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A mixed-methods approach for analysing social support and social anchorage of single mothers' personal networks

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Abstract The present paper analyses the relationship among social support and personal networks by focusing on social anchorage, which is a specific dimension of social support conveying to what extent people feel integrated into their personal networks. Specifying when, why, and how personal relationships play a significant role in individual lives is a common concern at the core of studies on social support. For this reason, the study adopts a strategy of analysis for ego-centred social support networks based on a mixed-methods approach. Hence, the strength of social networks analytical tools and multilevel logistic regression models is combined with the opportunities stemming from qualitative data provided by in-depth interviews. Firstly, statistical tools are used to describe the patterns of social support relationships in ego networks and to estimate the main determinants of social anchorage; secondly narratives are considered to understand the content, the meaning, and the significance that social relationships have for egos. The case of single mothers, which represent a clear instance of the relevance of social support derived from personal networks, is investigated.

Keywords Ego-centred networks · Multilevel regression models · Social support · Narratives · Single motherhood

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1 Introduction

Over the last decade, the financial crisis and the society's increasing complexity have created new areas of vulnerability, where the increasing fragility of both social support networks and welfare institutions intersect. Indeed, changes in societal and cultural conditions might have significant influences on needs for support, how it is provided, and satisfaction with the outcomes provided by supportive transactions.

In absence of reliable support offered to individuals by institutions or professionals, the social support provided by informal groups and intimate relationships represents an often unique safety net that provides protection against social risks. There is strong research evidence showing that social support furnished by personal networks represents a key asset for defining successful coping strategies, reducing hardships of everyday life (Henly et al. 2005). Specifying when, why, and how personal relationships play a significant role in individual lives is a common concern at the core of studies on social support. An implicit condition in these studies is the link between social support and social networks, even though this link is not always formalised or analysed in detail (Berkman et al. 2000) by using the methodological perspective of social network analysis SNA, (Wasserman and Faust 1994). This approach affords an advantage for providing information about the structural properties of social relationships that involve the quantitative account of connections in terms of the numbers of ties, their density or interconnectedness, and other measures of linkage among people. However, as suggested by Sarason and Sarason (2009), understanding social support requires a full appreciation of associations and mechanisms underpinning supportive transactions, shedding light on the process that begins with social ties and perceptions of support and ends with outcomes.

In this framework, the present paper provides an analysis of social support networks based on a mixed-methods approach that combines the strength of SNA methods by adopting an ego-centred network perspective (Wellman 2007) with the opportunities stemming from narratives. The former is useful to describe the pattern of relationships on which social support networks are based and the latter allows understanding of the content, the meaning, and the significance that social relationships have for individuals (Crossley et al. 2015). The focus is on a specific dimension of social support represented by social anchorage (Hanson 1994) that conveys the degree to which individuals are bound to their support providers by ties of proximity. The main goal is to investigate what conditions affect how personal relationships play a significant role in individual lives. To identify the main determinants of social anchorage, a multilevel regression analysis was performed within a wider analytical strategy to take into account the hierarchical structure of ego networks data, disentangling the complex structure of variability within and between ego networks (Snijders et al. 1995; Van Duijn et al. 1999).

The case of single mothers, which represent a clear instance of the relevance of social support derived from personal networks, is investigated here. Even if being a lone mother does not in itself predicate a condition of need, several studies commonly have highlighted the low living standards of single mothers and their broader vulnerability against hardship and social exclusion.

The paper is organised as follow. Section 2 presents the theoretical framework. Section 3 offers details on the case study with a focus on research instruments and analytical strategy. Section 4 reports the data description and the main results obtained through the analysis of ego-centred networks of social support by combining network analysis

techniques, logistic multilevel regression models, and narratives. Section 5 concludes with a discussion on the main results.

2 Social support and social anchorage: the case of single mothers

Social support can be defined as a commodity arising from interactions among people that can be activated when necessary, mainly in adverse conditions. It is rooted within personal networks and accessible through social relationships (Lin 2002). Social support has been proved to act as a facilitator in the access of material and/or symbolic goods in enhancing both physical and mental health and well-being (Smith and Christakis 2008), and/or in promoting upward mobility by permitting access to education, training, and connections to labour markets (Wellman and Gulia 1999). It also may be thought as a major mediating function of personal networks that provides cohesion, feelings of belongingness, and forms of 'bounded solidarity' (de Jong Gierveld and Van Tilburg 1995; Portes 1995) based on trust among members, but also acts as forms of social control (Portes 2000) by placing restrictions on individual freedom and enhancing mutual expectations and conformity between attitudes and in-group-oriented behaviours. Social support is most often conceptualised in terms of close and enduring relationships, which tend to be made of kin, neighbours, and intimate friends. Close ties are only a subset of a person's complete network, that also includes an array of weaker, more distant relationships (Granovetter 1973). Both strong and weak ties need to be taken into account as contributors to social support (Sarason and Sarason 2009). These ties generally provide emotional and expressive support as well as certain kinds of instrumental help for the fulfilment of ordinary responsibilities (e.g., childcare, household-related obligations, help for shopping, and borrowing money) and informational assistance related to the provision of advice and information for particular needs (e.g., job opportunities, available services, etc.).

