



When networks speak volumes: Variation in the size of broader acquaintanceship networks

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ABSTRACT

Personal network researchers have extensively studied the characteristics and effects of individuals' closest relationships, but they have paid much less attention to broader acquaintanceship networks, despite evidence that weak ties can also provide social support. In this paper we focus on one aspect of these networks: acquaintanceship volume. We estimate its distributional parameters for a large, representative sample of the general population of Spain, explore its variation across social groups as well as its implications for social support availability. We designed a survey instrument based on the Network Scale-Up Method and implemented it in a national survey in Spain. Our results suggest that Spaniards have approximately 536 acquaintances, with a large inter-individual variation, comparable to the estimates reported for the American population. Acquaintanceship volume varies with gender, age, education, and income. These differences are partially related to the unequal participation of social groups in voluntary associations, confirming the civic value of such associations, and in employment. Even with similar core network size, acquaintanceship volume increases the likelihood of having adequate social support available, suggesting that broader acquaintanceship networks also structure individual outcomes.

1. Introduction

Personal network research is based on the premise that individuals are not only influenced by their own attributes and macro-level characteristics, but also by their relationships with others. Traditionally, the lion share of this research has focused on the most intimate layers of the networks, primarily consisting of the romantic partner, family and close friends, which have been assumed to be most consequential for individual health and well-being (e.g., Berkman and Glass, 2000; Kahn and Antonucci, 1980). On a daily basis however, people spend far more time with a range of non-intimate others (e.g., colleagues, neighbors, parents of the other children at the school of yours, club mates, acquaintances; Kahneman et al., 2004; Jacobs and Gerson, 2004), who are more numerous and less densely connected among each other. Some scholars have suggested that non-intimate ties are as important for health and well-being as intimate ties, serving both distinct and similar functions (cf. Fingerman, 2009, for a review). On the one hand, non-intimate others (or weak ties) are better able than intimate others (strong ties) to provide access to novel information (Granovetter, 1973). On the other, weak ties can also provide support for which strong ties are thought to be better suited, for example during

emergencies (Fingerman, 2009), when close ties are not around (Bojarczuk and Mühlau, 2018; Desmond, 2013; Small and Sukhu, 2016), or when individuals do not expect their significant others to have cognitive empathy with the issue that bothers them (Small, 2017).

Yet despite the functions that weak ties are supposed to have, empirical evidence about broader acquaintanceship networks is scarce, presumably due to the difficulty of investigating extensive sets of social relationships. A first, straightforward question to ask about these larger networks is: how large are they? Dunbar (e.g., Dunbar, 1993; Kudo and Dunbar, 2001) argued that the upper bound of the number of people humans can know as individuals and with whom they can maintain meaningful contact is determined by their long-term memory capacity. This is now known as the “social brain hypothesis”. By regressing the average group size of hominoids on their neocortex ratio and by using the regression line to extrapolate the findings to humans, he predicted that the average group size of humans would be close to 150, now dubbed “Dunbar’s number”. Indeed, he observed that many tribal and traditional communities have approximately this size, and detected 500 as another typical group size (e.g., Dunbar and Sosis, 2018). He suggested that these two sizes also apply to the two outer layers (i.e., weaker ties) of personal networks, respectively the “active network”

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and the “acquaintances layer” (Curry and Dunbar, 2013).

A wide variety of methods have been applied to estimate acquaintanceship volume empirically in modern societies, including contact diaries (Dávid et al., 2016; De Sola Pool and Kochen, 1978; Fu, 2005, 2007; Gurevitch, 1961; Lonkila, 1997; Pachur et al., 2014), participant observation (Boissevain, 1974), experiments (Bernard and Shelley, 1987; Freeman and Thompson, 1989; Killworth and Bernard, 1978; Killworth et al., 1990), enquiries about the number of sent Christmas cards (Hill and Dunbar, 2003), free lists of all related and unrelated network members (Lu et al., 2009; Roberts et al., 2009), surveys (DiPrete et al., 2011; McCarty et al., 2001; Shati et al., 2014; Shokoohi et al., 2010; Van Tubergen et al., 2016), and social media data (Ellison et al., 2007; Arnaboldi et al., 2013; Dunbar et al., 2015), often combined with some form of extrapolation to estimate the total set of contacts. These studies led to vastly different estimates of average network size (see Table 1): from less than 100 (free recall; contact diaries for a limited period; online social networks) up to thousands (extrapolation from telephone book experiments or from prolonged contact diaries, participant observation), depending among others on the method of estimation, the characteristics of the sample, and the underlying definition of “knowing someone” (the network boundary). However, many studies found much higher averages than 150, concluding that Dunbar’s number is on the low side for modern societies (e.g., Wellman, 2012). A mechanism that may explain the higher numbers given limited cognitive capacity is the use of compression heuristics among humans (Brashears, 2013), allowing the storage of larger amounts of information about social relationships in the brain.

Although estimates of average acquaintanceship volume vary widely across studies, researchers coincide in observing large inter-individual variation (see Table 1). This rises other questions, concerning its potential causes and consequences. Scholars have mostly explored biological (e.g., gray matter volume; Bickart et al., 2011; Brashears et al., 2016; Lewis et al., 2011) and psychological explanations for this variation (e.g., perspective taking, or extraversion; Pollet et al., 2011; Roberts et al., 2008; Lu et al., 2009; Stiller and Dunbar, 2007). Another factor that may constrain the size of networks at different levels of tie strength is time (Roberts et al., 2009).

