Pancheva, M. G., & Vásquez, A. (2022). Close to others - closer to happiness?: An empirical investigation of the social determinants of subjective wellbeing. *International Journal of Wellbeing*, *12*(2), 206-232. https://doi.org/10.5502/ijw.v12i2.1887

ARTICLE

Close to others - closer to happiness?: An empirical investigation of the social determinants of subjective wellbeing

Marta G. Pancheva · Alejandra Vásquez

Abstract: Extensive research on the determinants of people's subjective wellbeing has shed light on factors that influence quality of life and that traditional welfare measures tend to neglect. Particularly important among these appear to be the relational, interpersonal aspects of human existence, and both intrinsic and extrinsic benefits of participating in different types of social networks and associative activities. This field of analysis, however, is not devoid of challenges. These include: the wide variety of social proxies adopted in the literature, which has often led to mixed results; and the almost exclusive use of cross-sectional data, which makes it impossible to control for individual unobserved characteristics that could significantly affect both wellbeing levels, and the quality of one's social and relational context. In this study, we address both of these issues by examining the association between subjective wellbeing, and a rich set of 17 social capital indicators reflecting the following dimensions: personal relationships, social network support, civic engagement, and trust and cooperative norms. Moreover, we use longitudinal data, and control for time-constant sources of heterogeneity among respondents, such as personality traits and predispositions. Our results suggest a consistent relationship between wellbeing and all four dimensions of social capital examined. Furthermore, we find evidence of important gender differences in the way social and relational factors affect overall life satisfaction.

Keywords: subjective wellbeing; social capital; relationships; longitudinal

1. Introduction

The idea that people are reliable judges of their own quality of life, and that it is therefore worth asking them to assess it directly, gained increasing acceptance during the second half of the 20th century among scholars from different disciplines. The analysis of people's subjective wellbeing (SWB) and what influences it has brought to light a number of factors that affect the quality of human life, the impact of which might otherwise be underestimated or completely overlooked (Dolan et al. 2008; Becchetti & Pelloni 2013).

Among these, considerable attention has been paid to the social context of wellbeing, that is, to the value that different types of social networks have for individuals, and for society in general (Helliwell & Putnam 2004). In particular, in recent decades the analysis of SWB has intersected with a concept that originated in the field of sociology, namely, social capital (Bjørnskov 2003; Helliwell & Barrington-Leigh 2010; Leung et al. 2011).

However, empirical evidence on the relationship between the two is still mixed. While, on the one hand, researchers have mainly used a single-item indicator of people's overall life satisfaction

Marta G. Pancheva
Istituto Universitario Sophia
marta.pancheva@sophiauniversity.org

(LS) as a proxy of SWB, on the other hand, a wide range of variables have been applied - often interchangeably – as proxies of social capital at both the individual and collective level of analysis. These include trust, participation in formal or informal associative activities, contacts with family and friends, among others. One reason is the relative vagueness of the concept of social capital, which still lacks a widely accepted definition (Portes 1998; Scrivens & Smith 2013). Indeed, empirical investigations adopting different measures of social capital have produced mixed evidence on its relationship with people's wellbeing, making it difficult to draw unambiguous conclusions (Rodriguez-Pose & Berlepsch 2014).

Another open question concerns the nature and causal direction of this relationship. While it is possible that the existence of social capital directly or indirectly affects a person's SWB levels, the opposite could also be true, or a third factor, omitted from the analysis, could influence both variables (Peasgood 2007). For instance, it may be the case that personal traits and innate predispositions influence both the respondent's general perceptions and judgments about life and the quality of his or her relational context and attitude towards involvement in social activities. So far, empirical analysis in this field has almost exclusively used cross-sectional data, making it impossible for researchers to control for such individual sources of heterogeneity and, thus, potentially reaching spurious results. Studies using longitudinal data are still rare and have mostly considered a handful of social capital aspects (Peasgood 2007; Becchetti et al. 2008; Powdthavee 2008; Lucchini et al. 2015).

In this paper we contribute to the study of the relationship between SWB and social capital at the micro level by explicitly addressing both the above issues.

First, in order to obtain a more complete picture of how and the extent to which different social and relational factors relate to wellbeing, we analyse a wide range of indicators encompassing four distinct dimensions of social capital, namely personal relationships, social support, civic engagement, and trust and cooperative norms. We, thus, explore how each of these facets of a person's social context relates to their overall satisfaction with life.

Furthermore, to address the potential problem of endogeneity, we implement an analytical strategy that successfully parcels out time-invariant heterogeneity characteristics, both observed and unobserved, that can significantly affect both these entities. To this end, we use panel data from a nationally representative sample of American adults who were called at three points in time and answered a wide range of questions concerning both their subjective perception of wellbeing, and a rich set of social and relational aspects of their lives.