A relevant dimension for the efficacy of such support is represented by social anchorage. This concept describes to what extent people feel integrated into their personal networks (Hanson 1994), and it reflects the involvement of individuals into the formal and informal groups they belong to. As such, it can be assumed as a proxy of social integration that has been proved to be more effective in predicting well-being than other indicators, such as having a diverse range of relationships (Cohen et al. 2000).

The literature on the Mediterranean model of the welfare state frequently has emphasised the key role played by forms of solidarity and integration developed amongst informal groups, based on kinship, friendship, and neighbourhood networks, guaranteeing social integration and protection against social disadvantages. This welfare model appears to be characterised by a reduced development of social policies and the absence of income support schemes or employment opportunities. In this context, personal networks are mobilised as a survival strategy in order to deal with the discomforts of daily life and the resulting material deprivation. These networks present a high level of social anchorage able to guarantee a precarious social integration, even though they are less effective for providing emancipation and upward social mobility opportunities. This depends on the persistence of a high rate of poverty and low labour market participation that, especially among the most disadvantaged groups, makes informal networks highly homogeneous in their socio-economic profile. This shapes the kind of social support provided, affecting both the quality and quantity of resources exchange. It implies a prevalence of forms of

bonding solidarity rather than bridging ones,¹ facilitating exposure to new and better opportunities for the improvement of their life condition (Lin 2002; Morlicchio 2005).

In such a scenario, single mothers represent one of the most disadvantaged groups, especially in southern Mediterranean countries, where high levels of gender inequalities persist in the labour market. In the meanwhile, the main source of social rights, also within family policies, is derived from paid work. Accordingly, personal networks are often the major source of support to deal with daily life, seizing opportunities, and reducing uncertainty (Tietjen 1985). A potential deficit in their ability to mobilise opportunities for networks building also has been pointed out by Dominguez and Watkins (2003). This happens especially in the presence of inadequate childcare and of a traditional household division of labour, as in the Mediterranean area. Here, the family is characterised by the persistence of mutual intergenerational obligations among members and unbalanced care workloads. The primary responsibility for domestic tasks, as well as for childcare and elder-care, are assigned to women, in particular within low-income families. As a result, the family is a burden that women tend to shoulder on their own. Given this heavy workload, tensions between the fulfilment of domestic responsibilities and cultivating relationships outside the family may arise, whatever women's personal goals and ambitions may be. Thus, while the family represents a substantial coping option, it risks enforcing that kinscripts are hard to avoid, which narrows women's expectations and opportunities.

3 Data collection and analytical strategy

As mentioned in the introduction, this paper explores the relationship among personal networks, social support patterns, and social anchorage. To pursue this aim, a mixed-methods approach is adopted, both in data collection and data analysis. Specifically, the analytical strategy of analysis focuses on the following aspects: (i) the structural apparatus under which social support is exchanged, by adopting an ego-centred approach, useful to measure the quantitative aspects of personal relationships providing social support; (ii) the main determinants of social anchorage, by performing multilevel logistic regression models able to estimate how social anchorage is affected by particular characteristics of the network structure and its members; and (iii) the qualitative and behavioural aspects of social relationships, by interpreting qualitative data on women's experiences, perspectives, and meaning-making about their own supportive relationships.

The interest here is in analysing the case of single mothers living in a southern Italian region (Campania), whose features fit well with the scenario described above. This region is characterised historically by a model of social protection, based on strong family support, weak social policies, and market dependency (Morlicchio 2005). The conceptualisation of family in itself mirrors a diffuse network of relationships, obligations, and loyalties, over and above the boundaries of the nuclear family (Naldini 2003). Thus, even

¹ Forms of bonding solidarity occur among homogeneous groups (e.g., family members, close friends, neighbours) providing a sense of identity, common purposes, and different supports typically deployed to reduce daily life hardship. Close relationships, especially those with kin, are thought to best serve this coping function. However these latter risk to hamper people to acquire the skills and resources to participate in networks that transcend their community. Forms of bridging solidarity imply weaker connections that cross various social divides based on religion, class, ethnicity, gender, and socio-economic status, and they are considered for providing access to information, influence, and financial resources that can improve economic status and facilitate upward mobility.

when network members have little to offer, kinship networks are forcedly mobilised to deal with the discomforts of daily life (Gambardella and Morlicchio 2005). Accordingly, single mothers living in this area (equal to 5.10 % from the 2011 Census of the National Statistical Bureau) can rely on informal resources as a result of family solidarity, not present elsewhere. In the meantime, this area also is characterised by high levels of female unemployment and income poverty; thus, the potential disadvantage of single mothers is higher than elsewhere.

3.1 Research instrument and recruitment strategy

The research instrument for conducting the survey on single mothers was based on in-depth interviews, together with a questionnaire that included a network-generator approach to reconstruct personal networks (Marsden 2011).

Thanks to assistance of social services offices and non-profit organisations, an initial list of single mothers was obtained. In a second step, through a snowball sampling design, other women referred by the first women interviewed were contacted. The women entering the sample were selected using following criteria: (i) to have been a single parent (i.e., having the sole parenting responsibility over children) for at least 2 years; (ii) to be the legal guardian of at least one child under the age of majority (18 years); and (iii) to have a low income. A total of 60 women living in the Campania region were interviewed during the years 2013 and 2014.

