

TYPES OF NON-KIN NETWORKS AND THEIR ASSOCIATION WITH SURVIVAL IN LATE ADULTHOOD

**forthcoming in
JGSS**

LEA ELLWARDT
Assistant Professor

University of Cologne



MARJA AARTSEN
THEO VAN TILBURG



SOCIAL INTEGRATION IS DETERMINANT OF HEALTH



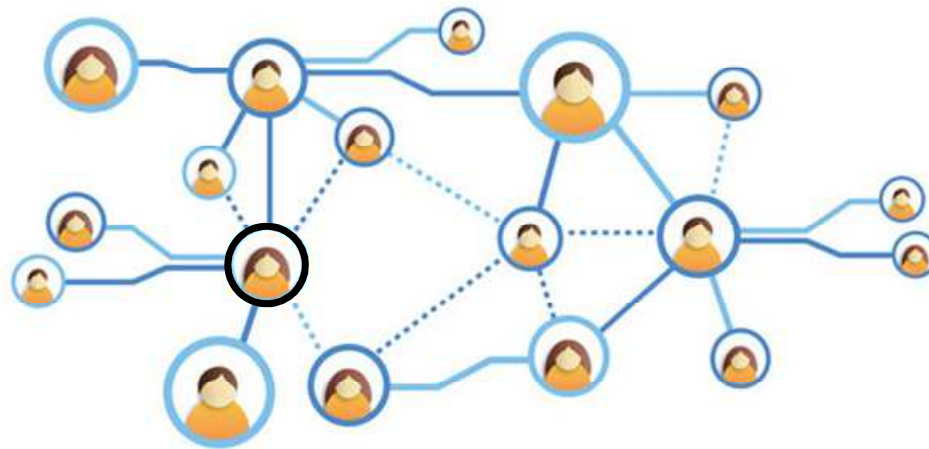
Isolation as chronically stressful condition contributes to functional decline and accelerated aging

Integration reduces risk of age-related morbidity and mortality

SOCIAL CONVOY MODEL (Kahn & Antonucci, 1980)

Composition and quality
of network is shaped
throughout life-course

Different types of social convoys
exist in late adulthood due to
varying gains and losses



Largest benefits for enhanced functional and structural characteristics

SOCIO-EMOTIONAL SELECTIVITY THEORY (Carstensen, 1993)

Composition and quality
increasingly geared towards
emotional needs

Drop weak ties
but invest in few
useful relations



Largest benefits for enhanced functional and reduced structural characteristics

NETWORKS IN OLD AGE ARE HETEROGENEOUS

Previous research focused on overall network and mental health

BUT...

Heterogeneity mainly based on instable non-kin relations

Unique contribution of non-kin relations

Voluntariness (functional)

Diversity (structural)

Social Network Types Among Older Adults: A Multidimensional Approach

Katherine L. Fiori,¹ Jacqui Smith,^{1,2} and Toni C. Antonucci¹

A Latent Class Analysis of Friendship Network Types and Their Predictors in the Second Half of Life

Martina Miche,¹ Oliver Huxhold,² and Nan L. Stevens³

¹Department of Psychological Aging Research, Heidelberg University, Germany.
²German Centre of Gerontology, Berlin, Germany.
³Rotterdam Science Institute, Radboud University Nijmegen, the Netherlands.

Social Network Typologies and Mental Health Among Older Adults

Katherine L. Fiori,¹ Toni C. Antonucci, and Kai S. Cortina

University of Michigan

Network Type and Mortality Risk in Later Life

Howard Litwin, DSW,¹ and Sharon Shiovitz-Ezra, PhD²

Purpose: The purpose of this study was to examine the association of baseline network type and 7-year mortality risk in later life. **Design and Methods:** We executed secondary analysis of all-cause mortality in Israel using data from a 1997 national survey of adults aged 60 and older (N = 5,053) that was linked to records from the National Death Registry up to 2004. We considered six network types—diverse, friend focused, neighbor focused, family focused, community-clan, and restricted—in the analysis, controlling for population group, sociodemographic background, and health factors. We carried out Cox

network types, may be related to rates of mortality. Examination of this association is important for gerontological knowledge development insofar as most of the factors that correlate with late-life mortality are irreversible. Exceptional in this respect is the domain of social networks, which can serve as a target of purposive social intervention.