Finally, we explore whether there is evidence of gender differences in the relationship between social capital and subjective wellbeing.

The rest of the article is organised as follows: Section 2 is devoted to the theoretical background of our study and summarises previous research on the relationship between social capital and SWB. In section 3 we present the data and variables employed in our empirical investigation and formulate the research hypotheses. Section 4 outlines the analytical strategy adopted. The empirical results obtained are reported in Section 5, and discussed in Section 6. Section 7 concludes.

2. Theoretical background

In recent decades, the relational and social aspects that influence the quality of human life have gained increasing attention among scholars interested in determining the drivers of human wellbeing (Dolan 2008; Boarini et al. 2012; Becchetti & Pelloni 2013). The more and more widely accepted need to "go beyond the GDP" as a measure of progress (Stiglitz et al. 2009) has fostered, among others, a keen interest in exploring the extent to which and how various features of a

person's intimate and social networks can contribute to or hinder their happiness. This assessment is important because, for example, it has been argued that people tend to overestimate the wellbeing gains they can achieve by satisfying extrinsic desires (beside basic needs) through the consumption of material goods, while at the same time underestimating the importance of intrinsically valuable activities such as time spent with family and friends, participation in a variety of social activities, etc (Stutzer 2004; Putnam 2000; Frey et al. 2007; Bruni & Stanca 2008; Bartolini 2009).

2.1 Sociality and relational goods

The importance of sociality for wellbeing is not surprising given the propensity of humans to interact and cooperate which has been linked to two distinct physiological mechanisms. The first refers to the release of oxytocin and endorphins during social interactions, which promotes bonding with other members of a group (Kilts 2002; Zak et al. 2005). The second mechanism relates to the functioning of so-called mirror neurons that allow subjects to put themselves in others' shoes and experience feelings such as empathy and compassion (Rizzolatti et al. 1997; Iacoboni 2009).

Pro-social preferences and attitudes such as generosity, reciprocity or altruism, have been analysed by behavioral scientists in experimental settings, among others (Levitt & List 2007; Van Lange et al. 2013). Moreover, they have been linked to the production of so-called relational goods in the encounter and interaction between people within different types of social networks (from the more intimate ones such as family and friendship, to wider ones related to participation in social and even economic activities, and organisations (Gui 2005; Uhlaner 1989, Becchetti et al. 2008). Such goods are simultaneously produced and consumed by the parties involved in a given relationship and have been defined as a kind of local public goods for whose emergence a coordinated investment (of time, energy, etc.) is required (Becchetti & Pelloni 2013). Relational goods capture the non-instrumental, intrinsic value of interpersonal relationships in various contexts, and require sincere and genuine contact between the parties (Bruni and Stanca 2008).

2.2 Social capital

Beyond this intrinsic value of social relations, another prominent strand of studies in the social sciences that focuses on the existence, characteristics, and outcomes of so-called social capital created within a certain network, has extensively examined over the last three decades the potential productive value arising from effectively functioning social groups. It has mainly distinguished two levels of analysis - individual and collective, referring to social capital as a primarily personal or more general, public resource (Scrivens et al. 2013).

In particular, the first approach focuses mainly on the individual benefits that can be derived from the existence and use of the social capital resulting from belonging to a certain network of interpersonal and social relations (Portes 1998). For instance, one of the precursors in the development of the concept Pierre Bourdieu defined social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (Bourdieu 1986, p.21). As such, in Bourdieu's view, it could be exploited by members of a given social network to maintain their status and power while excluding non-members and, thus, hindering social mobility (Scrivens et al. 2013).

Moreover, as economist G. Loury stated, "the social context within which individual maturation occurs strongly conditions what otherwise equally competent individuals can achieve." (Loury 1977, p.176). Indeed, it has been confirmed that the resources in one's networks

can be highly relevant for personal outcomes in various fields - from education (Coleman 1988), to labour market participation (Aguilera 2002; Lin 1999; 2001), to physical and mental health (Berkman & Glass 2000; Kawachi & Berkman 2001), and so on. This view of the role of social networks in people's lives, which is more instrumental than the above-mentioned one that exalts the intrinsic value of the relational goods created within them, sheds light from a different angle on the importance of the existence and characteristics of these networks in determining the overall quality of life and, therefore, the wellbeing levels of an individual.

One of the scholars who opened up to this broader view of social capital, J. S. Coleman defined it in rather general, if not vague (Portes 1998) terms as "a variety of different entities … that consist of some aspect of the social structure" and "facilitate certain actions of individuals who are within the structure" (Coleman 1990, p.302). In particular, he stressed that its existence is not necessarily confined to homogenous, class-based networks as in Bourdieu's view, but can actually emerge within more heterogeneous social groups (including families, communities, schools, etc.). Moreover, Coleman highlighted the functional role of social capital as a resource that can be used by social and even economic actors, and distinguished three main dimensions that compose it: trust, informational channels, and rules/sanctions (Coleman 1988).