The in-depth interviews gave the women the opportunity to furnish details of their personal experiences as single mothers. Interviewers asked women to speak about: *how and when they became single mothers, how single motherhood changed their lives, how they manage their daily lives, who supports them, and in which way.*

In addition, data was collected through a questionnaire on both ego characteristics (i.e., socio-demographic features, family characteristics, and form and duration of single parenthood) and different forms of support, consisting of *institutional* support (i.e., the assistance provided by local government, churches, and non-profit organizations), *perceived* support (i.e., the perceived adequacy of social support provided by friends, family and special people to whom women feel particularly close),² and *received* social support.

For the latter, ego-centred networks have been collected by using a multiple name generator that includes five questions related to informational, social companionship, emotional support, and instrumental support (Kogovšek et al. 2002; Hlebec and Kogovšek 2013). Given the poverty condition of single mothers, for instrumental support, financial aid (e.g., lending/borrowing of small amounts of money) was investigated separately to pure instrumental support (i.e., fulfilment of ordinary tasks). For each name generator, the respondent could point out five people (namely, alteri). A name interpreter, that is additional questions regarding alteri, was used to collect both information about the characteristics of each alter (e.g., sex, age, and work condition), and ties' properties of ego-alter and alter-by-alter relationships. Each single mother (namely, ego) was asked to specify for each alter the type of relationship (e.g., parents, siblings, friends, etc.), the duration of the relationship in years, the frequency of contacts on a 6-point Likert scale, from 'every day' to 'less than once a year', the feelings of closeness on a 4-point Likert scale, from 1 'very far' to 4 'very close', and the feelings of importance on a 4-point Likert scale, from 1 'not

² For a description of the Zimet scale (Zimet et al. 1988) used to collect single mother self-report measures of perceived support, see Lumino et al. (2016).

important' to 4 'very important'. Finally, in order to reconstruct the alter-by-alter network, single mothers were required to indicate the relationships among alteri.

3.2 The analytical strategy

The analytical strategy adopted here for the analysis of social support of ego-centred networks is based on a mixed-methods approach. The joint use of network measures, statistical models, and narratives allows taking into account the quantitative and qualitative dimensions of network relationships of low-income single mothers. This approach provides a contribution for analysing determinants and characteristics of social support patterns and social anchorage provided by network members, unveiling the system of meanings generated by actors' social ties (Yeung 2005; Bellotti 2015).

The strategy is based on three main steps. Firstly, social support networks of single mothers are explored by means of composition and structural measures in order to discover the main characteristics of the networks to be included as predictors in statistical models. Secondly, multilevel logistic regression models for nonoverlapping ego-nets³ (Snijders et al. 1995; Goldstein 2005; Crossley et al. 2015) are considered in order to unveil the determinants of the social anchorage. These models take into account the two-level hierarchical clustering structure of personal networks with ties or alteri as a unit of analysis (level-1) nested within the ego (level-2). The analysis of narratives based on the single mothers' points of view on received support are presented to understand the content, the meaning, and the significance that social relationships have for egos.

3.2.1 Ego-centred network analysis

Descriptive analyses are reported to explore the ego network structure,⁴ such as the network size (i.e., the number of alteri mentioned by egos) and the density (i.e., the number of ties divided by the number of pairs among alteri in the ego network) (Borgatti et al. 2013). In addition, some composition measures are considered to summarise the characteristics of ego-alter ties in terms of homogeneity of alteri and similarity between ego and alteri. Starting from ego and alteri attributes, the normalised version of the Blau's heterogeneity index proposed by Agresti, that is the index of qualitative variation IQV, (Borgatti and Halgin 2012), is considered. The propensity of single mothers to interact with others with similar personal characteristics (i.e., homophily) is evaluated by computing the E-I index presented by Krackhardt and Stern (1988), a measure of group embeddedness based on the comparison of the number of ties within groups (internal [I]) and between groups (external [E]). According to the structural holes theory (Burt 2009), in which an actor's utility varies in relation to his/her position in the network, some structural characteristics of personal networks⁵ are considered to highlight the ego's brokerage opportunities in an open structure with multiple structural holes, that is in the presence of disconnected alteri. This set of measures is concerned with the notion of redundancy (i.e., the extent of networks ties

³ The data obtained from the different single mothers are mutually independent, keeping one of the main conditions for applying specific regression models for personal network data (Snijders et al. 1995).

⁴ E-NET software was used to compute ego-centred networks indices (Borgatti and Halgin 2012).

⁵ More specifically, the *effective size* is referred to as the number of alteri that the ego has minus the average number of ties that each alter has to the other alteri, the *efficiency* obtained by dividing the effective size by the network size, the *constraint* as the extent to which ego contacts are redundant, and the *hierarchy* as the extent to which the constraint on the ego is concentrated in a relationship with a single alter.

leads egos to the same people providing the same resources or information benefits). In contrast, nonredundant links with disconnected alteri are influential sources of benefits and opportunities of upward mobility.

