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Family ties revisited: Evidence from the Italian survey on family and social subjects

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Keywords: family ties, inter-generational relations, education, gender

Abstract

This study provides a review of the concept of family ties. It then measures family ties in an unprecedentedly all-encompassing way, accounting for the individual heterogeneity (by context, gender, education and age) that may affect them, looking at the patterns of variation among the different dimensions. Indeed, a large number of indicators have been used in the literature to measure family ties, but the inter-relation among their dimensions has rarely been explicitly taken into account. Furthermore, family ties have been assumed to be invariant among different individuals, without any formal test of this assumption. The analysis is based on Italian National Statistical Office (ISTAT) survey on family and social subjects (FFS 2016) on 24,753 individuals. A Structural Equation Model (SEM) is used to measure the different family tie dimensions and to test their invariance by individual characteristics. The results bring out seven dimensions of family ties. These dimensions are invariant by context and gender, but not by education and age. These findings offer a clear picture of the concept of family ties and show how this concept is differently perceived on the basis of some ascribed and some acquired personal characteristics.

Introduction

Family ties are frequently invoked in the social sciences to explain societal differences in organizational structures and different individual behaviours at the micro-level. The concept of

family ties follows on from historical studies on family systems, their origins, and their impact on economic development and prosperity. The idea of family ties particularly caught on after Banfield's (1958) ethnographic study of a small village in the south of Italy, *The moral basis of a backward society*. In this work Banfield argued that general backwardness and blocks to change in Southern Italy were due to an amoral vision of the family (*amoral familism*), which in Banfield's view is about maximizing «the material, short run advantage of the nuclear family». Starting with this Italian example, family ties took on an important role in explaining how deep cultural ideas and beliefs about the family could have a pervasive impact on societal structures and development. Coleman (1990) elaborated on these observations suggesting that in societies based on strong family ties, selfish behaviour outside the family network is deemed acceptable. Instead, in those societies in which the ties are weaker, individuals are more prone to trust unknown others, something which enhances cooperation. Since the seminal works of Banfield and Coleman, family ties have become an important concept in the social sciences, and it has been argued that they explain variation in political interest and activism (Alesina and Giuliano, 2011; 2014), social trust (Yamagishi et al., 1998), economic prosperity and demographic behaviors such as fertility (Livi Bacci, 2002).

However, the concept has been measured using a large array of different variables with different dimensions concerning the family, though there has seldom been any attempt to account for inter-relations among these dimensions. This practice has undermined the complexity of the concept, that cannot be properly proxied by the use of a restricted and narrow number of *ad-hoc* variables without avoiding poor theorization and incomplete measurements.

Starting with these considerations, this study offers three main contributions. First, we empirically review the measures employed for family ties. For this purpose, the FFS 2016 is ideal, being probably the most comprehensive survey containing indicators of family ties. It also includes norms towards the family and new additional measures, such as frequency of contact through new technologies. Secondly, we control for the fact that different individuals may conceive the various

dimensions of family ties differently. In other words, the concept of family ties may be affected by individual heterogeneity, a fact that would undermine the external validity of family ties studies. In this light, we focus in on family ties invariance by the respondent's context (North-Centre vs. South and Islands), gender (women vs. men) education (low- vs. highly-educated) and age (18-30; 31-40; 41-50; 51+). Thirdly, once we have established to what extent the dimensions of family ties are consistent across these socio-demographics, we assess correlation patterns within the different sub-populations under analysis. This last step sheds light on different family ties practices for people with different characteristics.

Family ties and context

The literature has often studied variation in family ties in different socio-economic and cultural contexts, looking particularly at their territorial heterogeneity. In his review, Reher (1998) argued for a North-South gradient in inter-generational exchange, with northern European countries (e.g. Scandinavia, the UK, Germany) characterized by weak tie patterns with less direct family support and with care for younger children being largely outsourced to external institutions. On the other hand, Mediterranean countries (Italy, Spain, Greece) have strong family ties where support networks among family members are particularly strong all the way through life; a fundamental characteristic in these societies (Dykstra and Fokkema 2011). Indeed, inter-generational money and time transfers have been found to be less frequent but more intense in southern European than in northern European countries, with middle European countries somewhere in between (Albertini et al., 2007; Albertini and Kohli, 2013; Attias-Donfut et al. 2005). A similar gradient emerges both with respect to filial obligation norms – namely the expectations that adult children will furnish support and help to elderly parents. These have been found to be higher in Spain and Israel and lower in Norway, England and Germany (Daatland and Herlofson, 2003). Analogous trends come up when territorial distance between children and parents is considered: Nordic populations

(including here the Dutch) are more likely to live further from their parents (more than 25 km away) than their peers in the Mediterranean (Greece, Italy and Spain): again central European nations (Austria, Germany, France and Switzerland) lie somewhere in between (Hank, 2007). The Mediterranean countries are also more likely to have daily contacts (of various types) than elsewhere (Hank, 2007). Similarly, Daatland and Lowenstein (2005), with new data coming from the OASIS study, considered inter-generational family solidarity over the same area, specifically the frequency of contacts, emotional closeness, help exchange and support for filial norms. The study countries were Norway, England, Germany, Spain and Israel: Spain had the highest frequency of contacts and (with Israel) of filial norms, while there were no significant differences in terms of providing and receiving help.

Despite this focus at the country level, the existence of sub-regional differences has also been recognised: for instance, «the southern fringes of […] Italy often show characteristics distinct from the northern parts» (Reher, 1998, p.203). This is due to persisting historical models of family organization and household formation (Viazzo, 2003; Di Giulio and Rosina, 2007; Dalla Zuanna et al., 2007), that date back to the Middle Ages (Reher, 1998). It can be confirmed by different forms of demographic behaviour in the two halves of the country (Micheli, 2000). In this sense, studies have shown that young people in the South of Italy - with respect to the Centre-North - leave their parental home earlier, but that they tend to live closer to their parents than their northern peers (Billari and Ongaro, 1998). Barbargli and colleagues (2003), meanwhile, finds that North-Eastern and Central couples are more likely to live closer to their parents than North-Western and Southern ones. Santarelli and Cottone (2009), in a study of four Italian regions with the data of Istat "Family, Social Subjects and Childhood Conditions 1998", find the greatest dependency from parents (in terms of proximity and financial support to buy a house) is in Umbria and that the lowest is in Liguria. These differences have been explained in terms of different cultural traits (Impicciatore, 2015), as «culture may explain why communities or persons living under apparently identical

economic conditions but differing in language or tradition, often behave very differently demographically» (Hammel, 1990, p.455).