The second one was subsequently analysed in depth by Robert Putnam who was interested in the characteristics and functioning of both formal (political, civic, and labour), and informal (interactions with family and friends) interpersonal networks, and their potentially beneficial role for society (Putnam 2000). In Putnam's view social capital consists of "connections among individuals – social networks, and the norms of reciprocity and trustworthiness that arise from them" (Putnam 2000, p.19). The greater the amount of informal social interactions and participation in associative activities, the lower the incentives and frequency of free-riding. Social capital fosters solidarity, cooperation, civic engagement, and responsibility, and can even produce, as a positive externality, economic growth and political stability (Putnam 1993).

2.3 Social drivers of subjective wellbeing

Beyond these considerations about the overall relevance of the existence and functioning of social networks, both individual and collective level aspects of social capital have been examined as potential drivers of human wellbeing. In particular, the analysis of social capital has intersected with another field of research that has grown exponentially over the past quarter century seeking to assess people's SWB and shed light on its determinants (Bjørnskov 2003; Helliwell & Barrington-Leigh 2010; Leung et al. 2011; Rodriguez-Pose & Berlepsch 2014; Gable & Bromberg 2018; Helliwell et al. 2018). Scholars have gone as far to state that social and relational factors not only significantly affect the quality of human life but are one of the "most robust correlates of subjective wellbeing" (Helliwell & Putnam 2004, p.1437).

A wide range of indicators encompassing aspects of social capital at both the individual and collective level have been applied in the literature in order to empirically assess their relationship with self-assessed happiness.

Starting from the individual level of analysis concerning personal networks and various types of support deriving from their existence, among others, informal social activities such as time spent with family and friends, and frequency of contacts with neighbours have been associated, with greater life satisfaction (Diener & Seligman 2002; Lelkes 2006; Pichler 2006; Peasgood 2007; Powdthavee 2008; Helliwell & Barrington-Leigh 2010; Leung et al. 2011). This positive association has, on the one hand, been linked to the production of relational goods through the involvement in such non-instrumental social activities (Becchetti et al. 2008). On the other hand, it may depend on the resources, in terms of various types of support, made available through involvement in

such interactions.

The latter thesis has not been fully supported by empirical research with somehow mixed findings, instead, being recorded with respect to the social support resulting from the existence of such relationships and networks, especially the one received (Leung et al. 2011; Lucchini et al. 2015; Gable and Bromberg 2018). Studies have shown that a person's perception of being able to rely on the support of closely connected others is positively associated with wellbeing levels (Kaul & Lakey 2003; Siedlecki et al. 2014). However, the support actually received or enacted does not always seem to have such beneficial effects highlighting a so-called social support paradox (Shrout et al. 2006; Rafaeli & Gleason 2009). A positive relationship has been rather confirmed with respect to the provision of support (Thomas 2010; Aknin et al. 2013), as well as in cases where there is a certain degree of reciprocity in the exchange of social support (Maisle & Gable 2009).

Moving from the realm of personal relationships to the associative level of human interaction, participation in non-political and non-economic organisations has been found to be positively correlated with SWB (Pichler 2006; Helliwell 2003; Helliwell & Putnam 2004; Becchetti et al. 2008). At the same time, no significant or negative relationship was recorded with respect to involvement in political or professional interest groups (Pichler 2006; Leung et al. 2011).

The case of volunteering and its relation to SWB remains somewhat ambiguous, with rather mixed empirical evidence (Dolan et al. 2008). Volunteering has been linked to two distinct channels through which increased wellbeing can be produced: one involving the intrinsic rewards of caring for others or being involved in a cause that goes beyond the realm of one's private interest; and a more extrinsic one related to the expansion of one's social network (Helliwell 2003; Pichler 2006). However, even when empirically confirmed, its positive association with SWB is less robust, with the impact of volunteering weakening considerably when controlling for unobserved individual heterogeneity factors (such as personality traits) (Meier & Stutzer 2008).

Another form of associative activity that has been linked to SWB is religious practice. Usually operationalised through indicators such as frequency of participation in religious services, it has been positively and significantly associated with life satisfaction in several studies (Helliwell 2003; Helliwell & Putnam 2004; Greene & Yoon 2004; Clark & Lelkes 2005; Hayo 2007; Rodriguez-Pose & Berlepsch 2014). As in the case of volunteering, here too the impact on wellbeing can be at least twofold, with religious practices, on the one hand, influencing a person's sense of meaning or tempering negative feelings such as insecurity, and, on the other hand, enabling the expansion of one's social networks, and even the adoption of healthy behaviours (Ellison 1991; 1994; McCullough & Larson 1999).