3.2.2 Multilevel logistic regression models

Multilevel logistic regression models are introduced for the analysis of support networks to the extent necessary for the scope of the present paper. These models have been introduced in order to take into account a hierarchical structure of the statistical units and to analyse simultaneously the individual and the group levels. In the case of non-overlapping ego-nets, when the interest is in the ties between alter and ego, the use of multilevel models has received increasing attention in recent literature (among others, de Miguel Luken and Tranmer 2010; Lubbers et al. 2010). The ties or a property of the ties, like in our case, are the units of analysis (level-1), while the egos are the level-2, in which the alteri are nested.

Based on the idea of social support and social anchorage (*SochAnch*), the latter is defined beginning with the joint distribution of two variables: feeling of closeness and feeling of importance (both measured on a 4-points Likert scale). An alter is defined here as a social anchor for the single mother when both closeness and importance are equal to 4; alteri presenting all the other category combinations, are supportive, but not a social anchor.

Formally, $SochAnch_{ij}$ is equal to 1 if the ties between the i -th alter and the j -th ego is a source of social anchorage, 0 otherwise. The corresponding probability $\pi_{ij} = P(SochAnch_{ij} = 1)$ then is defined. Due to the dichotomous nature of the response variable, a multilevel random intercept logistic model with p explanatory variables x_{hij} , $h = 1, \dots, p$, measured at level-1, and q explanatory variables z_{kj} , $k = 1, \dots, q$ measured at level-2 is adopted and formalised as follows:

$$\text{logit}(\pi_{ij}) = \beta_{0j} + \sum_{h=1}^p \beta_h x_{hij} + \sum_{k=1}^q \beta_k z_{kj} \quad (1)$$

$$\beta_{0j} = \beta_0 + u_{0j} u_{0j} \sim N(0, \sigma_{u0}^2), \quad (2)$$

where σ_{u0}^2 is the level-2 (ego) variance component and $\text{logit}(\pi_{ij})$ is the usual logit transformation or logodds ratio transformation $\log(\pi_{ij}/(1 - \pi_{ij}))$. The β_{0j} coefficient is the random intercept, while the β_h and β_k coefficients are called the fixed effects of level-1 and level-2, respectively. The fixed effects do not vary across egos and can be viewed as the average effects over the whole population of individuals.

To this basic multilevel model, it is possible to add both random slopes for the level-1 variables (some β_h coefficients become $\beta_{hj} = \beta_h + u_{hj}$, $u_{hj} \sim N(0, \sigma_{uh}^2)$), giving rise to the covariances among the error terms u_{hj} , and interaction effects within variables of the same level or cross levels.

Different procedures have been implemented for the estimation of multilevel models that have categorical response variable: quasi-likelihood methods (such as the iterative generalized least squares IGLS, Goldstein 2005) and Monte Carlo Markov Chain (MCMC) method (Browne and Rasbash 2009). The results obtained by using MCMC method implemented in MLWIN software (Rasbash et al. 2005) were presented.⁶ The significance of the fixed effects was tested with the well-known t test, based on the ratio of the

⁶ Initial estimates were obtained by using the first-order marginal quasi likelihood (MQL) procedure, and the second-order predictive (or penalised) quasi likelihood (PQL) procedure of IGLS estimation method.

parameter estimate to the standard error. Given the unavailability of the likelihood ratio test in the multilevel logistic regression (Rasbash et al. 2012), the significance of σ_{u0}^2 parameter was tested by using the Wald test. In addition, through MCMC estimation method the Bayesian Deviance Information Criterion (DIC)⁷ is obtained to compare estimated models.

Finally, the variance partition coefficient (VPC) that shows the variance partitioning (i.e., the percentage of variance residing at level-2) was computed by evaluating $\sigma_{u0}^2/(\sigma_{u0}^2 + 3.29)$, where 3.29 is the variance of the logistic distribution assumed for the level-2 (Snijders and Bosker 1999).

With respect to the model selection, the steps below were followed in line with the procedure discussed in the contribution of Van Duijn et al. (1999). Firstly, all fixed level-1 (alteri) explanatory variables were added. Secondly, the fixed level-2 ego characteristics' and, then, the egos' network measures were considered. At each step, all the variables without a significant coefficient were removed. Finally, some interaction effects, random slopes, and cross-level interaction terms were taken into account.

3.2.3 Narratives

As a companion to statistical models described above, the narratives were examined by using the content analysis (Bernard and Ryan 2009) of the interview transcripts. Textual information has been coded taking into account both the contextual aspects of the social structure and the mechanisms discovered through the quantitative analysis of ego-centred networks. Specifically, attention has been paid to the women's point of view on their supportive relationships, their experience of single motherhood, their condition of need, as well as on the expectations and behaviours related to personal networks social support. The aspects of text interpretation have been revised step by step within the process of analysis and by locating network and data within wider findings.

