

- Barr, A. 'The Effects of Birthplace and current context on other regarding preferences in Accra' in J. Ensminger and J. Henrich (eds), *Experimenting with Social Norms: Fairness and Punishment in Cross-Cultural Perspective*, New York: The Russell Sage Foundation Press, January 2014.
- Barr, A and D. Clark 'A Multidimensional Analysis of Adaptation in a Developing Country Context', in D. A. Clark (ed), *Adaptation, Poverty and Development: The Dynamics of Subjective Well-being*, Basingstoke: Palgrave Macmillan, 2012.
- Barr, A, J. Ensminger and J. Johnson 'Social networks and trust in cross-cultural economic experiments', in K. Cook, M. Levi, and R. Hardin (eds), *Whom can we trust?* New York: Russell Sage Foundation, 2009.
- Barr, A. 'Kinship, familiarity, and trust: an experimental investigation', in J. Henrich, R. Boyd, S. Bowles, H. Gintis, E. Fehr and C. Camerer (eds), *Foundations of Human Sociality*, Oxford: Oxford University Press, 2004.

# **OTHER PUBLICATIONS**

- Barr, A., 'Comment on D. Gerkey 'Cooperation in context: Public goods games and Post-Soviet collectives in Kamchatka, Russia' *Current Anthropology*, 54(2), 163, April 2013.
- Serneels, A. Zeitlin, A. Barr 'Participatory Monitoring of Public Servants by Beneficiaries. Insights from Education Services', Background Note for World Development Report 2015.

#### RECENT WORKING PAPERS AND DISCUSSION PAPERS

- Barr, A., M. Dekker, F. Mwansa and T. Li. Zuze 'Financial decision-making, gender and social norms in Zambia: Preliminary report on the quantitative data generation, analysis and results' CeDEx Discussion Paper 2020-06.
- Barr, A., T. Owens, A. Perera 'Collective action when public good returns are heterogeneous', CREDIT Research Paper 17/05, 2017.
- Barr, A. and A. Zeitlin 'Conflict of interest as a barrier to local accountability', CSAE Working paper WPS/2011-13.
- Serra, D., A. Barr, T. Packard 'Education Outcomes, School Governance and Parents' Demand for Accountability: Evidence from Albania', World Bank Policy Research Working Paper 5643, 2011.
- Barr, A. and A. Zeitlin 'Dictator games in the lab and in nature: External validity tested and investigated in Ugandan primary schools', CSAE Working paper WPS/2010-11.

# PRESENTATIONS (since September 2010)

- 'Love and marriage' Hardwired Sociality? Vienna University of Economics and Business, 29<sup>th</sup>-30<sup>th</sup> November 2019.
- Love and marriage' 10th International Conference of the French Association of Experimental Economics, Toulouse School of Economics, 19<sup>th</sup>-20<sup>th</sup> June 2019.
- 'Lab-type experiments in the field' 2018 CESS/ESSEX Summer School Introduction to Experiments, Nuffield College, Oxford, 2<sup>nd</sup> July 2018.
- 'Cooperation in polygynous households' European University Institute, 31th May 2018.
- 'Cooperation in polygynous households' University of Namur, 27th March 2018.
- 'Risk taking and sharing when risk exposure is interdependent' NIBS Autumn Event 6<sup>th</sup> 8<sup>th</sup> September 2017.