Finally, the existence of such and other types of associative activities and the overall degree of civic engagement of citizens of a given society clearly depend on the quality of the social fabric and the particular social norms shared within it. For instance, one of the most widely examined aspects of social capital is trust - both general and institutional – whose beneficial effects on happiness have been confirmed in various studies (Frey & Stutzer 2002; Helliwell & Putnam 2004; Helliwell 2006; Hudson 2006; Bjørnskov 2008; Helliwell & Wang 2011). Along with it, a person's sense of belonging to their community of reference, and their feeling of safety within it, among others, have also been analysed as determinants of wellbeing (Helliwell & Barrington-Leigh 2010; Leung 2011; Helliwell & Wang 2011; Rodriguez-Pose & Berlepsch 2014).

Despite all these findings, it is difficult to draw a uniform conclusion regarding the association between social capital and SWB. This is partly due to the lack of an unambiguous definition of the former concept (Scrivens & Smith 2013), and partly due to data availability issues, with most

of the existing empirical analyses focusing on a single aspect, and only a handful of studies so far exploring a somewhat more integrated view to social capital in its various dimensions (Helliwell & Barrington-Leigh 2010; Leung et al. 2011; Rodriguez-Pose & Berlepsch 2014).

3. Data, variables, and hypotheses

We use data coming from the *Midlife in the U.S.* (MIDUS) national longitudinal sample of adults, and collected in three dates: 1995/1996 (wave 1), 2004/2005 (wave 2), and 2012/2013 (wave 3), respectively. Respondents were first administered a phone interview and then asked to complete an additional self-assessed questionnaire. For the purposes of our analysis, we selected a balanced sample of 1,600 respondents, aged 20 through 92, who completed both the phone interview and the self-assessed questionnaire in all the three waves of the survey (yielding a total of 4,800 observations).

As a proxy of SWB we use an indicator of the respondents' "satisfaction with life at present" (Diener 1984), measured on a 10-point Likert scale that ranges from 0 (not at all satisfied) to 10 (completely satisfied). We follow a widespread practice, and treat this ordinal indicator as a cardinal variable in order to ease the interpretation of the estimated parameters, since both measures produce similar results (see Ferrer-i-Carbonell & Frijters 2004).

As explanatory variables, we chose a set of 17 distinct indicators of social capital reported in Table 1. For the selection of these predictors we followed the classification proposed by Scrivens and Smith (2013), according to which existing social capital definitions and measures can be summed up and organized in four separate dimensions or categories.

The first concerns the structure and nature of the respondents' personal relational networks, and activities or behaviours that help to establish and maintain them (such as time spent together and other forms of contact, and communication). In a broad sense, this *personal relationships* dimension can reflect both intimate ones (with family and friends), and those with colleagues, neighbours, and so on.

The second dimension of social capital concerns the resources derived from these relationships or, in other words, the different types of social support that can be seen as a result of the existence of these networks. The intuition behind the identification of this separate category of indicators is that, beyond their intrinsic value, personal relationships also influence the quality of one's life through the various forms of support (both given, and received) that they activate.

Moving from the individual to the collective level, the third social capital category considered in our analysis refers to the respondent's level of civic engagement. It includes various types of activities such as participation in civic or political organisations, engagement in voluntary services, etc. This dimension largely corresponds to Putnam's idea of formal and informal interpersonal networks (Putnam, 2000). Civic engagement can, on the one hand, have intrinsic beneficial effects on a person's wellbeing deriving from acting in accordance with one's values, fulfilling what is perceived as a civic obligation, or from the enhanced sense of purpose associated with contributing to the common good. On the other hand, it may also have an extrinsic value associated with the extension of one's social networks and contacts.

Finally, the fourth category of social capital we consider refers to the dimension of trust and cooperative norms that characterise the respondent's surrounding environment. Such intangible resources can have a beneficial impact on the community as a whole, but also shape the way people behave as members of a society, with potential effects on individual wellbeing as well.

Other variables included as controls in our regression analysis are: a series of socio-demographic characteristics, namely age, and age squared; marital status (separated, divorced, widow, never married; ref. category: married), and number of children in the family; two social

stratification indicators, namely, educational level (undergraduate degree, postgraduate degree, ref.cat. high school diploma or less), and position in the income distribution (five income quintiles based on the net yearly equivalent household income of the respondent); respondent's self-rated health (with five response categories: excellent, very good, good, fair, or poor), and wave dummies. Detailed descriptive statistics can be found in Table A1 in the Appendix.

Table 1. List of social capital indicators.