4 Results

4.1 Composition and structure of ego-centred single mother networks

The survey participants (60 single mothers) share a similar family and economic background, characterised by a low educational level (mandatory school), irregular jobs, and inadequate income. The main features of some variables also included in the statistical models are presented in Table 1. The respondents are about 39 years old on average (with a standard deviation equal to 8.13 years), with a prevalence of women between ages 35 and 55 years. Regarding marital status, 58.47 % of mothers were separated, 15.65 % were widowed, and the remaining 25.88 % were unmarried. The duration of single parenthood was 14.2 years on average (with a standard deviation equal to 23.3 years). With respect to living condition, 49.20 % of the women lived alone with their children, whereas 50.80 % lived with others (specifically, 37.70 % of the women lived with their parents, 10.22 % with a new partner, and

Footnote 6 continued

Even if the low value of level-2 variance underestimated in MQL and PQL procedures, better estimates were obtained by using MCMC method setting 5000 burning, 50,000 runs and thinning of 10.

⁷ It represents a hierarchical modeling generalization of the Akaike information criterion (AIC) and Bayesian information criterion (BIC).

Table 1 Main characteristics of variables selected for the case study (mean, SD)

	Type	Mean (%)	SD	Label	Ref. cat.
Ego					
Age	Continuous	38.63	8.13		
Marital status	Categorical				
Unmarried		25.88			
Separated		58.47			
Widow		15.65			
N. children	Discrete	1.98	0.94		
N. children < 14	Discrete	1.19	0.77		
Work condition	Categorical (dummy)				
Employed		74.76			
Unemployed		25.24			
Living condition	Categorical (dummy)			Living	
Children		49.20			
With others		50.80			X
Contacts	Categorical (dummy)				
Everyday		50.48			
Not everyday		49.52			X
Social anchorage	Categorical dummy			SochAnch	
SochAnch _{yes}		59.11			
SochAnch _{no}		40.89			X
Alteri					
Work condition	Categorical (dummy)			Work	
Employed		57.19			
Unemployed		42.81			X
Type of relation	Categorical (dummy)			Relation	
Kin		49.20			
Not kin		50.80			X
Type of support	Categorical (dummy)				
Instrumental _{yes}		36.42		Instr _{yes}	
Instrumental _{no}		63.58			X
Informational _{yes}		19.49			
Informational _{no}		80.51			
Social comp _{yes}		50.80			
Social comp _{no}		49.20			
Emotional _{yes}		29.71		Emot _{yes}	
Emotional _{no}		70.29			X
Economic _{yes}		25.88			
Economic _{no}		74.12			
N. supports		1.62	0.91		
Network measures	Continuous				
Size		6.16	2.38		
Density		0.40	0.12		
Effective size		2.15	1.53		

Table 1 continued

Type	Mean (%)	SD	Label	Ref. cat.
Efficiency	0.36	0.19		
Constraint	0.56	0.17		
Hierarchy	0.02	0.02		
Sex _{EI}	−0.40	0.40		
Age _{EI}	0.25	0.49	Age _{EI}	
Job _{EI}	0.24	0.52		
Relation _{IQV}	0.89	1.39	Rel _{IQV}	
Time _{IQV}	0.43	0.37		

2.88 % with others). They have around two children on average, and 21.09 % of the mothers had more than two children. The youngest child was around 9.4 years old on average, ranging from 1 to 17 years. The women had a job in 74.76 % of the cases, even if they declared the job in half the cases was irregular.

The single mothers reported in total 313 alteri in their social support networks for the five dimensions under analysis. The ego-alter relations were deep in terms of duration, frequency of contact, and level of intimacy. The single mothers had strong relationships with alteri over periods of five years or more (82.11 %) with everyday contacts (50.48 %). They felt very close to more than half of the alteri (61.66 %) and considered these relationships to be very important in their lives (65.50 %).

The ego-centred networks were very dense and small in size (with 6 alteri on average). The single mothers received support mainly by women (E–I index equal to −0.40), by alteri of different ages (E–I index equal to 0.25), and different work conditions (E–I index equal to 0.24) (Table 1). These networks had redundant links with high value on average on the constraint index (0.56). However, the constraint was distributed equally in different relationships; indeed, the hierarchy index was equal to 0.02 on average. A high level of heterogeneity in alteri composition was observed for the type of ego-alter relation with IQV index equal to 0.89 on average.

With respect to support dimensions), it should be noted that the range of resources exchanged was fairly poor, both in quantity and in quality; 59.74 % of alteri provided only one type of support, and this was represented mostly by social companionship (50.80 %) (Table 1). Little more than a fifth of the alteri provided informational support. As shown in Table 2, instrumental support and economic support were provided essentially by kinship relations (70.18 and 80.25 %, respectively), whereas friends, workmates, and social workers represented the main source of social companionships (not kin 64.78 %). Single mothers rarely were supported by other professional caregivers, such as the parishes or volunteers in nonprofit organisations. Furthermore, the different kinds of support by alteri were oriented by gender; women provide all kind of supports. Only financial aid had been provided by male and female in equal measure.