The notion of network type constitutes a useful diagnostic and analytic construct. Despite the potential contribution of this emerging measure, researchers have not yet applied it to the analysis of mortality in later life. The current investigation addresses this goal by using network-related survey data to derive

mine if
d 1,669
diverse,
and two
pressive
diverse
pressive
can the
network

hips,
study
, and
rese-
nds-
type-
med-
istic

RESEARCH QUESTIONS



Which types of non-kin networks exist among older adults?

Do chances of survival vary among the different types?

PANEL DATA FROM THE NETHERLANDS

Longitudinal Aging Study Amsterdam (LASA)

11 Dutch municipalities

7 waves with 3-year time lag (1992-2013)

2,440 participants interviewed (53% female)

7,304 observations

$M_{\text{age}} = 70, SD_{\text{age}} = 8.6$



MEASURES

DEPENDENT

Mortality

Censored to 5 years
after last observation

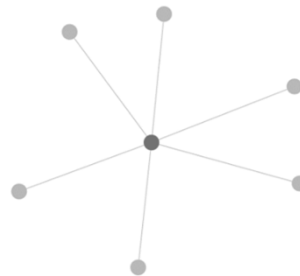


INDEPENDENT

Number/amount and variation

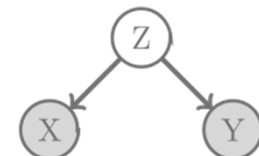
- Non-kin relations
- Emotional support
- Instrumental support
- Contact frequency

Tertiles (low, middle, high)



CONFOUNDING

Age, gender, education
Physical health
Mental health
Partner (yes/no)
Kin relations



ANALYTICAL STRATEGY

1. Identify number of different network types within population

Latent class analysis (LCA) with k classes ($k=1,2,\dots,7$)

Re-run best model with socio-demographic confounders in conditional LCA

Using *LCA Stata Plugin* by Lanza *et al.*, 2014

2. Assign individuals to network types

1,000 multiple pseudo-draws

Random draws from individual posterior probability distributions

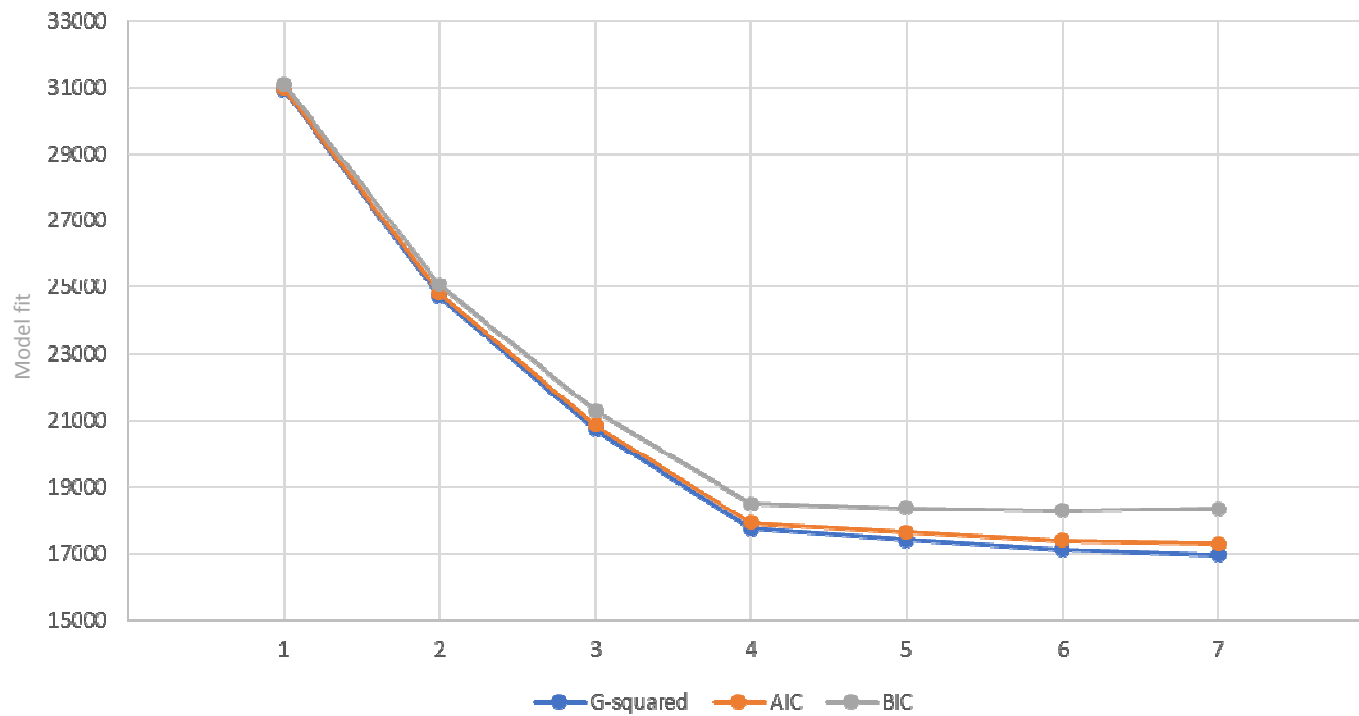
3. Test association of membership in network types with mortality