DIMENSION	QUESTION
PERSONAL RELATIONSHIPS	1. Frequency of contacts with family visits, phone calls, letters, or electronic mail messages (1=Several times a week; 2=Once a week; 3=Several times a month; 4 =Once a month or less)
	2. Frequency of contacts with friends via visits, phone calls, letters, or electronic mail messages (1=Several times a week; 2=Once a week; 3=Several times a month; 4=Once a month or less)
	3. Frequency real conversation or get together with neighbours (1=Several times a week; 2=Several times a month; 3=Less than once a month; 4=Never or hardly ever)
SOCIAL NETWORK SUPPORT	4. Emotional support received by spouse/partner; parents; in-laws; children; other family/friends, anyone else (average n.hours per month)
	5. Emotional support given to spouse/partner; parents; in-laws; children; other family/friends, anyone else (average n.hours per month)
	6. Unpaid assistance received in a typical month from one of the following: spouse/partner; parents; in-laws; children; other family/friends; community volunteers; religious groups; governmental groups (0= No; 1=Yes)
	7. Unpaid assistance given in a typical month to one of the following: spouse/partner; parents; in-laws; children; other family/friends; anyone else (0= No; 1=Yes)
	8. Financial support received in a typical month from one of the following: spouse/partner; parents; in-laws; children; other family/friends (0= No; 1=Yes)
	9. Financial support given in a typical month to one of the following: spouse/partner; parents; in-laws; children; other family/friends (0= No; 1=Yes)
	10. Can call neighbour for help if needed (1= A lot; 2=Some; 3=A little; 4=No)
CIVIC ENGAGEMENT	11. Volunteer in one of the following: hospital/nursing home; school/ youth organization; political organization; other (0= No; 1=Yes)
	12. Attend meetings of labor union or other professional organizations (0= No; 1=Yes)
	13. Attend meetings of sports or other social organizations (0= No; 1=Yes)
	14. Frequency attending religious services (1 =Once or more times a week; 2=Several times a month; 3=Never)
TRUST AND COOPERATIVE NORMS	15. Feeling safe being out alone in my neighbourhood at night (0= No; 1=Yes)
	16. Don't feel I belong to anything I'd call a community (1= Strongly agree - 7=Strongly disagree)
	17. People do not care about other people's problems (1= Strongly agree - 7=Strongly disagree)

Finally, based on the empirical results reported in the reference literature above, we formulate the following hypotheses for each of the dimensions of social capital:

Hypothesis 1. (Personal relationships): The more frequent the contacts with close ones (family, friends), the higher the reported level of SWB.

Hypothesis 2. (Social support): The higher the level of social support, the greater the overall satisfaction with life.

Hypothesis 3. (Civic engagement): The more actively the respondent is involved in associative activities, the higher his/her level of SWB.

Hypothesis 4. (Trust and cooperative norms): The stronger the sense of belonging and safety in one's community, the higher the life satisfaction.

4. Analytical strategy

To assess the relationship between respondents' wellbeing and the social capital indicators of interest, we ran two set of regressions based on the following equation, where subscript i refers to individuals, i=1,2,..,1600, and subscript t denotes the wave within which the information is collected (t=1,2,3):

$$LS_{it} = \sum_{k=1}^{K} \beta_k X_{it} + \sum_{q=1}^{Q} \gamma_q Z_{it} + \alpha_i + \psi_t + \varepsilon_{it}$$

where LSit is our subjective wellbeing dependent variable (overall life satisfaction); Xit is a vector composed of the 17 social capital explanatory variables indexed by k=1,2,..,K, with respective coefficients βk; Zit is a vector of control variables, indexed by q=1,2,..,Q, with respective coefficients γq; αi are individual fixed effects; are wave effects, and εit is a residual that varies both across individuals and time, and captures our overall ignorance about the factors associated with the dependent variable of the model.

We used two different estimators: first, we applied a random effects (RE) model which assumes that the independent variables in the equation are uncorrelated with the idiosyncratic error term. It allows to estimate the influence of both time-invariant, and time-variant predictors on the dependent variable, and is a good analytic strategy when the variables of interest have low within variation over time.

However, such estimates would be biased in case of unobserved heterogeneity captured in the αi term of our equation. Therefore, we also adopted a fixed effects (FE) model that allows us to control for time-invariant heterogeneity factors. Instead of relying on cross-person comparison as in the case of cross-sectional data analysis, this approach allows to use the same person, followed over time, as its own control, and account for the influence of time constant characteristics like personality traits and dispositions, genetic endowments, which are among the most important drivers of SWB levels (Bartels 2015; Raysamb & Nes 2018). If there is enough intra-individual variation in the regressor, the FE model yields unbiased estimates of the influence of social capital on wellbeing. Finally, a Hausman model selection test was run to determine which of the two estimators was more efficient.

5. Empirical results

A bivariate descriptive analysis reported in Table 2, based on the first wave of observations, generally confirms what is known in the literature with higher wellbeing levels reported by married, healthy, better educated, and affluent individuals. Our data seems to confirm a U-

shaped relationship between SWB and age, with middle aged adults reporting lower mean life satisfaction levels than older ones. Turning to our social capital variables of interest, for the first dimension of personal relationships we observe that people with more frequent contacts with family, friends, and neighbours report a higher LS. Regarding the category of social network support, it seems that both giving and receiving emotional support is associated with lower average levels of SWB for our sample. Slightly higher LS levels are associated with providing financial help rather than receiving it.