In order to deepen the analysis of social support, a social anchorage dummy variable was defined, as described in Sect. 3.2. In general, 59.11 % of ties represent a source of social anchorage for single mothers. Just looking at the alteri characteristics shows that, among the kinship ties, the incidence of social anchorage rises up to 73 %. The type of support provided by alteri is related to the level of anchoring. Indeed the percentage of social anchorage increases respectively to 72, 74, and 69 % for instrumental, emotional,

Table 2 Composition of received social supports from different kinds of alteri relations with egos (column percentage)

	Instrumental	Informative	Social comp.	Emotional	Economic
Mother	21.05	4.92	3.14	7.53	19.75
Father	8.77	3.28	1.89	3.23	19.75
Son/daughter	2.63	0.00	1.26	0.00	3.70
Siblings	20.18	16.39	10.69	19.35	25.93
Relative	17.54	19.67	18.24	15.05	11.11
Friend	20.18	31.15	58.49	45.16	8.64
Ex-partner	2.63	1.64	0.00	0.00	3.70
Neighbour	2.63	.00	1.89	1.08	1.23
Workmate	0.00	3.28	1.89	0.00	4.94
Social worker	1.75	18.03	0.00	4.30	0.00
New-partner	2.63	1.64	2.52	4.30	1.23
Kin	70.18	44.26	35.22	45.16	80.25
Not Kin	29.82	55.74	64.78	54.84	19.75
Male	27.19	34.43	22.01	21.51	49.38
Female	72.81	65.57	77.99	78.49	50.62

Each alter could be mentioned by ego from different kind of supports

and economic support. As expected, the daily relationship between ego and alteri also implies a greater amount of anchoring (64.4 %). All the other characteristics are not associated significantly to the social anchorage.

4.2 Logistic multilevel model results

The ego and alteri characteristics, as well as the network measures described in Sect. 3.2, are included as explanatory variables in multilevel logistic regression models in order to discover the determinants of social anchorage. The following are considered as relevant information at level-1 (alteri): the three variables refer to the socio-demographic characteristics (age, sex, and working condition) and the dummy variables defined for kinship relation, frequency of contacts, and the five kinds of support provided by alteri to the ego.

At level-2 (ego), the explanatory variables are related to age, marital status, working condition, living condition, and the number of children under the age of 14. In addition, models included as predictors network indexes were derived from ego-centred network analysis (i.e., E-I index, IQV heterogeneity index, structural holes indexes, and network size).

Several random intercept models were estimated after the null or empty model, the starting model containing the random intercept shared by alteri in the same ego network and the level-2 residuals variance term. In Table 3, the estimated models with only significant effects of predictors are reported (see Table 1 for variables' labels and reference categories [Ref. cat.] of dummy variables included in the models). In addition, Fig. 1 shows the level-2 ego residuals available for the above estimated models.

The empty model (Model 1) shows that the percentage of variance residing at level-2 is only 7 %. By adding fixed level-1 and level-2 variables related to alteri and egos (Model 2–Model 4), this percentage goes down (3 % in Model 4), as expected when explanatory variables are added.

Table 3 Estimated coefficients for the 2-level random intercept models for alteri (level-1) and egos (level-2)

	Model 1	SE	Model 2	SE	Model 3	SE	Model 4	SE
Fixed Part								
Intercept	0.40	0.14***	-1.88	0.42***	-2.18	0.47***	-4.78	1.17***
Alteri								
Work _{employed}			0.63	0.29*	0.65	0.29*	0.76	0.30**
Relation _{kin}			1.19	0.29***	1.24	0.29***	1.14	0.30***
Frequency _{everyday}			1.00	0.34***	1.03	0.34***	1.07	0.34***
Inst _{yes}			0.79	0.30***	0.77	0.31**	0.81	0.31***
Emot _{yes}			1.11	0.32***	1.11	0.32***	1.07	0.32***
Ego								
Living _{children}					0.50	0.29 ⁺	0.52	0.28 ⁺
Network measures								
Age _{EI}							0.48	0.30
Re _{IIQV}							2.73	1.19*
Random Part								
Level-2 residual variance	0.26	0.26	0.22	0.26	0.15	0.21	0.09	0.17
DIC	423.26		376.75		375.93		370.79	
VPC	0.07		0.06		0.04		0.03	

The response variable is the social anchorage (*SocAnch*). The explanatory variables are related to alter and ego characteristics, and ego-centred networks measures. More specifically, significant coefficients are marked by: ⁺ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The model 1 provides evidence that alteri work condition, the type of relationship, the frequency of contacts, and two types of support present a significant effect on the response variable. Indeed, alteri that are employed and have strong connections with the ego (a kinship relation and everyday contact) increase the probability that an alter provides social anchorage to the ego. It seems that alteri with these characteristics have more resources to share with the single mothers and are closer to them. This could be seen as the consequence of that family assuming the primary caregiver role. The instrumental support and emotional support also affect the probability of social anchorage. These kinds of support are more crucial for single mothers' survival strategies, and consequently alteri providing these two supports are strictly linked to egos.

The egos' socio-demographic characteristics (Model 3) do not affect the probability of social anchorage. A low effect was observed for the living condition. The ego network measures describing the alteri heterogeneity in terms of type of alteri and the homophily behavior of ego supported by alteri with the same age affected the probability of social anchorage. It seems that this probability depends more on a network's composition than its structure due to the low variability of networks in terms of density and strong connections with a lot of redundant ties. In particular, the higher the variability of kinds of relationships between the ego and alteri, the higher the probability that alteri provide a high social anchorage. This depends on the limited multiplexity of ties within ego-centred networks. For the most part, alteri give specialised support, answering specific single mothers' needs.