Family ties and gender

Studies analysing family ties and gender show women to be the main kin-keeper and care-giver in the family. They a central role in actively maintaining inter-family relationships (Swartz, 2009; Luppi and Nazio, 2019), and it has been noted how the relationship between mother and daughter contributes «to the structure of the ties that hold families together in a socially embedded way» (Rossi, 1995, p. 275). This is the result of the different socialization of men and women (West and Zimmermann, 2009) and their different family roles, and it is reflected in the different family ties patterns. Indeed, women have more frequent contacts with the family network than men; this has been for instance found for US (Fingermann et al., 2020a; Swartz, 2009) and The Netherlands (van Gaalen et al., 2010), and this holds true irrespective of their proximity (Farkas and Hogan, 1995). Also, daughters are substantially more likely to provide care for their parents than sons, according to an underlying strategy for which the combination of elder caregiving with other family and work responsibilities is remarkably gendered (Soldo et al., 1990; Abel, 1991); women provide help within family but themselves receive less support from the very same family than men providing help (Bielby, 2006). They are also more involved emotionally in relationships with other family members: mothers are more likely to declare that they feel closer to their children (Rossi and Rossi, 1990), up to the point that they are psychologically affected by their children's negative life-course events; daughters, likewise, report stronger ties with parents (Lynott and Roberts, 1997). Furthermore, daughters have higher relationship quality, measured by the extent to which they affirm that they love and care (a) and understand (b) other family members. They also give more frequent support exchanges: financial, practical, emotional, advice, listening to talk about daily events) (Fingermann et al., 2020a; Lee et al., 2003). Some studies have found that women live

further away than men from their parents (Malmberg and Pettersson, 2007; Michielin et al., 2008), while others have found no gender difference in parent-child proximity (Lin and Rogerson, 1995; Fokkema et al., 2008; Chan and Ermisch, 2015). Different mechanisms may explain different proximity patterns by gender: on the one hand, women's more frequent contacts and the tendency to give help to other family members may make them more willing to live near parents (Blaauboer et al., 2011); on the other hand, men's willingness may be more important due to their dominant role on the labour market as workers (Mincer, 1978).

Family ties, age and education

The increased longevity and health in later life, on the one side, and the expansion of higher education, on the other, are two phenomena that have triggered in scholars some reflections on the new forms of family relationships and on their links with those factor what traditionally have shaped the family ties dynamics (Fuller et al. 2020). In general, the literature has underlined how individuals place stronger emphasis on family ties as they become older (Lang and Carstensen, 1994; Antonucci, 2001). In line with what prescribed by the socioemotional selectivity theory (SST), indeed, elder people highly value their family ties as they approach the final stages of their life (Carstensen et al, 1999), up to the point that they are positively biased towards family members (Winkeler et al., 2000) they list a higher number of relatives as close social ties and few as problematic than younger individuals (Fingerman and Birdit, 2003) and they are also more likely to classify their relationships as close instead of ambivalent (Fingerman et al., 2004). Theoretically, the paradigm of the «intergenerational solidarity model» (Bengston and Roberts, 1991), over the last half century has led much of the research on intergenerational relationships (Silverstein and Bengtson, 1997). This model identifies six dimensions of parent-child relations as key components of the intergenerational solidarity, which are: 1) contact; 2) affection; 3) agreement; 4) instrumental support; 5) norms and expectations; 6) availability.

The second long-term phenomenon connected with family ties practices is the expansion of higher education. High education levels have a liberalising effect on attitudes towards family and gender role behaviour (Di Giulio and Rosina, 2007; Trent and South, 1992). Different mechanisms have been hypothesized through which education may affect family ties (Ikkink et al., 1999).

Education directly modifies the individual's cultural system of reference; more or less educated people differ in terms of values, preferences, beliefs, attitudes and internalised norms towards family. In this sense, highly-educated people have generally been found to be more independent, with higher self-achievement and autonomy: these characteristics make them more individual-oriented, and as such they are less attached to their family and so have weaker family ties (Thornton and Young-DeMarco, 2001). They are also more rational than they are normative in their reasoning about relationships (Inglehart, 1997; Lesthaeghe and Meekers, 1986). As such they are less driven by feelings of reciprocity or obligations. Another hypothesized mechanism is that one between education and family ties which can act indirectly, through opportunity structures. Highly-educated people are more likely to move further away from their family home to find a job that matches their educational endowment, since the labour markets offering them more rewarding opportunities are geographically circumscribed and specific (Machin et al., 2012); conversely, low-educated workers have less specific skill-sets, and as such they are likely to find a suitable job without migrating or moving (Shelton and Grundy, 2000; Davis and Dingel, 2019). Furthermore, highly-educated people may invest more (in terms of motivation and effort) in their career and have higher aspirations. As such they may be more willing to accept good job opportunities even if far from their family households (Mcdonald et al., 2011). Some studies have confirmed this view, finding that higher education increases distance from parents' home (Malmberg and Pettersson, 2007; Choi et al., 2020), while other research has found a negligible association between education and distance (Assirelli and Tosi, 2013). There is also evidence that low-educated people report significantly more contacts (not distinguishing the form these contacts take) than those with higher education (Goldman and Cornwell, 2018); this also seems to be true in terms of their siblings (Verbalek De

and Graaf, 2004). In a study on both contacts and proximity, Kalmijn (2006) has found a sharp education gradient: less-educated individuals are about four times more likely to live close to their parents and they are two times more likely to have at least weekly contacts with them. Those who are more highly-educated compensate for lower face-to-face interactions with more contact *via* the phone. These results hold true irrespective of proximity: hence, the direct cultural mechanism seems to explain this educational gradient. Evidence shows that people with high school certificates or lower report significantly more contacts than the higher educated (even if is not possible to distinguish the type of contact) (Goldman and Cornwell, 2018).

