Connecting Alone: Smartphone Use, Quality of Social Interactions and Well-being

Valentina Rotondi[13] Luca Stanca[2] Miriam Tomasuolo[4]

[2]University of Milan-Bicocca

[1]Bocconi University [3]LCSR-HSE Moscow [4]Catholic University of Milan

Outline

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BEFORE SMARTPHONES
HOW OLD IS BARBRA STREISAND?
I THINK SHE'S 71
REALLY? WOW!
WHO'S BARBRA STREISAND?
AFTER SMARTPHONES
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Key points

- Quantity and quality of social interactions matter for SWB
- The intrusiveness of the smartphone:

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- Quantity and quality of social interactions matter for SWB
- The intrusiveness of the smartphone:
  - reduces the quality of face-to-face interactions
  - affects their evaluation in terms of SWB

Conceptual Framework

- World's most popular electronic device
- In 2015 half of the world's population owned a smartphone. This percentage will reach 80% in 2020.
- People spend 5 hours a day on their smartphones (Andrews et al., 2015)
- The device first thing people look at in the morning, last thing they look at before sleep.

Conceptual Framework

This technology much more intrusive than any other

- satisfy more complex activities
- subsumes a wide range of tecnologies and needs
- total portability

Conceptual Framework

- Absent-presence (Katz and Aakhus, 2002)
- Social fragmentation (Gergen, 2003)
- Withdrawal from immediate relationships (Miller-Ott et al., 2012; McDaniel and Coyne, 2016)
- Adverse effect in terms of satisfaction with social interactions and, ultimately, well-being.

Outline

Data

- Multipurpose Survey on Households (ISTAT, 2015)
- Large and representative sample of Italian individuals
- Five years: 2010-2014
- $16 \leqslant Age \leqslant 75$
- obs. $= 145{,}000$

Methods

- OLS and Ordered Logit Model
- Quantile regression
- IV
- Propensity Score Matching

Measurement

Explicative Variables:

- Smartphone use (binary)
- Time spent with friends (binary and 6-point scale)

Dependent Variable:

- Life satisfaction (10-point scale)