- 'Cooperation and the behavioural foundations of cooperation between spouses' 8th Development Economics Workshop, Wageningen University, 11<sup>th</sup> 12<sup>th</sup> May 2017.
- 'Cooperation in polygynous households: Findings from a lab-in-the-field experiment in Nigeria' Joint Economics-Psychology Seminar Series, University of Kent, 9th February 2017
- 'Unemployment and distributive preferences: Results from a longitudinal lab-in-the-field experiment' Berlin Behavioral Economics seminar series, 29<sup>th</sup> June, 2016.
- 'Identifying the mechanisms at work behind effective community-based monitoring of schools: A mixed experimental methods approach' Deutsches Institut für Wirtschaftsforschung, Berlin, 30<sup>th</sup> June 2016.
- 'Cooperation in polygynous households: Findings from a lab-in-the-field study in Nigeria' Stockholm Institute of Transition Economics, Stockholm University, 17th May 2016
- 'Unemployment and distributive preferences: Results from a longitudinal lab-in-the-field experiment' at the Network of Integrated Behavoural Science Conference, University of East Anglia, 4<sup>th</sup> 6<sup>th</sup> April, 2016.
- 'Cooperation in polygynous households: Findings from a lab-in-the-field study in Nigeria' at the Experimental Development Economics: Lab in the Field workshop, University of East Anglia, 3<sup>rd</sup> April, 2016.
- 'Cooperative efficiency in monogamous and polygynous households: Findings from a lab-in-the-field experiment in Nigeria' Centre for Experimental Social Science, Nuffield College, University of Oxford, 16th June, 2015.
- 'Mixing methods to generate insights into the mechanisms at work behind behaviour-changing interventions' at the workshop on Comparative (Framed) Field Experiments on the Environment, Universitat Autònoma de Barcelona, 18<sup>th</sup> 20<sup>th</sup> May, 2015.
- 'The Roots of Human Sociality Project' at the workshop on Comparative (Framed) Field Experiments on the Environment, Universitat Autònoma de Barcelona, 18<sup>th</sup> 20<sup>th</sup> May, 2015.
- 'The Causal Effect of Unemployment on Distributive Preferences' at the workshop on Behavioural Science and Policy, Network of Integrated Behavoural Science, University of Nottingham, 21<sup>st</sup> 23<sup>rd</sup> April, 2015.
- 'Economic experiments and the behavioural foundations of the political economy' Centre for Economic and Political Research (NICEP), University of Nottingham, 4<sup>th</sup> February, 2015.
- 'Collective coping in the presence of interdependent risk exposure' University of Gothenburg, 16<sup>th</sup> December 2014.
- 'The behavioural foundations of effective public sector accountability: Preliminary findings from Albania' at the workshop on Public Services in Developing Countries at CMPO, University of Bristol, 20<sup>th</sup> 21<sup>st</sup> November, 2014.
- 'Homo Æqualis: A cross-society evaluation of four models of other-regarding preferences' University of Essex, 27th January, 2014.
- 'Homo Æqualis: A cross-society evaluation of four models of other-regarding preferences' keynote speech, 2013 Symposium on Economic Experiments in Developing Countries, Norwegian School of Economics, Bergen, 5<sup>th</sup> 6<sup>th</sup> December, 2013.
- 'Homo Æqualis: A cross-cultural analysis of other-regarding preferences' Behaviour Laboratory at the University of Edinburgh Inaugural Conference,  $6^{th} 7^{th}$  June, 2013.
- 'Economic status and acknowledgement of earned entitlement' Experiments in Governance and Politics IX, University College London, 31<sup>st</sup> May 1<sup>st</sup> June, 2013.

- 'Information and collective action in the community-based monitoring of schools: Field and lab experimental evidence from Uganda' University of Reading, 20<sup>th</sup> March, 2013.
- 'Information and collective action in the community-based monitoring of schools: Field and lab experimental evidence from Uganda' University of York, 30<sup>th</sup> January, 2013.
- 'Information and collective action in the community-based monitoring of schools: Field and lab experimental evidence from Uganda' Universidad del País Vasco, 11<sup>th</sup> January, 2013.
- 'Economic status and acknowledgement of earned entitlement' Norwegian School of Economics, Bergen, Norway, 24<sup>th</sup> October, 2012.
- 'Economic status and acknowledgement of earned entitlement' University of East Anglia, 6<sup>th</sup> September, 2012.
- 'Economic status and acknowledgement of earned entitlement' University of Zurich, 20th April, 2012.
- 'Individual notions of distributive justice' Centre for the Study of African Economies Annual Conference, St. Catherine's College, Oxford, 20<sup>th</sup> March, 2012.
- 'Individual notions of distributive justice' Centre for the Study of African Economies' workshop on Experimental Development Economics, St. Catherine's College, Oxford, 17<sup>th</sup> March, 2012.
- 'Individual notions of distributive justice and relative economic status' School of Economics, University of Nottingham, 12<sup>th</sup> October, 2011.
- 'Using lab-type experiments to investigate public servant motivation and accountability relationships' 6<sup>th</sup> Annual CEDI Conference: Behavioural Development Economics, Brunel University, 26<sup>th</sup> May, 2011.
- Who should be charged with the duty of holding Ugandan primary school teachers to account?' Workshop on The Economics of Non-Profits, NGOs and Aid Effectiveness, Centre for Research in the Economics of Development (CRED), University of Namur, 15<sup>th</sup>-16<sup>th</sup> June, 2011.
- 'Corruption and Culture' The Kellogg Centre, Oxford, 19th May, 2011
- 'Using lab-type experiments to investigate accountability relationships' CSAE 25th Anniversary Conference 2011: Economic Development in Africa, University of Oxford, 20<sup>th</sup>-22<sup>nd</sup> March, 2011.
- 'Risk Sharing among Strangers and Neighbours Compared' 5th European Workshop on Experimental and Behavioral Economics, Bologna, 10<sup>th</sup> December 2010.
- 'Dictator games in the lab and in nature: Evidence of external validity from Ugandan primary schools' Experiments and Games in Surveys Workshop, Institute of Fiscal Studies, 3<sup>rd</sup> December 2010.
- 'Pro-social norms in lab-type experiments' UNICEF, New York, USA, 20th November 2010.
- 'Participatory accountability in Albanian primary schools: Combining surveys and lab-type experiments' The World Bank, Washington DC, USA, 28th October 2010.
- 'Just playing games? Lab-type experiments to investigate accountability relationships' The World Bank, Washington DC, USA, 28th October 2010.
- 'Using lab-type experiments to investigate accountability relationships' Department of Economics, Erasmus University, Rotterdam, the Netherlands, 22<sup>nd</sup> October 2010.
- 'Using lab-type experiments to investigate accountability relationships' Department of Economics, University of Sussex, 4<sup>th</sup> October 2010.
- 'Inequality, distributive justice and the individual' Distributive Justice Workshop, Nuffield Centre for Experimental Social Sciences, 28<sup>th</sup> September 2010.