Finally, it was checked whether the model could be further improved by adding interaction effects or random slopes, but this turned out to be not the case.

Fig. 1 Level-2 egos residuals for the estimated M_1 – M_4 multilevel logistic regression models

Summarising, it seems that, for the estimated models, the level-2 residuals variance is not statistically significant according to the results of the Wald test. Therefore, it can be concluded that there are no significant differences between egos in explaining the probability of social anchorage provided by alteri to single mothers. This could be due, on the one hand, by the small sample size and, on the other hand, by the relative homogeneity of life trajectories of the single mothers under analysis.

4.3 Networks and narratives

A large amount of information about the experiences of single mothers collected in the interviews was described above, although the results provide much more detailed information on the meaning of supportive relationships, enriching the overall frame of the research. In general terms, the role played by family in providing support for single mothers is restated, along with the importance of having heterogeneous networks, including significant others outside family boundaries. Their presence in personal networks allows single mothers to benefit from the support provided by family, avoiding the risk of remaining deeply entrapped within binding kinscripts.

Although the single mothers were different in terms of age, marital status, and duration of single motherhood, they shared similar life trajectories. Specifically, their condition of need is influenced considerably by the conditions of their families of origin and by the shared precariousness of the specific socio-economic context. Household characteristics

and initial endowments considerably affect low-income single mothers' capabilities and levels of vulnerability against 'shocks' that other families would be able to better manage. As a result, economic misfortune has more to do with family circumstances than a specific financial calamity, negative life-cycle events (such as death of the spouse or parents, separation, etc.) more likely worsen dramatic living standards, activating a downward spiral of a hard-to-escape disadvantage.

Throughout my life I've experienced several issues but the point at which a very negative change occurred was the death of my parents. They helped me, supported me in every aspect of daily life. Since that moment, everything worsened. I was desperate, pushed-down by pain and worried for the survival of mine and of my child. [ego23]

Since my father died, I've lost my income support, his pension, and now I am in great financial difficulty. In addition, his disappearance has shocked me. I feel like I couldn't do anything on my own. [ego10]

When my husband was alive, we had more money; we were happy. We had our own small business, we were not rich, of course, but we could carry on the family. We worked a lot and earned a little, as needed. Then, he fell seriously ill, and soon after, he died. It was an awful moment. Since then, everything went upside down. [ego32]

In these scenarios, kinship networks continue to play an extremely important role in meeting the basic needs of single mothers, including looking after children, giving small amounts of money, and providing emotional support. However, these networks are unable to give any serious economic help or offer upward mobility opportunities due to the proximity of family members in terms of inadequate or irregular job conditions and economic instability.

My family and my children are all I have [...]. They always help me in rearing my younger child. They listen me when I have a problem. They give me advice [...]. We spend much time together [...] for other needs, they can't help me. Their living condition are nearly as bad as mine. [ego8]

I have three sisters, but they can't help me to improve my life but only support me in surviving day by day. No one regularly works. They make do as best they can. Two of them are single mothers, too. [...] I can't ask them for money or for finding a job [...]. We can only spend our free time all together or let off steam with each other. [ego12]

As a result, the perception of the support's providers as social anchors is more likely to occur when they have a job, because this enlarges the range of resources exchanged. This confirms the result provided by the estimated multilevel model already described for social anchorage.

[about relatives] Everyone has got their own problems, specifically economic ones. We all are on the same boat; none of us can help the other. At the most, we help each other for little, ordinary things. The only reliable source of support is my brother, not only because he has regular work but also because he knows more things and everyday meets more people than me. [ego6]

The kind of support received by single mothers appears to be fragmented and oriented by gender, as confirmed by the data description. The persistence of a male breadwinner

model, based on an unequal sharing of family functions according to gender, seems to come out. This model assigns to men (fathers, brothers, or sons) the role of family provider and to women the care-giving burden. Gender dimension does not seem to affect the level of social anchorage, as reported in the multilevel models, because it seems to be absorbed by the kind of support provided (oriented by gender), as well as by the kind of relationship between the ego and alteri.

Childcare is a women's task. Everyone knows. If a problem occurred, my ex-partner said it is your problem, you are the mother, it is your task. [ego54]

My brother helps me; he lives nearby. I air his dirty laundry, and he help me economically. We support each other as we can do. (ego37)

I do several odd jobs, combining different sources of income with my father's pension [...]. I take care of his domestic needs. He is a man -you know- he can't manage such affairs. [ego2]

The presence of strictly defined kinscript as well as a high level of engagement within family risks narrowing the range of women's relationships and closing the door on the mothers' opportunities to improve their living standard.