No apparent difference in levels of wellbeing is recorded for unpaid assistance, either given or received. Interestingly, the perception of being able to count on one's neighbour for help is associated with significantly higher overall life satisfaction levels. Turning to the third civic engagement dimension of social capital, we observe higher average SWB scores reported by individuals who actively participate in the various social activities considered in our analysis. Finally, for the last category – trust and cooperative norms – we see that the greater the respondents' sense of belonging and safety, the higher their average satisfaction with life.

In order to assess more precisely the relationship between social capital and wellbeing, we then proceed to analyse the parameter estimates resulting from the application of the RE and FE regression models presented in the previous section, reported in Table 3. Both RE and FE estimators are first run for the whole sample (columns 1 and 4), and then separately for males and females (columns 2 and 5, 3 and 6, respectively).

We begin by discussing the results of the RE regression model. Regarding the dimension of personal relationships, we find only partial confirmation of our first hypotheses. Our empirical evidence suggests that less frequent contacts with family members have negative effects in terms of LS (slightly more pronounced for women than for men). However, no statistically significant relationship is found with respect to contacts with friends and neighbours. Another covariate closely related to this social capital dimension is the respondents' marital status. Compared to the reference category of being married, never married, widowed, divorced and especially separated individuals register significantly lower LS levels. Finally, we find a slightly positive association between the number of children in a household, and the wellbeing of female respondents.

Turning to the second category of social capital, namely social network support, our regression analysis suggests that receiving emotional support from closely related persons is positively associated with the respondent's SWB levels. The reverse seems to be true with regard to being the recipient of financial support or unpaid assistance. Both of these forms of social support are associated with lower LS levels, the former for women, the latter for men.

Regarding providing (rather than receiving) support, our RE estimates suggest that more time spent giving emotional support is associated with slightly lower SWB, especially for women. At the same time, for the male subsample there is evidence that providing financial support is related to higher life satisfaction. Finally, the perceived possibility to ask a neighbour for help seems to be, among our social support indicators, the one most strongly associated with LS. Compared to the reference category ("A lot"), feeling less confident that neighbours would help in case of need is associated with substantial losses in SWB for both genders (a relationship somewhat more pronounced for women). Therefore, our second hypothesis is only partly confirmed. It seems that a more nuanced picture, taking into account also gender differences in the relationship between social support (provided and received) and SWB shall be considered.

Taking into account the third category of social capital examined – civic engagement, we find no significant association between volunteering or participation in sporting or other social organisation meetings and respondents' overall life satisfaction. At the same time, participation

Table 2. Average life satisfaction levels by covariates of interest.

Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*	Variables	*Mean LS*	*Std. Dev.*
Dimension 1: Personal Relationships									**Dimension 2: Social Network Support**											
Freq. contacts family			**Freq- contacts friends**			**Freq. contacts neighbours**			**Emotional support rec.**			**Emotional support given**			**Financial support rec.**			**Can call neighbour for help**		
									No	8	1.57	No	8.29	1.46	No	7.85	1.38			
Sev. times a week	7.91	1.4	Sev. times a week	7.89	1.4	Sev. times a week	7.93	1.38	Yes	7.81	1.42	Yes	7.81	1.43	Yes	7.47	1.6	A lot	8.14	1.25
Once a week	7.73	1.48	Once a week	7.79	1.5	Sev. times a month	7.63	1.46	**Financial support given**			**Unpaid assistance rec.**			**Unpaid assistance given**			Some	7.47	1.52
Sev. times a month	7.64	1.55	Sev. times a month	7.74	1.4	Never	7.28	1.71	No	7.51	1.63	No	7.82	1.47	No	7.68	1.46	A little	7.23	1.52
Once a month, less	7.63	1.26	Once a month, less	7.62	1.48				Yes	7.93	1.34	Yes	7.82	1.38	Yes	7.86	1.42	No	6.69	1.68
Dimension 3: Civic Engagement												**Dimension 4: Trust and Cooperative Norms**								
Volunteer			**Attend meetings social org.**			**Attend meetings prof.org.**			**Religious service attend.**			**Feel safe out alone**			**Don't belong community**			**People don't care for others**		
									Once/more a week	8.14	1.25				Agree	6.67	1.88	Agree	7.3	1.74
No	7.75	1.51	No	7.76	1.48	No	7.75	1.48	Sev. times a month	7.47	1.52	No	7.63	1.52	Somewhat	7.61	1.6	Somewhat	7.65	1.25
Yes	7.91	1.32	Yes	7.95	1.3	Yes	8.12	1.13	Never	7.23	1.52	Yes	7.98	1.33	Disagree	8.34	1.28	Disagree	8.42	1.25
Socio-demographic characteristics																				
Age group			**Gender**			**Highest education level**			**Marital status**			**HH Income quintile**			**Self-reported health**			**Wave**		
									Married	8.03	1.3	Quintile 1	7.37	1.74	Excellent	8.22	1.18			
24-39 years old	7.91	1.4	Male	7.84	1.33	High school or less	7.66	1.35	Separated	6.51	2.3	Quintile 2	7.68	1.4	Very good	7.98	1	Wave 1	7.83	1.43
40-49 years old	7.73	1.48	Female	7.82	1.52	Under-graduate	7.65	1.5	Divorced	7.37	1.6	Quintile 3	8.05	1.28	Good	7.56	1.55	Wave 2	7.92	1.42
over 50	7.64	1.55				Post-graduate	8.15	1.37	Widowed	7.53	1.83	Quintile 4	7.93	1.29	Fair	7.11	1.47	Wave 3	7.9	1.56
									Never Mar	7.19	1.38	Quintile 5	8.08	1.26	Poor	7	2.58			