Cox proportional hazard regression model

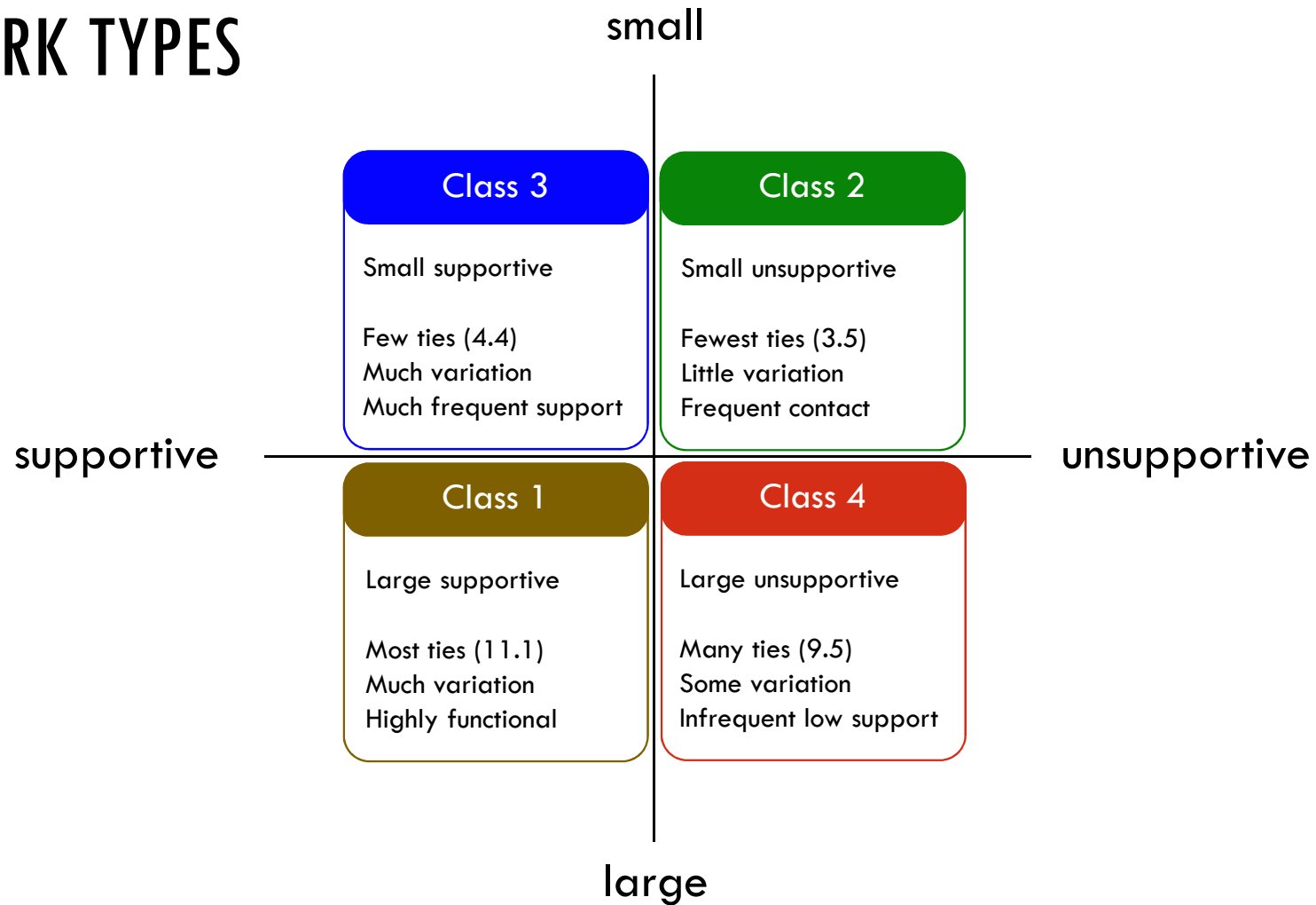
Stratified for gender and age groups

Inspect distribution of 1,000 HR estimates

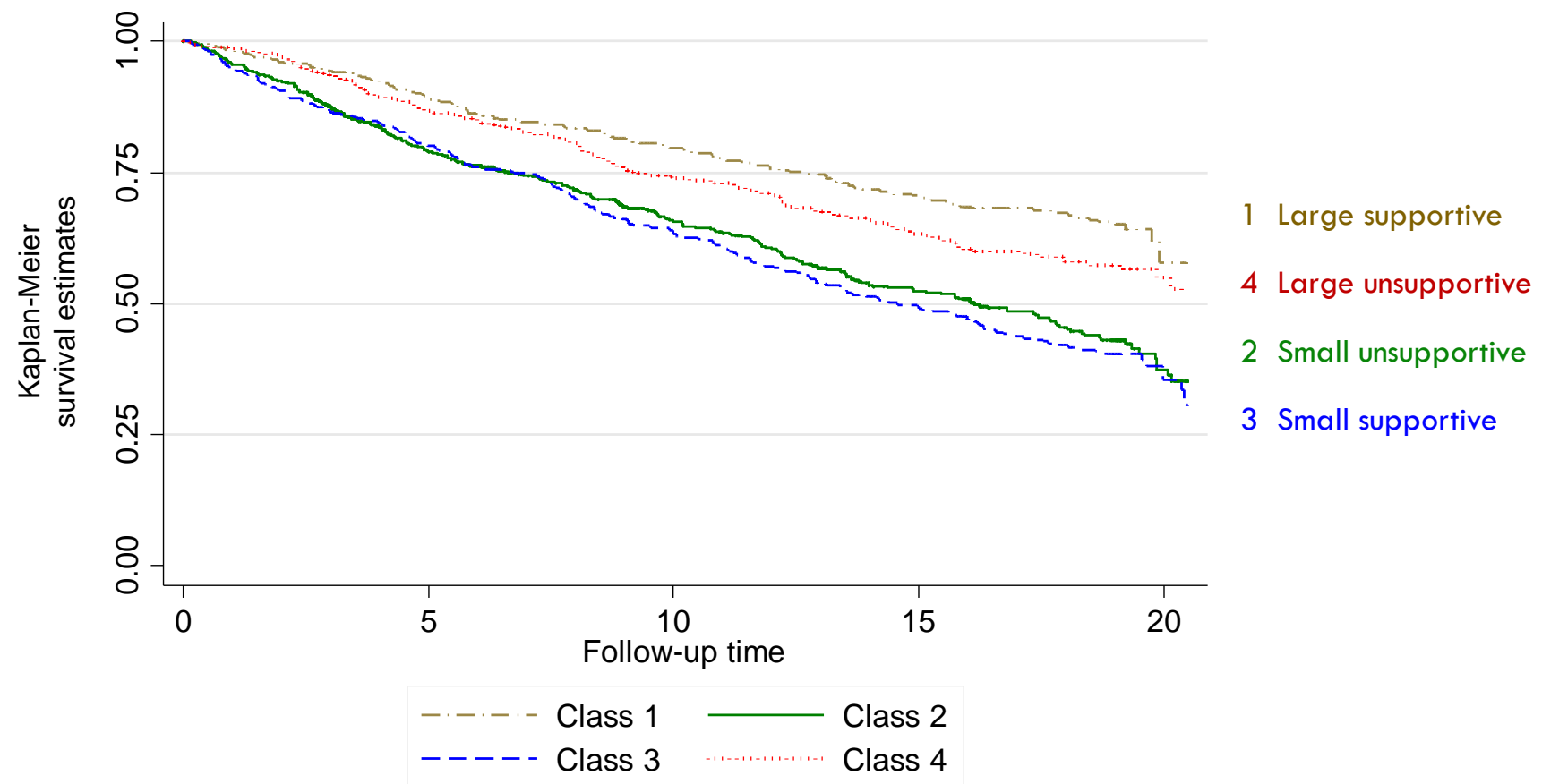
FOUR LATENT NON-KIN NETWORK TYPES



FOUR LATENT NON-KIN NETWORK TYPES



CHANCES OF SURVIVAL DIFFER ACROSS NETWORK TYPES

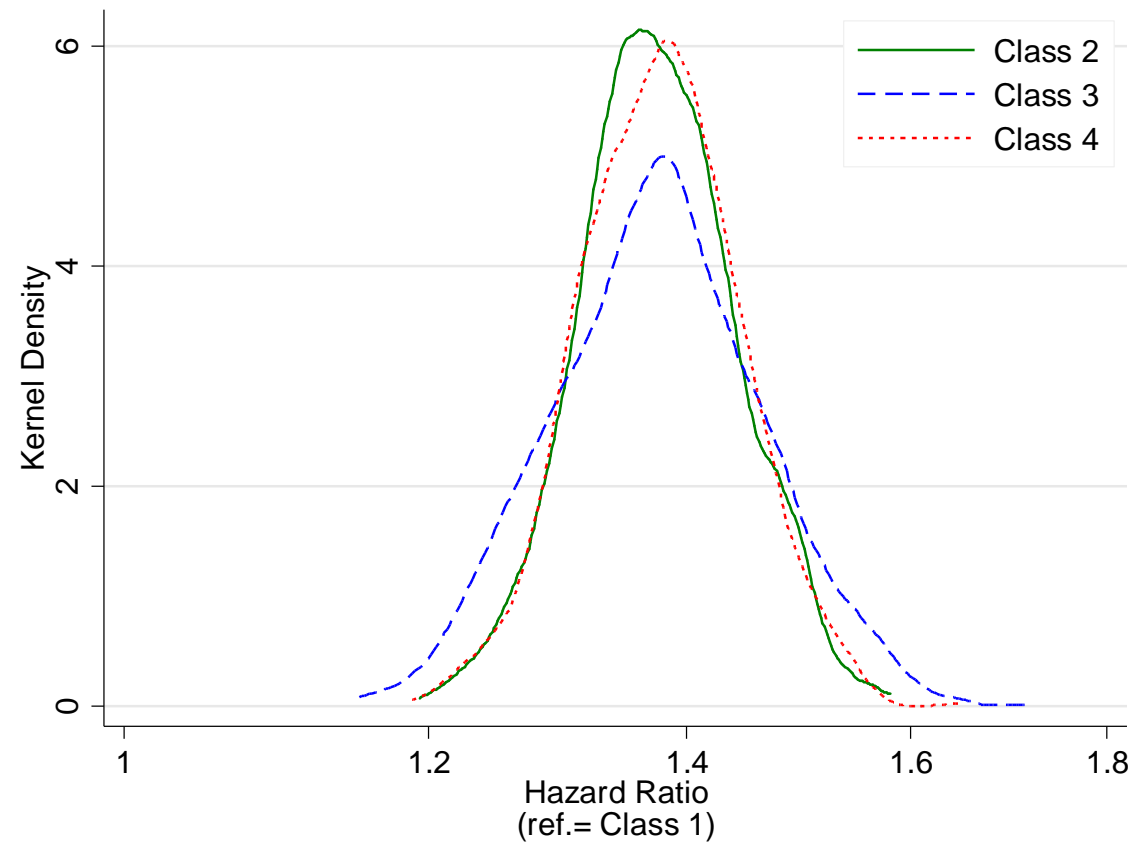