This brief literature review has emphasized the extent to which different studies have relied on different measures, tapping into different family ties dimensions (contact, norms and obligations, support exchange and territorial distance), to draw their conclusions. Scholars may have underestimated the fact that family ties, as a complex concept, cannot be measured without taking into account its multidimensionality: indeed, while some dimensions may be strongly correlated, others may have very low magnitude or even null correlations (Gans and Silverstein, 2006). Also, it should be stressed that due to its complexity, family ties may "mean" different things for different persons: without explicitly accounting for this, one risks biased findings.

Method

Data

We use the data of the Italian National Statistical Office (ISTAT) survey on family and social subjects (FFS 2016 from now on) implemented by the Italian National Institute of Statistics (Istat) in 2016. It is part of an integrated system of social surveys - the Multipurpose survey on households - conducted in Italy every five years since 1998, and it represents the main national statistical source on the structure and socio-demographic characteristics of Italian families. This survey is a unique source of information for pursuing our analytical goals. It records not only information on all dimensions of family ties used in the literature. It also has a set of questions aiming at attitudes

around the concept of family. As such, the FFS 2016 is particularly suited to our purposes. It allows us to measure family ties by employing the full range of variables traditionally used in the literature. The original sample consisted of 24,753 individuals. We focused on individuals with mother, father and at least one sibling alive, so to observe both inter- and intra-generational ties. We then end up with an analytical sample of 4,394 individuals.

We define a three-step analytical strategy based on Structural Equation Modeling (SEM) estimates by the method of Maximum Likelihood. SEM utilizes the variance-covariance matrix of a chosen set of variables to estimate a system of linear equations among unobserved (constructs or factors) and observed (indicators) variables. This technique is particularly suitable for our purposes since it allows us to test a model imposing and assessing a theory-driven structure and to explicitly take into account the measurement errors of the variables used in the model (Byrne, 2011). SEM is composed of a measurement part (which estimates the paths among constructs and indicators) and a structural part (which estimates the paths among constructs). Since we are interested in testing the dimensionality of the concept of family ties, we focus on the measurement part of the SEM, which resembles Confirmatory Factor Analysis. Formally, a measurement SEM is defined as follows (Joreskog and Sorbom, 1982):

$$x = \Lambda_x \xi + \delta$$

where x represents a vector of observed indicators; Λ_x a q x n regression matrix of x on ξ; ξ a random vector of not-observed (latent) variables; δ a vector of measurement errors of x. In the first step, drawing on the literature on family ties, we estimate a theory-driven measurement model. In this way, we are able to define the ontology of family ties. Once we have identified the adequate psychometric properties of the concept of family ties in the overall sample, in the second step of the analysis we test for measurement invariance among key sub-groups. The invariance check determines the degree to which members of different populations ascribe the same meanings to the scale items (Milfont and Fischer, 2010). Hence, we estimate a Multi-Group Confirmatory Factor Analysis (MGCFA) where we impose between-group constraints on factor loadings and

simultaneously analyze the data from all groups (Bollen 1989; Byrne et al., 1989). This approach is recognized as providing the most powerful and versatile approach for testing measurement invariance (Steenkamp and Baumgartner, 1998). We estimate three different MGCFA models, each on different sub-groups based on: context (North-Centre vs. South and Islands)[1]; gender (men vs. women); and education (lower than tertiary vs. tertiary). Last, in the third step, once we have established the degree of model invariance by sub-populations of interest, we look at the correlations among the different identified dimensions. We do so to define how family ties patterns resemble each other in subjects with different socio-demographic characteristics.

Measures

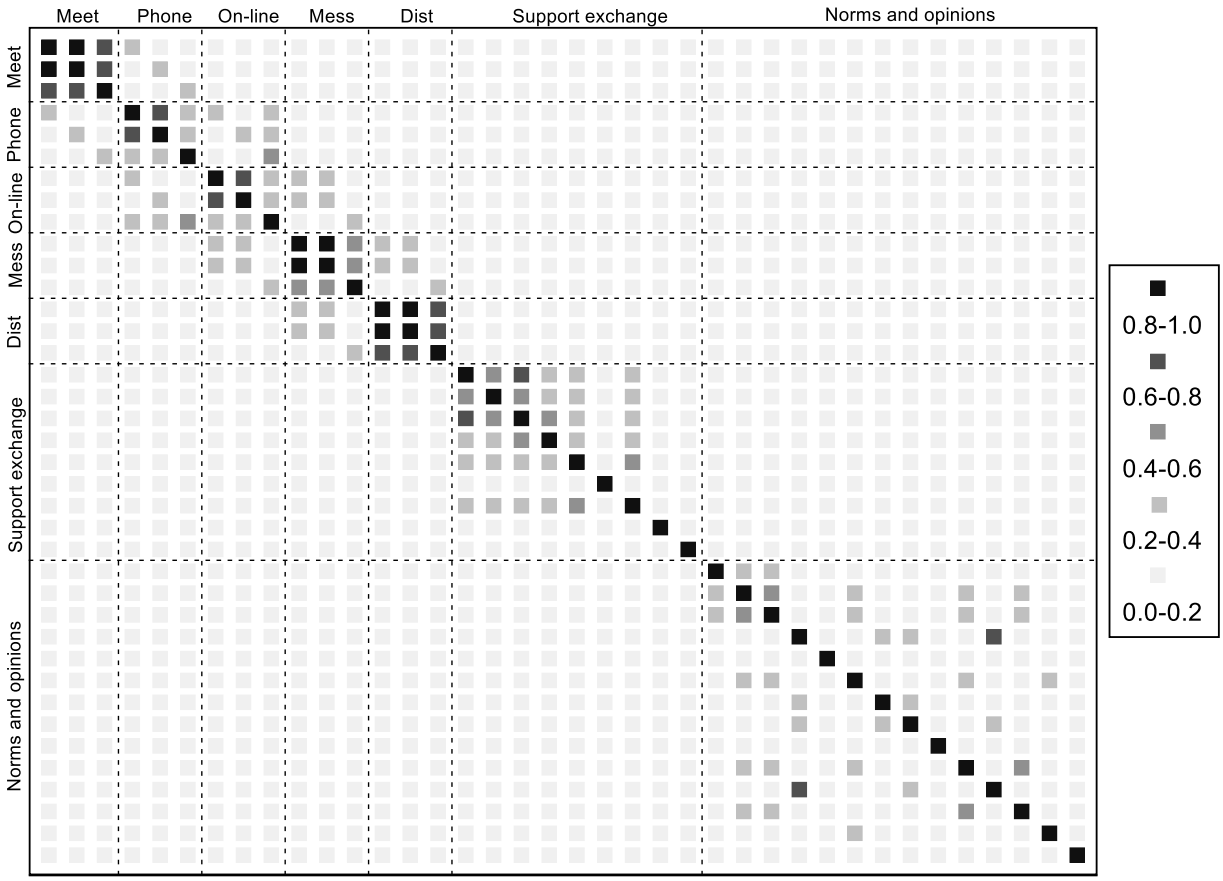
We distinguish seven family ties dimensions. The first four dimensions refer to the interviewee's frequency of contacts with mother, father and first sibling. A distinction is made between: meeting (*Family Ties dimension 1*); phone calls (*FT2*); online calls (*FT3*); and messaging (*FT4*). These are then coded in six categories: a) never; b) sometimes per year; c) sometimes per month; d) once per week; e) sometimes per week; f) every day. The last two sets of variables are particularly remarkable, since they refer to the 'newest' media and allow for the inclusion in our measurement model of the so-called 'digital solidarity' dimension (Fingermann et al., 2020b). The fifth dimension (*FT5*) refers to the territorial distance between the interviewee and her relatives, and is made up of three indicators asking "where does your mother/father/first sibling live?" The possible answers are: a) in the same building; b) in the same city, within 1 km; c) in the same city, farther than 1 km; d) in another city, within 16 km; e) in another city, between 16 and 50 km; f) in another city, farther than 50 km; g) abroad. The sixth dimension (*FT6*) taps into the respondent's support exchange with her relatives. It asks for the number of uncles (both the parents' siblings and the spouses of the parents' siblings), cousins, nephews, parents-in-law, sons-in-law and brothers-in-law that the interviewee can rely on. It also asks for the number of occasions when the individual has