in trade unions or other types of meetings of professional organisations seems to have some boosting effect on people's life evaluation, especially for males. In addition, we find some evidence that less frequent participation in religious services is associated with lower SWB levels – a relationship entirely led by the female subsample. .Thus, our third hypothesis is only partially confirmed.

Finally, all three indicators reflecting the fourth dimension of social capital including trust and cooperative norms seem to have a significant relationship with people's satisfaction with life confirming our fourth hypothesis: feeling safe out alone at night-time, feeling a part of the community, and believing that others care about the people around them, are all associated with higher SWB levels.

Turning to the FE regression model, which allows us to control for time-invariant unobserved characteristics that might have a substantial influence on respondents' SWB (Raysamb & Nes 2018; Lucas 2018), the RE estimates presented above are largely confirmed.

More precisely, no particular differences are observed in the first social capital dimension. Again, we find only evidence that rarer contacts with family are associated with lower levels of life satisfaction. Married respondents appear to be by far the most satisfied compared to the other marital status categories, although for women the strong negative association with SWB is now statistically significant only in case of separation.

Regarding the dimension of social support, receiving emotional support has a slight positive effect on wellbeing. Again wellbeing seems to be lower for female respondents receiving financial help, while the boosting effect for the male part of the sample of giving such kind of support is even more pronounced. Once controlled for individual FE, no significant relationship is observed with respect to the covariates of unpaid assistance. At the same time, not having the possibility to rely on neighbours in case of need again shows a strong negative association with LS, especially for women.

As for the various forms of civic engagement considered, there are almost no differences compared to the RE estimates, except for the relationship between SWB and the frequency of attendance of religious services, where no significant association is found once we control for time-invariant heterogeneity characteristics of the respondents.

Finally, the RE results are also confirmed in the case of the fourth dimension of social capital - trust and cooperative norms, with the sole exception of the explanatory variable "feel safe out alone during the night" which is not significantly associated with LS in the FE regression model.

A general comparison of the RE and FE results shows that the signs of parameters are consistent in the two models. However, to determine which of them better fits the data, we perform a Hausman specification test. The null hypothesis that the individual-level effects are adequately modeled by a random-effects model is resoundingly rejected in favor of the fixed effects one. Time constant unobserved characteristics seem to be related to the social capital predictors, and it is therefore important to take them into account.

In summary, even after controlling for time-invariant unobserved characteristics (such as the personality traits of the respondent, or inborn determinants of her perception of wellbeing), we can confirm that a number of social capital indicators continue to be significantly associated with SWB. Interestingly, in almost all cases, this relationship seems to be driven by one of the two genders, with no significant relationship found for the other one. The only indicators that consistently predict higher SWB levels for both male and female respondents in our sample are the possibility to count on a neighbour's help in case of need, feeling a part of a community, and being confident that people in general care about others' problems.

Table 3. Random (RE) and fixed (FE) effects of social capital indicators on life satisfaction