Yet so far, little research has explored whether acquaintanceship volume differs among social groups. In contrast, for core networks, a large body of evidence shows inequalities in the size and other characteristics of core networks in terms of gender, race, age, education and income (e.g., Fischer, 1982; Marsden, 1987). Among others, core networks have been found to be larger among the higher educated (Fischer, 1982; Grossetti, 2007; Marsden, 1987; Moore, 1990) and the higher income groups (e.g., Van den Berg and Timmermans, 2015). Furthermore, they seem to shrink with age (Marsden, 1987; Smith et al., 2015; Cornwell et al., 2008; Harling et al., 2018). Consequently, even though core networks are assumed to function as safety nets on the micro-level in terms of the social support they offer, on a macro-level they can reproduce or exacerbate inequalities (cf. DiMaggio and Garip, 2012), in the sense that people who may need more support from their relationships have smaller networks. A sociological explanation for the differences between social groups in the size and other characteristics of core networks lies in the unequal access of these groups (Chua, 2013) to the social contexts in which ties are formed (e.g., Blau, 1977; Feld, 1981; Grossetti, 2005; Small, 2009). Feld argued that friendship ties in modern life are organized around “social foci”, defined as “social, psychological, legal or physical [entities] around which joint activities are organized (e.g., workplaces, voluntary organizations, hangouts, families, etc.)” (Feld, 1981, p. 1016). Consequently, these foci provide opportunities of interaction to people, such that people associated to the same focus are more likely to develop a relationship. This theory has been cited extensively in research into core networks (e.g., Mollenhorst et al., 2011; Marsden, 1987; Small and Sukhu, 2016; Smith et al., 2014), to explain why strong relationships are often homophilous, and also why persons in poverty or the elderly have smaller networks (e.g., Van Eijk, 2010).

Yet it is equally likely that the unequal access of social groups to social foci (Chua, 2013) affect the broader acquaintanceship networks. Weak ties, too, are created in social contexts, be it neighborhoods, schools, work places, churches, or other contexts where individuals interact. Do the differences in network size observed for core ties also apply to the larger acquaintanceship networks? The scarce empirical evidence for inequalities in broader network size (Dávid et al., 2016; DiPrete et al., 2011; Roberts et al., 2009; Shati et al., 2014; Shokoohi et al., 2010; Van Tubergen et al., 2016) is mixed for gender, age, and education (Van Tubergen et al., 2016; DiPrete et al., 2011; Shati et al., 2014; Shokoohi et al., 2010; Dávid et al., 2016; Roberts et al., 2009), but consistent for income (for only two studies; DiPrete et al., 2011; Van Tubergen et al., 2016), in the sense that people with higher incomes tend to have larger acquaintanceship networks. With regard to social foci, the scarce empirical evidence suggests that religious service attendance (DiPrete et al., 2011; in the US) and being employed (Van Tubergen et al., 2016; among youths aged 18–25) increase network extensity, suggesting that participation in religious communities and work environments has beneficial effects on acquaintanceship volume. Living in a couple also increases network extensity for young people in Saudi Arabia in the context of family relationships (Van Tubergen et al., 2016), but decreases it among Kermanian men in Iran (Shokoohi et al., 2010), and was not related to network size in the US (DiPrete et al., 2011). Except for the study of DiPrete and colleagues, none of these studies is based on representative samples of the national population though (see Table 1). Also, none of these studies relates acquaintanceship volume with support availability. However, if weak ties provide individuals with information, and complement strong ties in the provision of material and emotional support, does having more of them, beyond core network ties, affect the adequacy of social support?

Considering the voids in the literature about acquaintanceship networks, with this paper we first aim to estimate the distribution of acquaintanceship volume for the general population of Spain, on the basis of a large, nationally representative sample and following the recommendations with regard to instrument design by McCormick et al. (2010). Second, we aim to explore variation in acquaintanceship volume across gender, age, education, and income. Third, we explore whether these differences are related to differential participation in social foci: civil status, as a proximal variable for participation in family networks; having children of minor age, as an indicator of participation in parental and school networks; employment status, for participation in work environments or studies; religious service attendance, for participation in religious communities, and active membership in associations. Last, we tested the association between acquaintanceship volume and the availability of adequate social support (Fischer, 1982) for four dimensions, namely help to find a job, lending money, practical help during illness, and emotional support. For these analysis, we control for individual attributes and core network size (the number of friends and relatives), to test whether the acquaintanceship volume *beyond* core ties is associated with social support availability. We hypothesized that due to its reliance on novel and specified information, help with finding a job would be particularly related to acquaintanceship volume (more than with the number of friends or relatives), whereas financial and emotional support and support during illness relies more on relatives and friends, with a complementary task of the broader acquaintanceship network.

The following section describes the method we use for the estimation of acquaintanceship volume in more detail. Subsequently, we present the design of our instrument for the population of Spain (in Section 3) and the characteristics of the national survey ($N \sim 2500$) in which it was administered by the Spanish Center for Sociological Research (CIS). Section 4 describes the results, and Section 5 our conclusions.

2. The known population method

As indicated in Section 1, the literature about acquaintanceship volume is predominantly based on relatively small convenience samples

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