given and has received help from his or her relatives. The last dimension (*FT7*) reports information about family norms and obligations (for the question wording see Table A1). Questions are recorded with a five-point Likert scale: a) strongly disagree; b) disagree; c) neutral; d) agree; e) strongly agree.

Descriptive findings

The definition of our dimensions of family ties comes from a careful analysis of the literature, but this definition is also empirically supported from the pairwise correlations matrix of indicators; indeed, correlations among indicators theoretically linked to the same dimension of family ties are always very strong (see Figure 1 below). The high reliability of these dimensions is also confirmed by the Cronbach's alpha values, ranging from 0.91 (Territorial distance) to 0.74 (Messaging). The only dimension with low internal consistency is Support exchange, with a reliability of 0.32; this value indicates that some of the indicators referring to this dimension may be weakly connected to it.

Figure 1. Pairwise correlation matrix for family ties indicators. Each square represents an indicator. Labels refer to the family ties dimensions theoretically defined in literature.



Results

On these grounds, as a first step of the analysis we run a SEM with maximum-likelihood estimator linking, in line with the literature, each observed indicator to its appropriate dimension. We end define seven dimensions of family ties (see Table 3 and Table 4 for factor loadings). In the model, we correlate and estimate the errors of the indicators referring to the same family member (father, mother and first sibling). We do this to account for the fact that different family ties refer to the same member of the family. We correlate, too, the error terms of the variables: "A woman is fulfilled only if she has children" and "A man is realized only if he has children", since the two variables are linked by design (they have the same question formulation and underlying concept; see Joreskog and Long, 1993, for a discussion). The factor loadings of our indicators are generally

high (all β >.30, except for the indicator "number of mothers-in-law to rely on") and statistically significant at p>.000. The only exception were the two items "number of sons-in-law to rely on" (β=.01) and "Number of times I helped my family" (p-value= .10); due to their low explanatory power, these two indicators have been eliminated from the model. The low factor loadings of the two indicators referring to the actual support exchange are suggestive of the fact that these variables are only weakly related to the dimension of support, since the actual exchange may confound need and availability (Taylor et al., 1988).

The model exhibits a very good absolute fit, which suggests a low discrepancy between the fitted covariance matrices and our model (Kaplan, 2001). As to the Root mean square error of approximation (RMSEA), which is one of the most informative indices of goodness-of-fit (Diamantopoulos and Siguaw, 2000), we have a value of .041 (CI: .039 - .042), below what is considered the most stringent cut-off (Steiger, 2007). When looking at the Goodness-of-fit statistic (GFI), which refers to the proportion of variance accounted for by the estimated population covariance (Tabachnick and Fidell, 2007), we have a value of .941. This is way higher than what is recommended by the literature (Miles and Shevlin, 1998). Also, the Standardized root mean square residual (SRMR), which is based on the discrepancy between the residuals of the sample covariance matrix and the hypothesized model, and which signals a good fit with a value of .043 (Hu and Bentler, 1999). Additionally, the Comparative fit index (CFI), which compares the hypothesized model with an independence model with all the not-correlated variables. This is suggestive of a good fit with a value of .947 (Kline, 2016). Below, we present the results of the factor loadings for each set of family ties variables *FT1-FT7*.

Table 2. Unstandardized (B), standard errors (SE) and standardized (β) factor loadings for *FT1-FT6* sets of indicators, ML estimator. All coefficients are significant at the 0.001 level.

Indicator	Factor (*set of indicators*)	B	SE	β
Father	Meeting (*FT1*)	1.00	-	.93
Mother		.98	.01	.96
Sibling		.60	.01	.61
Father	Phone calling (*FT2*)	1.00	-	.88
Mother		.95	.02	.91
Sibling		.37	.02	.36

Father	On-line calling (*FT3*)	1.00	-	.95
Mother		1.16	.02	.99
Sibling		.65	.02	.47
Father	Messaging (*FT4*)	1.00	-	.86
Mother		1.16	.02	.92
Sibling		.43	.02	.35
Father	Territorial distance (*FT5*)	1.00	-	.97
Mother		.99	.01	.97
Sibling		.66	.01	.70
Uncles\aunts A	Support exchange (*FT6*)	1.00	-	.75
Uncles\aunts B		.61	.02	.65
Cousins		2.15	.05	.78
Nephews		.51	.02	.49
mothers-in-law		.20	.01	.42
brothers-in-law		.40	.01	.47
#times my family helped me		.37	.12	.07

Note: RMSEA=.041 (CI: .039 - .042); GFI=.941; SMRM=.043; CFI=.947; Uncles\aunts (A) stands for number of parents' siblings; Uncles\aunts (B) stands for number of spouses of the parents' siblings

Table 3. Unstandardized (B), standard errors (SE) and standardized (β) factor loadings for *FT7* set of indicators, ML estimator. All coefficients are significant at the 0.001 level.

