Empathic people have more friends: Empathic abilities predict social network size and position in social network predicts empathic efforts

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ABSTRACT

Living in large groups and maintaining extensive social relationships, as humans do, requires special social capabilities. Past research has shown that social cognitive abilities predict people's social network size. To extend these findings we explored the role of a social *emotional* ability, and investigated how empathic abilities shape people's social network. In line with the social brain hypothesis the findings show that dispositional empathic abilities (IRI), and empathic concern specifically, predict how many close relationships people maintain. The study also found that emphatic abilities are strategically used in people's social network, with more empathy exercised in the support group with closer relationships. The findings further demonstrate the social function of empathy and highlight the importance of understanding empathy in terms of its strategic exercise among various social relationships.

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Humans evolved living in groups. The reproductive and survival benefits that groups provided explain the basic human motivation to establish and maintain social bonds (Baumeister and Leary, 1995; Bowlby, 1969; Buss, 1990; Fiske, 2010). While living in big groups provided protection, maintaining multiple and various relationships and thus maneuvering in a complex social environment requires special abilities. Humans adapted well to this requirement. In fact, the social brain hypothesis proposes that it is for the reason of maintaining social relationships that social animals have developed large brains with specific social capabilities (Dunbar, 1993; Dunbar and Shultz, 2007). A species' social capabilities not only enable, but also limit, the number of relationships its members can maintain. Understanding and tracking others' mental states in the social environment depletes social capabilities (Dávid-Barrett and Dunbar, 2013) and building up trust and close ties require large time investment (Sutcliffe et al., 2012).

Because of time and social capabilities are finite, people allocate them strategically among their relationships in their social network. To best use their limited capabilities, the relationships in a person's social network are structured in layers. Individuals spend more time and use more their social capabilities for those in their *support group*—the network's most central layer containing the closest relationships with high contact frequency (Roberts and Dunbar, 2011). They invest less effort into relationships in the less central network layers (Sutcliffe et al., 2012), like the second network layer called *sympathy group*, which contains important relationships with on average monthly contact (Hill and Dunbar, 2003); the third network layer that contains less important relationships; or the fourth layer that contains the peripheral social relationships (Kudo and Dunbar, 2001; Zhou et al., 2005).

Demonstrating the relationship between social capabilities and network size, past research found that individual differences in social-cognitive abilities predict the number of relationships that people maintain. Mentalising is a social cognitive ability that allows people to correctly infer and remember others' higher-order intentions and desires. It was found that the better people are able to mentalise, the larger is their social network as well as the brain regions associated with intention-attribution (Dunbar, 2012; Lewis et al., 2011; Powell et al., 2012; Stiller and Dunbar, 2007). More specifically, people's mentalising ability predicts the size of their *support groups*, whereas people's memory capacity predicts the size of their *sympathy groups* (Stiller and Dunbar, 2007).

So far research has focused on the role that cognitive abilities and the brain regions associated with them play in predicting the number of relationships people maintain. Psychological research, however suggests that social relationships depend on both cog-

nitive *and* affective capabilities. In this paper we focus on a social *affective* capability, empathy, the ability to understand *and* relate to others' affective states, and investigated if, and if so, how, it shapes people's social networks.

Empathy

People's understanding of others' mental states lays the foundation of social interactions and bonding (Theory of Mind; Frith and Frith, 1999; Herrmann et al., 2007). Both the understanding of others' intentions *and* attending to their emotional states are necessary for social relationships to last (Shamay-Tsoory and Aharon-Peretz, 2007). In fact, understanding others' intentions or emotions *without* properly reacting to them can signal psychopathic (Decety et al., 2013) or Machiavellian (Davies and Stone, 2003; Jones and Paulhus, 2009) personality disorder. Mentalising ability, for example, correlates with emotion recognition, but it does not predict performance on other empathic measures that are associated with properly reacting to those emotions, (Launay et al., 2015). The crucial capability that shapes humans' understanding of and proper reaction to others' emotional states is called empathy (Batson, 1991, 2009).

Empathy connects and unites people with each other (Davis, 2004), and provides the "social glue" (Hoffman, 2000) that holds societies together (McDougall, 1908/1923). Empathy evolved in mammalian species that live in complex social groups, facilitating bonding and cooperation (de Waal, 2009; de Waal, 2012). Importantly, people differ in their empathic abilities. The individual differences are partly due to genetic causes (Rodrigues et al., 2009) but empathic abilities can also be improved through learning (e.g. Decety and Fotopoulou, 2015).