Summary statistics

Outline

Figure: Smartphone penetration and time spent with friends, by region

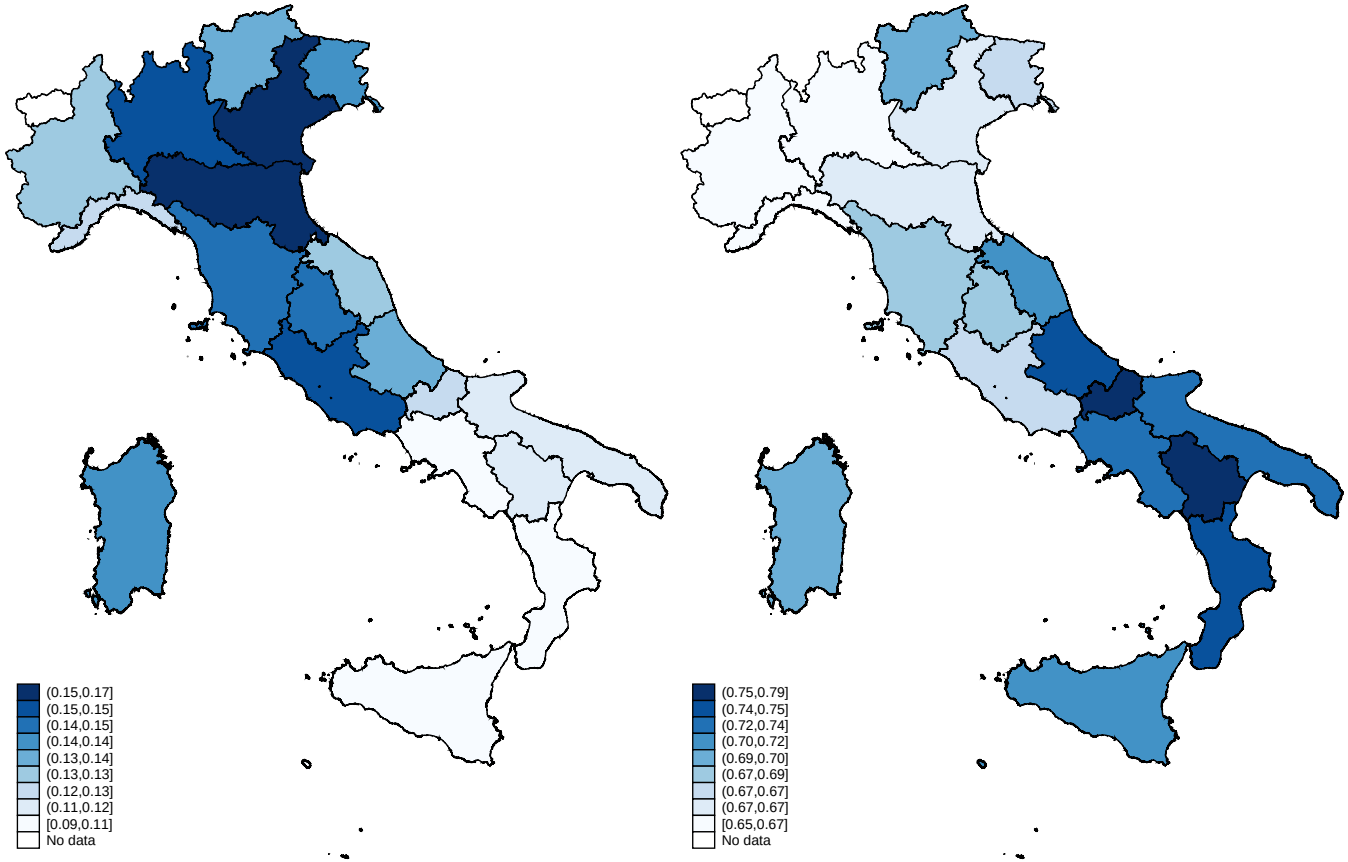

Table: Smartphone use, social interactions and well-being (OLS)

	(1)	(2)	(3)
Time friends d1	0.307**		
	(0.012)		
Time friends d1 * Smartphone	-0.112**		
	(0.031)		
Time friends d2		0.238**	
		(0.011)	
Time friends d2 * Smartphone		-0.090**	
		(0.025)	
Time friends			0.129**
			(0.004)
Time friends * Smartphone			-0.034**
			(0.011)
Smartphone use	0.163**	0.127**	0.224**
	(0.029)	(0.020)	(0.052)
R^2	0.121	0.119	0.124
N.	139451	139451	139451

Note: dependent variable: Life Satisfaction. Additional explanatory variables, not reported in the table, are described in Table 4. Heteroskedasticity-robust standard errors clustered at the household level reported in brackets. * $p<0.05$, ** $p<0.01$

- OLS focuses on the effects at the mean of the conditional distribution of the dependent variable
- The moderating role of the smartphone may differ by levels of well-being

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Table: Smartphone, social interactions and well-being, quantile regression

	0.10	0.30	0.50	0.70	0.90
Time friends d1	0.481**	0.240**	0.283**	0.000	0.151**
	(0.021)	(0.009)	(0.010)	(2.215)	(0.018)
Time friends d1 * Smartphone	-0.202**	-0.099**	-0.159**	-0.008	0.003
	(0.064)	(0.027)	(0.030)	(3.427)	(0.033)
Smartphone use	0.244**	0.154**	0.201**	0.000	-0.008
	(0.061)	(0.026)	(0.029)	(3.305)	(0.026)

Note: dependent variable: life satisfaction. Quantile regression estimates. Additional explanatory variables, not reported in the table, are described in Table 4. Heteroskedasticity-robust standard errors clustered at the household level reported in brackets. Number of observations: 139,451. * $p<0.05$, ** $p<0.01$

Addressing Endogeneity

Main problems using cross-sectional data:

- Reverse causality - what causes what?
- Omission of relevant variables

Addressing Endogeneity - Instruments

- Share of respondents in each region/year who report to use the smartphone

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- Average time spent at work in each region/year

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- Average time spent at work in each region/year
- "Introduction of 4G technology in Italy"