ASSOCIATION WITH MORTALITY RISK

	Model 1		Model 2		Model 3		Model 4	
	HR	CI	HR	CI	HR	CI	HR	CI
Class 1 (ref.)								
Class 2	1.513	1.212,1.889	1.513	1.210,1.891	1.474	1.176,1.847	1.463	1.165,1.836
Class 3	1.565	1.242,1.972	1.521	1.206,1.919	1.494	1.183,1.886	1.468	1.161,1.856
Class 4	1.344	1.053,1.714	1.404	1.100,1.793	1.419	1.111,1.813	1.435	1.123,1.834
Education	0.967	0.932,1.004	0.990	0.953,1.028	1.006	0.968,1.046	1.005	0.967,1.045
No. chronic diseases			1.243	1.168,1.323	1.238	1.162,1.319	1.238	1.163,1.319
Physical functioning			0.941	0.927,0.954	0.951	0.936,0.965	0.952	0.937,0.966
Depression					1.023	1.009,1.037	1.021	1.007,1.035
Anxiety					0.969	0.940,0.999	0.972	0.943,1.002
Cognition (MMSE)					0.962	0.939,0.986	0.963	0.939,0.987
Partner							0.881	0.742,1.047
No. kin relations							0.992	0.978,1.007

RESULTS ROBUST AFTER 1,000 PSEUDO-DRAWS

Class	draws	mean	sd	min	max
Class 2	1,000	1.34	.06	1.17	1.55
Class 3	1,000	1.34	.08	1.13	1.64
Class 4	1,000	1.35	.06	1.17	1.55



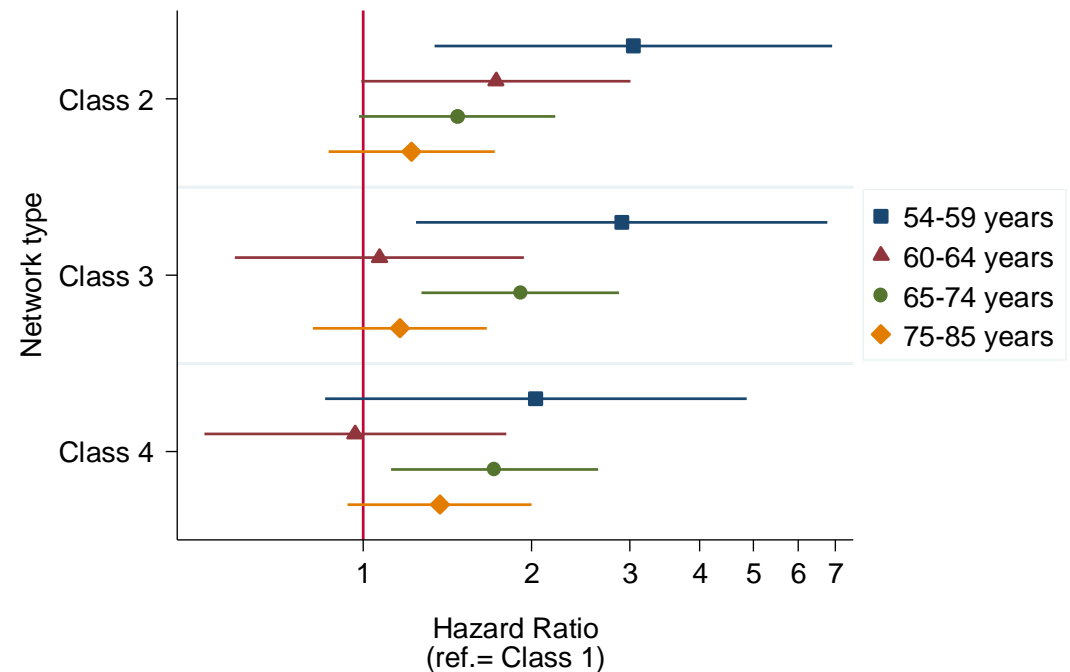
RESULTS NOT ATTRIBUTED TO SUBPOPULATIONS