My parents are unable to take care of themselves, and I stay with them because I am the only woman among my siblings. It is my duty. My child helps me in domestic tasks, but she still goes to school [...] thus, I have no time to work outside home. My older brother gives me a bit of money, as well as my older child, he sells fruit and vegetables at the market. [ego2]

Having friends is a luxury I can't afford. I am too busy in managing my day-life and taking care of my child, of my old parents, sometimes of my brother because he is a widower. [ego17]

Such a condition appears to be moderated only within larger families of origin, whose conditions are not so compromised by a condition of need and by the presence of heterogeneous relationships between women and the support's providers. This latter is confirmed also by models estimates about the probability of experiencing a high level of social anchorage according to a higher level of network heterogeneity.

Since my husband left us two years ago, I have restructured my life but thanks to my parents, sisters, and relatives, in general, I could not isolate myself [...] They (my sisters) are not so badly off as me. They are married. Their husbands work regularly, and thus, they can look after my children when I go out with my friends and support me in many ways. My parents help me, encourage me to have a life outside home. [ego27]

My friendship ties are priceless [...] we talk each other every day [...] Sometimes, we go out for a walk with our children. More frequently, I look after their children, and they do the same when I need. [ego7]

I have some friends in the neighbourhood. They cannot help me to find a better job or gain more money, but they are very important to me. Otherwise I could become crazy. [ego12]

In general terms, the risk of being entrapped in a condition of hardship is sensitive when personal networks are composed only of the immediate family. In these cases, the support

received is exchanged with a higher investment by single mothers in domestic tasks and in-kind services.

When I was younger, I didn't have time to find another man. I was always busy. I had to raise my kids, take care of my parents, do housework and so on... and now it is too late. I have no friends, only my family, and I would not show how or where to find new friends. I am still too busy at home. [ego10]

I have no time to get another job. I have to raise my children, look after my father and my younger sister. Our mother died three years ago. They cannot manage themselves. I have too many things to do. [ego42]

This overload of caregiving tasks places women under enormous pressure, overburdening them and fuelling frustration. The women interviewed, and specifically the older ones, were very pessimistic regarding the possibility of improving their living conditions, such as finding a new job.

What else can I do besides cleaning? I haven't studied when I was younger, and now it is too late. [ego29]

I'd take a better job, but I would have to work all day to survive. [ego6]

In addition, in the presence of small and homogeneous personal networks, the pattern of social vulnerability risks worsening over time due to the gradual depletion of resources at disposal, such as according to parents ageing.

Until some years ago, I received wide support from my family. Now, my parents are old and are unable to give me great help due their health problems, and my sister, she has her own family and does not have much time to devote to me. I am waiting for my children to grow. [ego55]

However, the women interviewed perceived themselves as highly supported by their personal networks and strongly integrated within them. Notwithstanding, they were conscious of the paucity of resources at their disposal and worried about the future. Within a context of such high precariousness, the women interviewed complained about the weakening of their relationships outside the family, which was linked mainly to the overall worsening of socio-economic conditions due to the economic crisis.

My relationships with the neighbourhood are not so supportive as before. Only some years ago, things went better for everybody. We could help each other. Now, we are all in trouble, and when you intercept some opportunities, you do not tell anyone to avoid competition, with the exception of your family members, of course. [ego8]

The economic crisis has worsened our conditions. Many of my friends have some economic or working problems, thus it was became more difficult to help each other. [ego51]

It is difficult times, and we all need help. There is less solidarity there once was. [ego57]

A strong sense of distrust in the social welfare system permeated the single mothers' narratives. They are not confident about available supports and self-assured enough to question their entitlements. They often prefer to do their own research into their entitlements and the range of supports available to stand on their own resources.

5 Conclusions

This contribution represents a novel approach in terms of method by adopting a mixed-methods approach to examine personal networks of single mothers focusing on the social anchorage provided by alteri. Statistical models, social networks measures, and narratives were considered together for analysing determinants and characteristics of social support patterns and unveiling the system of meanings generated by actors' social ties. Hence, the interplay of quantitative and qualitative data analyses allowed us to achieve depth and rigour. The results of the estimated models confirmed the main findings of the narratives, and the narratives provided meaning to the results of the statistical analysis.

Summarising, the social support networks are very small in size and mainly are formed by strong ties that play a crucial role in making adjustments to survive in the context of adverse economic conditions and in absence of an adequate welfare system. The performed analysis, on the one hand, bears the key role of kinship relationships in guaranteeing a high level of social integration by providing a high social anchorage, even though such relationships cannot provide resources for improving single mothers' living conditions. This places families under enormous pressure. On the other hand, from in-depth interviews, an important role of exchange and solidarity within networks appears to be played by friends. This notwithstanding they are, in the same vein, unable to furnish concrete help for providing upward-mobility opportunities.

In general terms, the higher the heterogeneity of alteri in the ego network's composition is, the higher the level of social anchorage provided by alteri. The contribution of the network structure is less than could be expected. This probably depends on the great similarity of the structure of single mothers' personal networks.

Albeit issues relating to economic resources are key concerns for low-income mothers, interpersonal dynamics play central roles as these women create and use resources at their disposal for daily survival. The women interviewed use familial ties for social support according to the solidarity model described by the literature about low-income survival strategies. However, in line with the concerns expressed by single mothers, the worsening of socio-economic conditions risks compromising over time the resilience of social support networks and the ability to redistribute resources for the benefit of their members.

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