First stage

Figure: Smartphone penetration before and after introduction of 4G

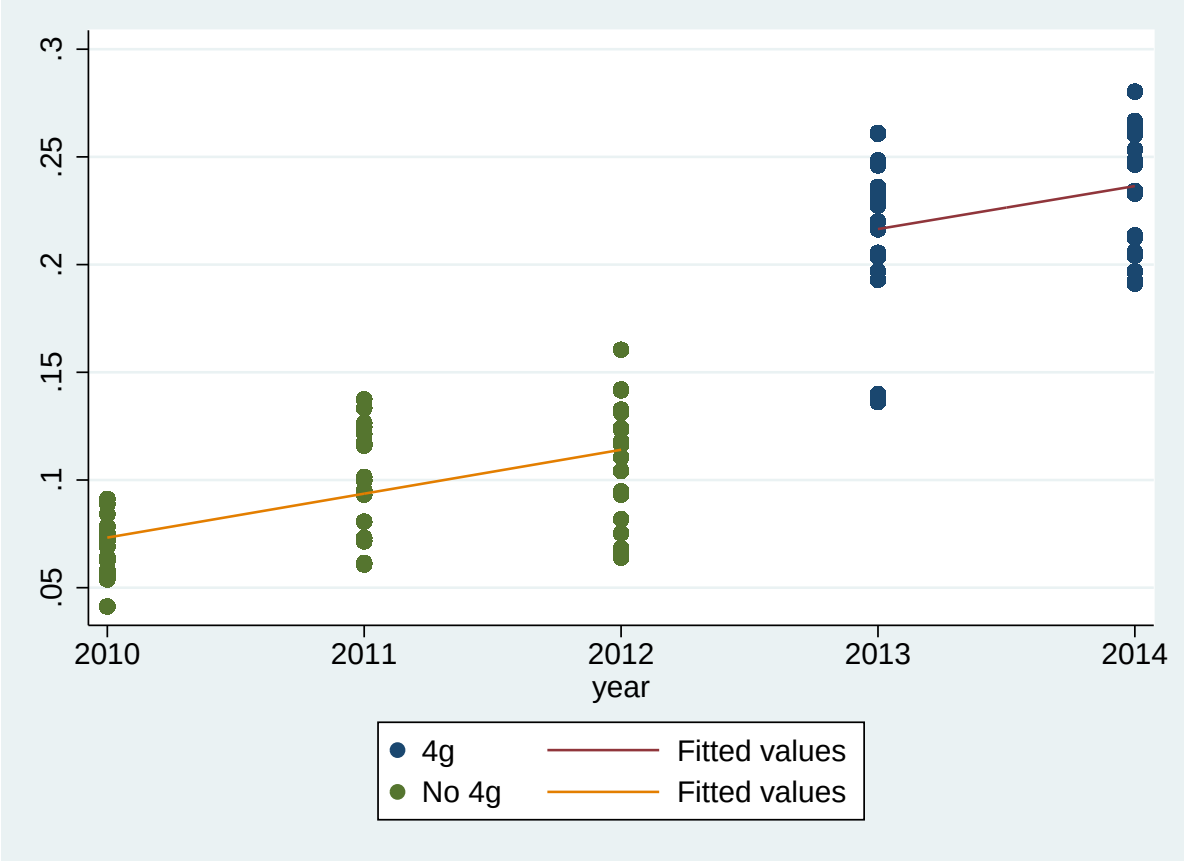

Table: Effects of smart-phone, instrumental variables regression

	(1) Life satisfaction	(2) Life satisfaction	(3) Life satisfaction
Smartphone use	0.240**	7.419**	10.956**
	(0.041)	(2.636)	(3.910)
Friends d1	0.349**	0.021	2.267**
	(0.013)	(0.400)	(0.499)
Friends d1 * smartphone	-0.198**	-8.066*	-15.046**
	(0.046)	(3.241)	(4.662)
N.	139451	139451	139451

Note: IV regression. Covariates as described in Table 4. Heteroskedasticity-robust standard errors clustered at the household level. * $p<0.05$, ** $p<0.01$

Outline

Conclusions

- Smartphone can negatively affect the quality of time spent with others... a major determinant of individual well-being

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- This effect decreases monotonically along the distribution of well-being
- Robust to alternative specifications and estimation techniques

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- ...can make feel people isolated, even when they are close to others
- Why do people choose to make sub-optimal decision?
- Is it an irrational behaviour?
- or is it an obtimal decision?

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- How could *homo smartphoniens* adapt to this new technology **without get carried away by it...?**

Conclusions

- How could *homo smartphoniens* adapt to this new technology **without get carried away by it...?**
- **...By remebering what is that makes us human:**

...the relationships with other humans

Thank you

Table: Selected summary statistics

Variable	Mean	Std. Dev.	Min.	Max.	N
Life satisfaction	7.05	1.7	0	10	144809
Satisfaction with friends	3.1	0.67	1	4	145030
Smartphone use	0.13	0.34	0	1	144830
Time spent with friends	4.19	1.37	1	6	147125
Time spent with friends d1	0.70	0.46	0	1	147125
Time spent with friends d2	0.47	0.5	0	1	147125
Smartphone penetration (region/year. IV)	0.14	0.07	0.04	0.28	148088
Time spent with friends (region/year. IV)	0.70	0.04	0.61	0.8	148088
Presence of 4G network (IV)	0.3	0.46	0	1	148088
Time dev. to work (region/year)	20.4	3.24	14.94	29.02	148088

Source: Multipurpose survey on households

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Table: Effects of smart-phone, instrumental variables regression

	(1) Smart.	(2) Friends d1	(3) Friends d1*Smart.	(4) Smart.	(5) Friends d1	(6) Friends d1*Smart.	(7) Smart.	(8) Friends d1	(9) Friends d1*Smart.
Smart. penetration (household/year)	0.964**	-0.026**	0.064**						
	(0.001)	(0.002)	(0.003)						
Avg. time friends (household)	-0.015**	0.982**	-0.022**						
	(0.000)	(0.000)	(0.001)						
Friends*Smart. (household)	-0.007**	-0.013**	0.914**						
	(0.002)	(0.002)	(0.003)						
Smart. penetration (region/year)				0.910**	-0.112	0.166			
				(0.269)	(0.372)	(0.250)			
Friends (region/year)				0.015	0.989**	-0.068	-0.183**	0.956**	-0.166**
				(0.072)	(0.109)	(0.067)	(0.057)	(0.086)	(0.052)
Avg.smart.*Avg.friends				-0.018	0.060	0.780*			
				(0.372)	(0.505)	(0.347)			
4G network							0.107**	0.007	0.018
							(0.039)	(0.051)	(0.036)
4G*Avg.friends							0.029	-0.006	0.127*
							(0.055)	(0.073)	(0.052)
F	44995.43**	27005**	38909.19 **	49.63**	43.68**	38.35**	1010.96**	48.51**	841.95**

Note: First stage regression. Covariates as described in Table 4. Heteroskedasticity-robust standard errors clustered at the household level. Number of observations: 141981. * $p<0.05$, ** $p<0.01$

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