Tests for alternative explanations:
selection effect, attrition bias,
mediation, moderation

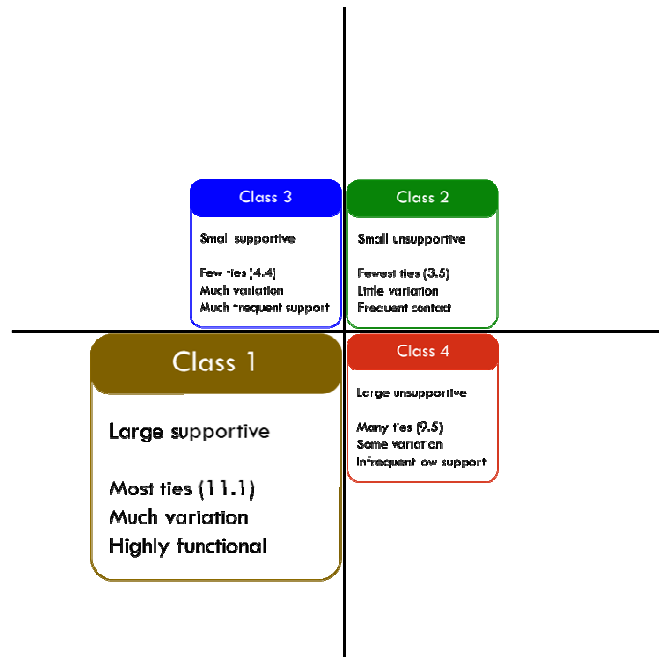
Tests including health confounders in
conditional LCA

Tests separately for men and women

Tests separately for age groups



LARGE VARIED SUPPORT NETWORKS MAKE THE DIFFERENCE



Neither contact with many non-kin relations, nor receipt of much support alone facilitated higher chances of survival

Effects showed independent of important health factors and social variables

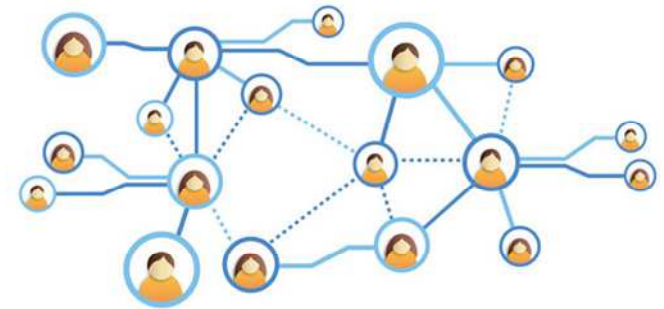
SOCIAL EPIDEMIOLOGY MAY FOCUS MORE ON NON-KIN

Support for Social Convoy Model

Combination of functional and structural network resources seems beneficial

Partly questions Socio-emotional Selectivity Theory

Older adults with selective dependent networks are not better off



PRACTICAL IMPLICATIONS AND OUTLOOK

Life-course approach makes interventions to improve networks difficult

Intervening strategies should be directed towards nourishing existing non-kin contacts



Reliance on non-kin contacts as **non-negligible driver of inequality** in health and survival in aging populations

RELATED PUBLICATIONS

Ellwardt, L., Van Tilburg, T., Aartsen, M., Wittek, R., Steverink, N. (2015): Personal Networks and Mortality Risk in Older Adults: A twenty-year longitudinal study. *PLoS ONE*, 10(3): e0116731.

Ellwardt, L., Van Tilburg, T., Aartsen, M. (2015): The Mix Matters: Complex Personal Networks Relate to Higher Cognitive Functioning in Old Age. *Social Science & Medicine*, 125, 107-115.

Ellwardt, L., Peter, S., Präg, P., Steverink, N. (2014): Social Contacts of Older People in 27 European Countries: The Role of Welfare Spending and Economic Inequality. *European Sociological Review*, 30(4), 413-430.

Ellwardt, L., Aartsen, M., Deeg, D., Steverink, N. (2013): Does Loneliness Mediate the Relation between Social Support and Cognitive Functioning in Later Life? *Social Science & Medicine*, 98, 116-124.

ellwardt@wiso.uni-koeln.de
www.lea-ellwardt.de