Indicator	B	SE	β
Marriage is outdated	1.00	-	.35
Ok living together not married	1.58	.08	.66
Woman alone can have a child	1.66	.09	.58
Ok divorcing with children	.95	.06	.45
Same-sex couples must have same rights	1.67	.09	.58
Child needs father and mother	-.97	.06	-.40
Child needs parents' love, regardless of their sex	1.48	.08	.49
Working mother has good relationship with child	.59	.04	.29
Daughters (and not sons) should care for parents	-.52	.05	-.22
Children of divorced parents must live with mother	-.32	.04	-.14
Woman fulfilled only with children	-.62	.05	-.26
Man fulfilled only with children	-.53	.04	-.24
Being housewife is fulfilling for woman	-.43	.05	-.17
Children should leave household when 18-20	.42	.05	.17

Note: RMSEA=.041 (CI: .039 - .042); GFI=.941; SMRM=.043; CFI=.947

As mentioned before, all the factor loadings are generally high in magnitude and statistically significant at $p<0.001$. The negative loadings in *FT7* reflects the fact that some indicators of family opinions are worded with higher values meaning more traditional views of family: as such, the higher the score on this sub-dimension, the lower the score on these indicators. In the end, we estimate an encompassing measurement model of family ties, which takes into account the whole structure of interrelations between the observed variables. It also provides a thorough picture of the concept under analysis. In our second step we test whether the measurement model is invariant in

the sub-populations of interest, namely North-Centre vs. South (invariance by context), females vs. males (invariance by gender) and low- vs- highly-educated (invariance by education). If so, it would mean that people which differ in terms of these socio-demographics would have the same relationship between observed variables and the underlying constructs to which they are connected (Byrne 1998; Vandenberg and Lance 2000). We oriented our choice of the model and relied on the likelihood ratio test and the values of AIC (Akaike Information Criterion) and BCC (Browne-Cudeck Criterion) indexes, in line with the literature (Vrieze 2012). When testing the same model separately in the sub-population indices without imposing any constraint we find good fit indices. Then, we estimate a MGCFA where we set across-groups constraints on parameters and compare more restricted models with less restricted ones. After having run a set of models (results available on request), we were able to detect partial measurement invariance by gender and socio-economic context in our full measurement model. In particular, we established a full metric invariance for the factors Meeting, Phone calls, On-line calling, Messaging and Distance; this means that when constraining the factor loading of each indicator, tapping into one of these constructs to be equal in the two groups, the more constrained model shows a significantly better fit than the less constrained one (Muthén and Christoffersson, 1981; Byrne et al, 1989; Reise et al., 1993; Steenkamp and Baumgartner, 1998). This condition does not hold for the factors Support and Opinion, where only some indicators are constrained to be invariant in the two groups; still, for these dimensions, too, the overall comparison is meaningful (Donahue, 2006; Sass and Schmitt, 2013). Under this set-up, the likelihood ratio test does not reject the null hypothesis at the .05 level (signalling that the more constrained model is correct) for invariance by gender (p-value = .183) and by macro-area (p-value = .058); also the AIC and BIC indices are lower in the more constrained model in these two sub-groups, showing a better fit. MGCFA, differently, estimated by education and age suggests a less restricted level of invariance (configural invariance; see Horn and McArdle, 1992), which means that each construct is measured by the same items across groups, but that the structural regression

coefficients (namely the magnitude of the change in the indicators depending on a change on the sub-dimensions) are different.

These results provide some interesting insights. Indeed, we are able to detect partial measurement invariance in the concept of family ties by gender and by socio-economic context. This means that when studying family ties heterogeneity, the concept may be legitimately considered as having the same meaning for people who differ across these two individual socio-demographic characteristics. This condition does not hold for people with different educational degrees, for whom the different dimensions of family ties may have different nuances; nevertheless, the configural invariance achieved guarantees that each dimension is composed of the same indicators regardless of educational level. Also when estimating the model across cohorts, we do not detect measurement invariance: as for education, people of different age conceive differently the concept of family ties.

The third step of our analysis looks at the correlations among different family ties dimensions, considering to what extent these correlations vary by the socio-demographic under scrutiny. Results for the whole sample are presented in Figures 2 and 3, while Figures from A1 to A4 (in Appendix) show the heterogeneity of correlations by individual characteristics of interest.

Figure 2: Correlation among family ties dimensions (*FT1-FT4*)