# FUNDING

Co-investigator on a project entitled "International anti-corruption laws and local 2019 - 2020: social norms: Interactions and implications for policy" funded under The Global Integrity Anti-Corruption Evidence Programme. 2012 - 2017: Co-investigator within the ESRC funded "Network for Integrated Behavioural Science" 2013 - 2014: Principal investigator on a British Academy and Leverhulme funded project entitled "Collective responses to environmental risk" 2010 - 2011: Principal investigator on a Fell Fund funded project entitled "Inequality, Distributive Justice and the Individual" 2010 - 2011: Joined Dr. Masooda Bano as a researcher on an ESRC funded project entitled "Ideas and Beliefs in Development" 2010 - 2010: Joined the research team on a DfID funded project entitled "Improving institutions for pro-poor growth" 2007 - 2010: One of three researchers on an ESRC and DfID funded project entitled "An experimental analysis of network and group formation for collective action" 2007 - 2009: Research team member on an ESRC and DfID funded project entitled "Finance and formalisation as mechanisms for poverty reduction in Africa 2002 - 2006: Researcher in the ESRC funded "Global Poverty Research Group" 2001 - 2004: Research team member on a National Science Foundation funded project entitled "The roots of human sociality" 2001 - 2002: One of two researchers on a Russell Sage Foundation funded project entitled "Trust, trustworthiness, and the dynamics of trustfulness" 2000 - 2002: Sole researcher on an ESRC funded project entitled "From strangers to neighbours: Identifying the pre-conditions for social capital development"

#### **TEACHING**

1998 - 2000:

# 2019 - Associate Fellow of the Higher Education Academy

ethnicity and entrepreneurship in Africa"

## PhD. and DPhil. Supervision (completed):

Xueheng Li (2018), University of Nottingham, now Assistant Professor, Institute for Social and Economic Research, Nanjing Audit University

Research team member on a World Bank funded project entitled "The economics of

Georgia Michailidou (2017), University of Nottingham, now Postdoctoral Associate, New York University, Abu Dhabi

Tom Lane (2017), University of Nottingham, now Assistant Professor, School of Economics, University of Nottingham, Ningbo, China

Ashira Perera (2016), University of Nottingham, now at Oxford Policy Management

Ingrid Shaw (2009), University of Oxford, now a policy consultant and independent researcher

Danila Serra (2008), University of Oxford, now Assistant Professor, Department of Economics, Southern Methodist University

Tom LeQuesne (2005), University of Oxford, now Head of the Inclusive Economy

Unit, Department for Culture, Media and Sport, UK

Truman Packard (2002), University of Oxford, now Lead Economist, Human

Development, Europe and Central Asia Office, The World Bank

**Graduate:** Applied Behavioural Economics, 2011-2018, University of Nottingham

Development Policy Analysis, 2011-2018, University of Nottingham

Mathematics for Economists, MSc in Development Economics, 1995-1996,

University of Oxford

# Undergraduate:

Applied Econometrics I, 2018-, University of Nottingham

The Undergraduate Dissertation, 2015-, University of Nottingham

Quantitative Economics III, 2015-2018, University of Nottingham

The Econometrics Project, 2011-2013, University of Nottingham

### PROFESSIONAL MEMBERSHIPS

Research Associate/Affiliate: Centre for Experimental Social Science, Nuffield College, Oxford; Institute for Fiscal Studies, London; Research Unit in Behavioural Economics and Neuroeconomics, University of Cape Town, South Africa.

Editorial Board Member: Journal of Experimental Political Science.

Management Committee member: Economics Science Association

Scientific Committee Member: 3<sup>rd</sup> Scientific Committee, Economic Development and Institutions

**Member:** European Development Research Network; Royal Economics Society; Economic Science Association; Experiments in Governance and Politics.

## REFEREEING

Journals: American Economic Review, Quarterly Journal of Economics, Review of Economics Studies, Economic Journal, Journal of European Economic Association, European Economic Review, Oxford Economic Papers, Journal of Public Economics, Games and Economic Behavior, Journal of Economic Behavior and Organization, Experimental Economics, Journal of Experimental Political Science, Journal of Evolutionary Economics, Journal of Development Economics, Economic Development and Cultural Change, World Development, Journal of Development Studies, Journal of International Development, Journal of African Economics, Environment and Development Economics, Review of Income and Wealth, Journal of Comparative Economics, International Review of Economics, Science, Nature, American Journal of Political Science, Current Anthropology, International Journal of Social Research Methodology, Journal of Behavioral Decision Making, Journal of Human Resources, Agriculture and Human Values, Evolution and Human Behavior.

**Funding bodies:** Economic and Social Research Council, British Academy, Department for International Development, Leverhulme Trust, National Centre for Research Methods, United States-Israel Bi-national Science Foundation, AUSAID, National Research Foundation South Africa.