Given the central role of empathy in social interactions (Batson, 2009), we hypothesized that individual differences in dispositional empathic abilities would explain variation in network size. Specifically, as emotional closeness and understanding is most important in the support group (vs. the outer layers), empathy should be most likely predict the size of the support group. We thus expected that people with better dispositional empathic abilities would have more relationships in their support group. In line with this hypothesis, neuroimaging studies have shown that the size of the amygdala – a brain region that plays an important role in empathic reactions (Decety, 2010; Decety and Michalska, 2010) – predicts social network size (Bickart et al., 2011).

The social brain hypothesis also suggests that social capabilities are unevenly used within one's social network. People do not invest their limited social capabilities homogeneously in their social network (Pollet et al., 2013). Instead, they exert different levels of effort to maintain relationships in the different network layers: more in the central layers (i.e. support group; Curry et al., 2012; Sutcliffe et al., 2012). As a result, people can maintain their most important relationships with high intensity (Binder et al., 2012; Roberts et al., 2009). Like menatlising, empathy has its limits too. People cannot empathize at equally high level with everyone they know, nor can they manage to feel the pain of everyone they see suffering (Cheng et al., 2007; Decety et al., 2010; Slovic, 2007). We thus predicted that people would not empathize evenly across different network layers. Because people are most motivated to maintain their intimate relationships that also should require the most empathic effort to be sustained, we hypothesized that people would exercise more empathy in relationships within their support group in particular, rather than relationships within other network layers (e.g. sympathy group).

Our prediction that people use empathy selectively to sustain some relationships over others is supported by social psychological research. While empathy is generally hardwired and automatic (Decety and Ickes, 2009; Preston and de Waal, 2002), people can still control their empathic responses (Hodges and Wegner, 1997). Strategic motivation to avoid excessive distress or negative attitudes toward the target often curtail empathic responses (Castano, 2012; Cikara et al., 2011a, 2011b; Decety et al., 2010; Dovidio et al., 2010). In other words, while people are predisposed towards empathy (e.g. Davis, 1980; Baron-Cohen and Weelwright, 2004), they modulate their predisposed level of empathy, exerting more or less empathy depending on the situation and the target person. Extending this more nuanced understanding of empathy, we predicted that people systematically vary their empathic reactions even among their close social relationships. To test this assumption, in addition to examining people's dispositional empathy as a global trait (as commonly done), we also examined their contextualized empathy directed towards different members in their social network.

Method

Participants

Eighty Americans recruited via Amazon Mechanical Turk completed the study online, using Qualtrics (Mage = 34.58, SD = 11.03, range: 19–72; 46 female). The sample size was determined based on past research testing similar hypotheses with similar designs (e.g., Stiller and Dunbar, 2007). The Institutional Review Board of the first author's home institution has reviewed and approved the study.

Materials and procedure

Participants first completed a demographic questionnaire, followed by the Interpersonal Reactivity Index (IRI; Davis, 1980) as a measure of dispositional empathy. The IRI reflects the multidimensional nature of empathy, encompassing both empathic understanding of and reactions to others (Shamay-Tsoory, 2011). We administered three of the IRI's four subscales, each with seven items (IRI's fourth subscale of *Fantasy*, assessing the ability to imagine and experience the emotions of fictitious characters, did not pertain to our topic of interest and was not measured). The perspective taking (PT) subscale measured people's ability and tendency to view the world from others' point of view (e.g. *When I'm upset at someone, I usually try to "put myself in his shoes" for a while*). The empathic concern (EC) subscale measured the tendency to feel for others and react emotionally to others' misfortune (e.g. *I am often quite touched by things that I see happen*). The empathic distress (ED) subscale measured how well people cope with emotionally disturbing situations (e.g. *I sometimes feel helpless when I am in the middle of a very emotional situation*). Participants expressed their agreement with each of the 21 items, presented in random order, on a scale with the endpoints labeled *Strongly disagree* (1) and *Strongly agree* (9). An exploratory factor analysis of all items resulted in three factors corresponding to the three intended subscales. We thus averaged the seven items of each subscale into the following composite scores: *perspective taking* (M = 6.73, SD = 1.48, α = 0.89), *empathic concern* (M = 6.79, SD = 1.64, α = 0.90), and *empathic distress* (M = 3.81, SD = 1.86, α = 0.93).

Name generator

To extract participants' social networks, we asked participants to list their acquaintances (so-called *alters*). Focusing on the central two network layers of support and sympathy group, we asked participants to list only those alters that they were in contact with at least once per month and had some sort of personal relationship with. Following others (Hill and Dunbar, 2003; Pollet et al., 2011), alters that participants were only in contact with in work environments, professionally (e.g. doctor), or briefly (e.g. mailman), were