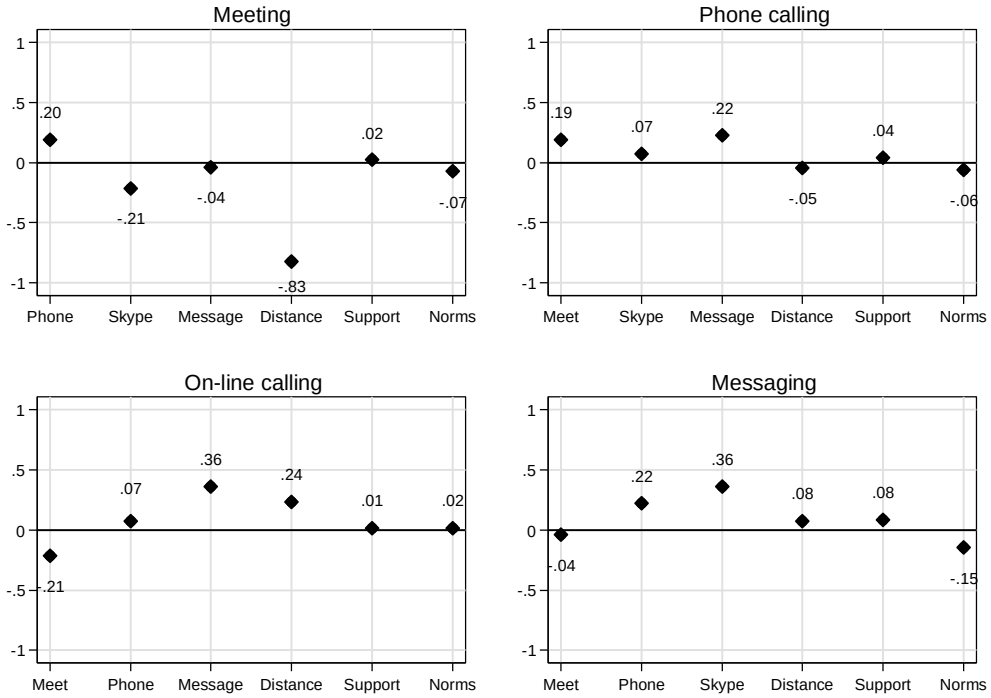
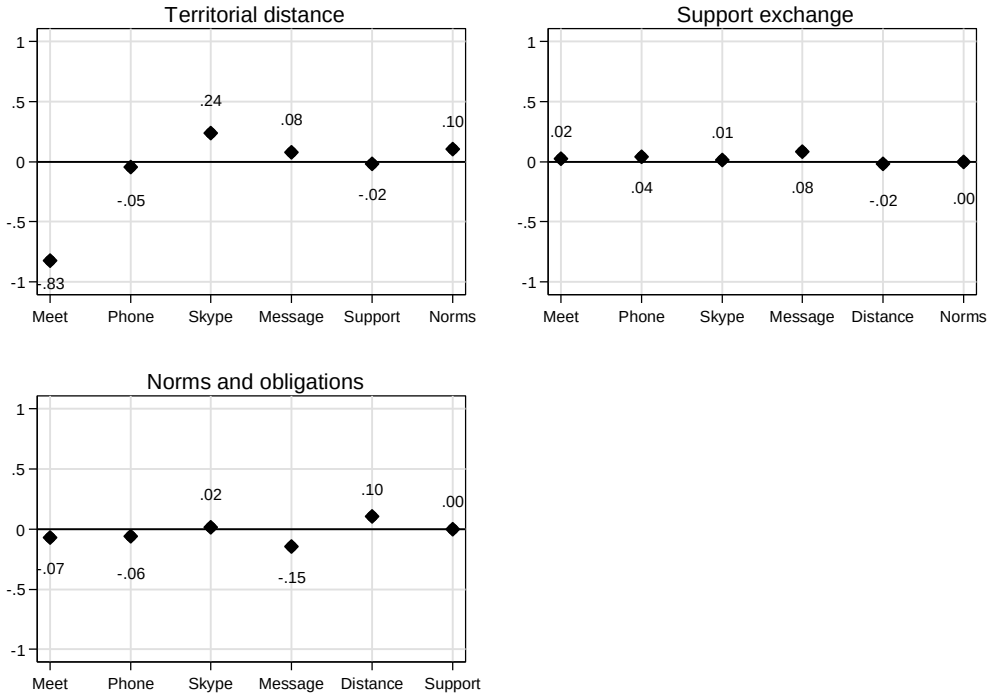


Figure 3: Correlation among family ties dimensions (*FT5-FT7*)



Regarding the four dimensions (*FT1-FT4*) that refer to different forms of contact (meeting, phone calling, on-line calling, messaging), several things are worth noting. First, there is a strong negative

correlation (-.21) between meeting, which is the most traditional way of maintaining contacts within a family, and on-line calling, the 'newest' and most modern way. This pattern is particularly strong in the North-Centre (-.25) and among the highly-educated (-.30); this evidence suggests a stronger 'old' vs. 'new' dichotomy for types of contact for subjects of higher status or for those living in more advanced socio-economic contexts. Phone calling and messaging seem to lie in-between in the 'old' vs. 'new' modes continuum. Phone calling has a positive correlation with meeting (.19) and with messaging (.22), while its correlation with on-line calling is much lower (.07). Interestingly, the correlation between phone-calling and meeting is highest among females (.27): in this group, then, contacts mediated by phone seem to be complementary (and not substitutive) of face-to-face encounters. Messaging is strongly correlated with phone-calling (.22) and especially with on-line calling (.36): evidently ties based on new technologies are linked.

As expected (Mulder and Cooke, 2009), there is a strong negative correlation between meeting and territorial distance (-.83) which is less pronounced in the South (-.78). It may be that in socio-economic contexts with strong family ties physical distance is less important as an obstacle to face-to-face contacts. Conversely, there is a positive correlation between distance and on-line calling (.24): people living far away, naturally enough, buffer the lack of 'live' contacts with on-line communication. Remarkably, the correlation between phone calling and distance is particularly low among women (-.14): it seems that women use this mode of communication in combination with more traditional face-to-face contacts. The different contact dimensions have in general low correlation with support exchange and norms and obligations; the only one worth noting is the negative correlation between messaging and norms and obligations (-.15).

The dimension of distance shows low correlations with support exchange (-.02), differently to what has generally emerged in the literature (Michielin et al., 2008), even if some heterogeneity emerges. Indeed, this correlation is slightly positive for the Centre-North (.02) and for the highly-educated (.08). This suggests that the postulated positive relation between proximity and resource exchange

may actually be reversed among subjects of higher status or in more advanced socio-economic contexts.

Discussion

Family ties is a concept which has been often studied to explain heterogeneities in institutions and individual behaviours. Since Banfield's study on southern Italy, it has been studied as a driver for civic activism, social trust, economic prosperity and fertility. The literature has devoted particular attention to heterogeneity in levels of family ties by individual characteristics: particularly, looking at different socio-economic contexts (proxied with geographical area), gender and education. But due to limited data, these heterogeneities have been studied focusing on few or small sets of variables. In particular, when considering the socio-economic context particular attention has been given to the indicators referring to territorial proximity and support exchange. Studies analysing family ties and gender have focussed on norms and obligations, especially from an inter-generational perspective of linked lives. Finally, works on family ties and education have tended to be given over to the analysis of contact frequency between family members, often in relation to physical distance. These studies have resulted in sparse evidence and they have failed to pin down the multidimensionality of family ties. Indeed, attention has focused on a few or a small sets of indicators, very often referring to specific dimensions of family ties: the complexity of inter-relations among family members have largely been under-rated and have not been accounted for.

This work contributes to this literature by embracing the idea of family ties as a multidimensional concept. Thanks to the availability of uniquely rich and appropriate data, we measure the concept of family ties, considering all the dimensions that have traditionally been used separately in the literature; we account for both vertical (inter-generational) and horizontal (intra-generational) family ties. We do this by means of structural equation modeling (SEM), a technique particularly suitable for our research. Indeed, by means of this methodology, through a system of linear equations we are able to estimate a number of latent family ties dimensions present in our dataset.

As such we do not have to parcel out the concept into several independent and unrelated dimensions. What is more, SEM allows us to explicitly account for the measurement errors for both dependent and independent variables, an issue particularly relevant when dealing with self-reported and subjective measures (Bollen and Paxton, 1998).

Our SEM measurement model estimates seven family ties dimensions with a very good fit, systematising the evidence in different pieces of work in this literature stream. In particular, the data covers four different dimensions of contact frequency: two 'traditional' (meeting and phone calling); and two more 'modern' (on-line calling and messaging). Importantly, this distinction allows us to account for the concept of 'digital solidarity', something increasingly important in the family ties literature in the light of technological advances (Fingermann et al., 2020b). The other three dimensions refer to territorial distance, support exchange and norms and obligations towards family. The second step of our analysis tests the measurement invariance by sub-population of interest in the family ties literature: socio-economic context (here proxied by Centre-North vs. South); gender (men vs. women); education (low- vs. highly-educated); and age (18-30; 31-40; 41-50; 51+). The measurement invariance signals that the psychometric properties of the concept analysed are the same in the groups under comparison, something necessary for achieving meaningful conclusions on heterogeneity in family ties levels or corresponding patterns. It is unfortunate that this has seldom been tested in the literature (Sass and Schmitt, 2013). We achieve measurement invariance for socio-economic contest and gender, but not for education and gender: this means that the theoretical constructs (i.e. family ties dimensions) are equivalent for people living in both the North and the South, women and men. However, both the dichotomy low- vs. highly-educated and the different birth cohort 'make a difference' in the way people conceive these dimensions. This is an important insight and suggests the need for caution in conducting comparative analysis on family ties by education and age, especially in the light of the expansion of education and increased life expectancy.

The third step of the analysis looks at correlations among the different estimated dimensions over the socio-demographic characteristics under consideration. Some findings deserve particular attention. First of all, there is a clear negative correlation between frequency of contacts through 'traditional' modes (meeting) and 'technological' ones (on-line calling). This seems to be particularly pronounced in higher status people and in more socio-economically advanced contexts. At the same time, the messaging dimension is strongly correlated with on-line calling, confirming the linkage of new technologies. Also, phone and face-to-face contacts appear complementary for women, while they are much less well correlated among men. The expected negative correlation between meeting and territorial distance is less pronounced in the South, suggesting that in societies characterised by stronger family ties face-to-face contacts are important in and of themselves, and that they are not simply driven by geographical proximity. The positive correlation between territorial distance and on-line calling is also worth stressing, suggesting as it does that people living far away rely a great deal on technological media to maintain contacts. We do not find, as many others had, a strong correlation between territorial distance and support exchange; instead, this correlation is (weakly) positive in the Centre-North and among the highly-educated.

It is proper to acknowledge some limitations in our study. First and foremost, by using data from one country, the two different territorial areas we consider share the same institutional setting, despite being different in cultural and socio-economic terms. A cross-country analysis may account for this shortcoming. But the fact that family ties appear to be driven by cultural traits arguably minimises this weakness. This study suggests some new lines of research. First of all, the marked cleavage between older and newer modes of contact suggests a digital divide in the family ties pattern, which warrants further attention especially in the light of the growing pervasiveness of digital media (Fang et al., 2021).

Also, it would be interesting to reconsider family ties in the aftermath of the COVID-19 pandemic. Will we learn that COVID has affected intra-familiar relationships? (Ones, 2020).

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APPENDIX

Table A1. Complete wording of questions for variables of Norms and obligations dimension (*FT7*)

Variable's label	***Question's complete wording***
Marriage is outdated	Marriage is an outdated institution
Ok living together not married	Two members of a couple have right to live to together even if they don't want to marry
Woman alone can have a child	A woman has right to have a child even if she is alone and she does not want a stable relationship with a man
Ok divorcing with children	Two members of an unhappy couple should divorce even if they have children
Same-sex couples must have same rights	A same-sex couple in a civil union must have same rights of a married couple (inheritance rights, pension reversibility, sickness assistance, etc.)
Child need father and mother	A child needs to live with a father and a mother in order to well grow up
Child need parents' love, regardless of their sex	A child needs parents who love him/her regardless of their sex in order to well grow up
Working mother has good relationship with child	A working mother is able to establish a good relationship with their children, exactly as a non-working mother
Daughters (and not sons) should care for parents	When parents need care, their daughters should take care of them instead of their sons
Children of divorced parents must live with mother	If the two members of a family divorce the children should live with mother instead of with father
Woman fulfilled only with children	A woman is fulfilled only if she has children
Man fulfilled only with children	A man is fulfilled only if he has children
Being housewife is fulfilling for woman	Being a housewife is fulfilling for a woman like having a paid job
Children should leave household when 18-20	When children are 18-20 years old they should leave the household

Figure A1: Correlation among family ties dimensions for North-Centre (N) and South (S) individuals (*FT1-FT4*)

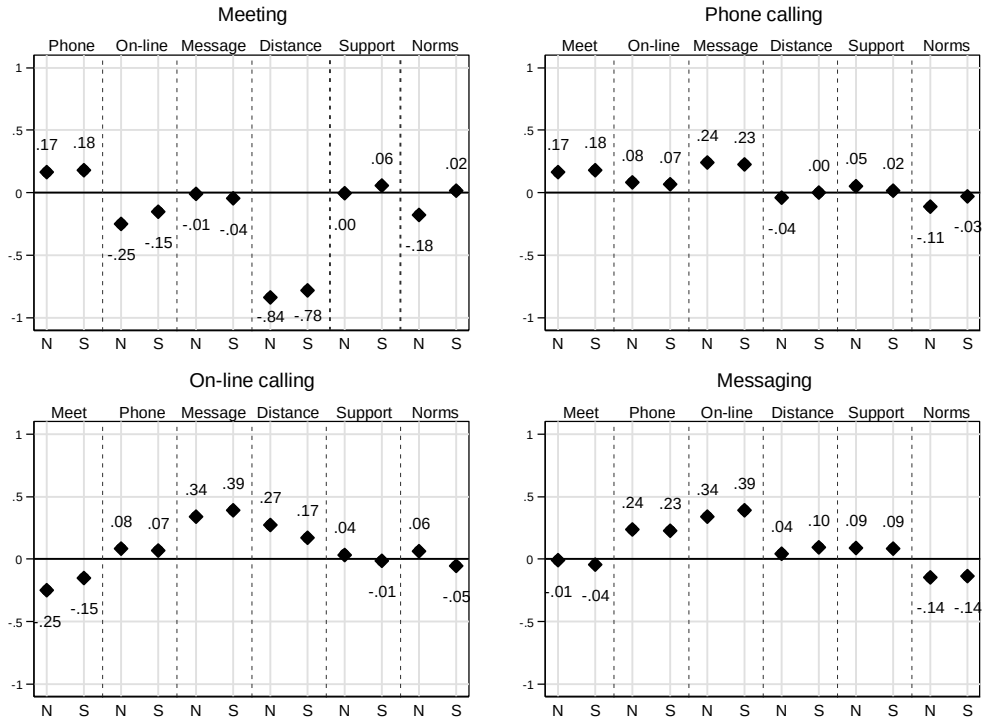

Figure A2: Correlation among family ties dimensions for North-Centre (N) and South (S) individuals (*FT5-FT7*)

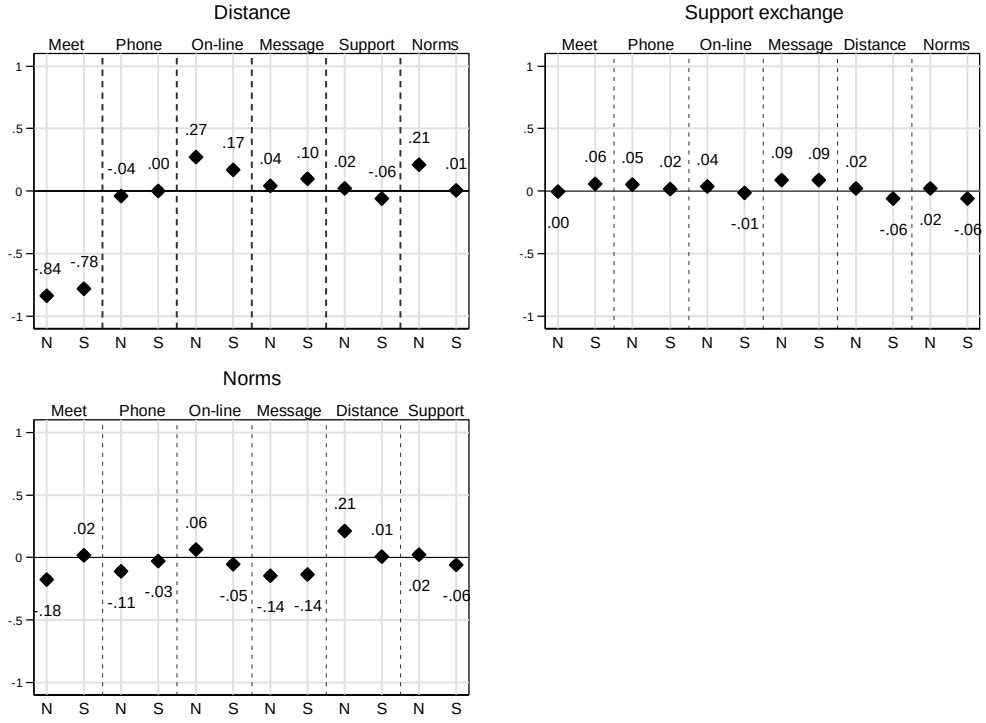

Figure A3: Correlation among family ties dimensions for female (F) and male (M) individuals (*FT1-FT4*)

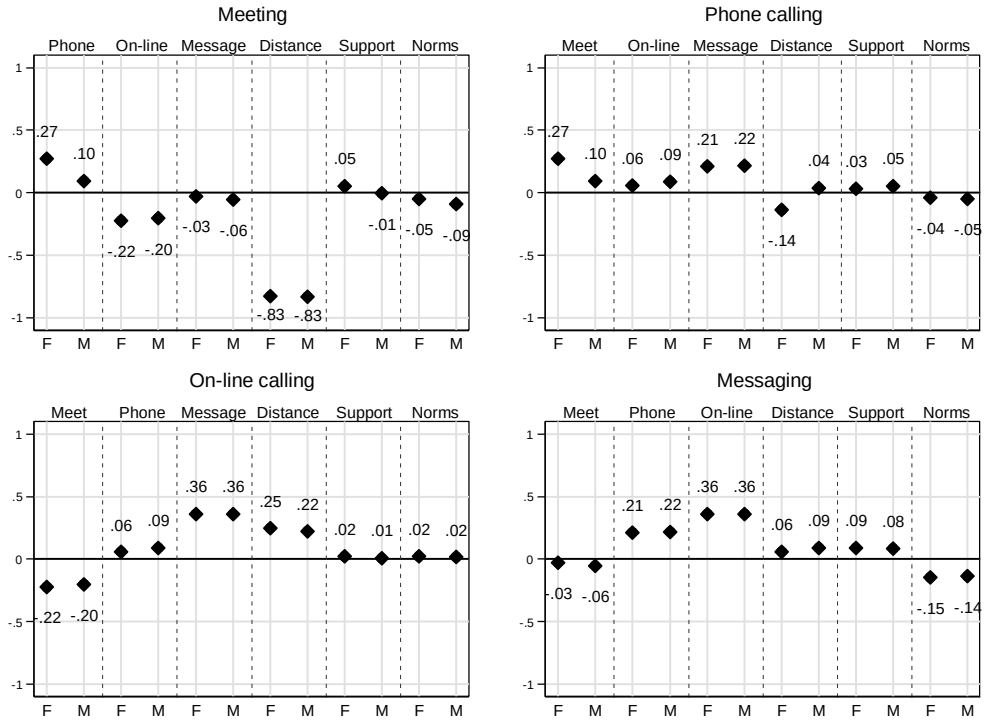

Figure A4: Correlation among family ties dimensions for female (F) and male (M) individuals (*FT5-FT7*)