Variables	*RE whole sample*	*RE male*	*RE female*	*FE whole sample*	*FE male*	*FE female*
Dimension 1: Personal Relationships						
Frequency contacts with family Several times a week (ref.cat)						
Once a week	-0.14***	-0.14**	-0.14*	-0.06	-0.07	-0.07
	(0.05)	(0.06)	(0.08)	(0.06)	(0.08)	(0.09)
Several times a month	-0.15**	-0.14*	-0.13	-0.09	-0.08	-0.10
	(0.07)	(0.08)	(0.11)	(0.08)	(0.09)	(0.13)
Once a month or less	-0.31***	-0.28***	-0.36**	-0.31***	-0.33***	-0.30
	(0.09)	(0.11)	(0.16)	(0.10)	(0.13)	(0.19)
Frequency contacts with friends Several times a week (ref.cat)						
Once a week	-0.01	-0.06	0.05	0.02	-0.00	0.06
	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.08)
Several times a month	-0.02	-0.06	0.02	-0.04	-0.06	-0.00
	(0.06)	(0.08)	(0.08)	(0.07)	(0.09)	(0.10)
Once a month or less	-0.10	-0.13	-0.09	-0.03	-0.08	0.02
	0.00	0.00	0.00	0.00	0.00	0.00
Frequency contact with neighbours Several times a week (ref.cat)						
Several times a month	-0.03	0.01	-0.07	-0.09	-0.06	-0.10
	(0.06)	(0.08)	(0.08)	(0.06)	(0.09)	(0.09)
Never or hardly ever	-0.09	-0.18	-0.08	-0.21	-0.28	-0.21
	(0.13)	(0.21)	(0.17)	(0.14)	(0.21)	(0.19)
Dimension 2: Social Network Support						
Log Hours emotional support received	0.08***	0.04	0.10***	0.06**	0.03	0.07*
	(0.02)	(0.03)	(0.04)	(0.03)	(0.04)	(0.04)
Log Hours emotional support given	-0.06**	-0.02	-0.10**	-0.04	0.01	-0.06
	(0.03)	(0.04)	(0.04)	(0.03)	(0.04)	(0.05)
Financial support received	-0.14**	0.02	-0.27***	-0.07	0.16*	-0.28***
	(0.06)	(0.08)	(0.09)	(0.07)	(0.09)	(0.10)
Financial support given	0.10**	0.13*	0.07	0.15***	0.24***	0.06
	(0.05)	(0.07)	(0.07)	(0.06)	(0.08)	(0.08)
Unpaid assistance received	-0.10***	-0.15***	-0.07	-0.06	-0.08	-0.05
	(0.04)	(0.05)	(0.05)	(0.04)	(0.06)	(0.06)
Unpaid assistance given	-0.01	0.04	-0.06	-0.01	0.06	-0.08
	(0.05)	(0.07)	(0.07)	(0.05)	(0.07)	(0.08)
Can call neighbour for help A lot (ref.cat)						
Some	-0.26***	-0.23***	-0.28***	-0.20***	-0.16**	-0.24***
	(0.05)	(0.06)	(0.07)	(0.05)	(0.07)	(0.08)
A little	-0.33***	-0.31***	-0.34***	-0.18**	-0.16	-0.21**
	(0.07)	(0.10)	(0.09)	(0.08)	(0.12)	(0.10)
No	-0.65***	-0.43**	-0.78***	-0.47***	-0.33	-0.57**
	(0.14)	(0.19)	(0.20)	(0.16)	(0.21)	(0.23)

Table 3. Random (RE) and fixed (FE) effects of social capital indicators on life satisfaction (continued)

Variables	*RE whole sample*	*RE male*	*RE female*	*FE whole sample*	*FE male*	*FE female*
Dimension 3: Civic Engagement						
Volunteer	0.00	-0.01	-0.01	0.04	0.05	0.04
	(0.04)	(0.06)	(0.05)	(0.05)	(0.07)	(0.06)
Attend meetings prof. organizations	0.16***	0.21***	0.10	0.15**	0.18**	0.12
	(0.05)	(0.07)	(0.07)	(0.06)	(0.08)	(0.09)
Attend meetings social organizations	-0.02	0.00	-0.05	-0.03	-0.03	-0.04
	(0.04)	(0.05)	(0.06)	(0.05)	(0.07)	(0.06)
Frequency participation religious services Once or more times a week (ref.cat)						
Several times a month	-0.13**	-0.06	-0.17**	-0.08	-0.09	-0.09
	(0.05)	(0.07)	(0.07)	(0.07)	(0.09)	(0.10)
Never	-0.06	0.02	-0.13*	-0.00	-0.02	0.01
	(0.05)	(0.07)	(0.08)	(0.08)	(0.11)	(0.11)
Dimension 4: Trust and Cooperative Norms						
Feel safe being out alone at night	0.14***	0.1	0.20***	0.01	-0.11	0.11
	(0.03)	(0.06)	0.05	(0.04)	(0.07)	(0.05)
Don't feel belong to community	0.12***	0.12***	0.13***	0.07***	0.06***	0.07***
	(0.01)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
People do not care about others' problems	0.06***	0.06***	0.06***	0.05***	0.06***	0.04*
	(0.01)	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)
Socio-demographic Control Variables						
Age	-0.04***	-0.06***	-0.03**	-0.00	-0.08	0.08
	(0.01)	(0.02)	(0.01)	(0.04)	(0.06)	(0.06)
Age squared	0.00***	0.00***	0.00***	0.00***	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Marital status Married (ref.cat.)						
Separated	-1.01***	-0.93***	-1.06***	-0.90***	-0.86**	-0.86***
	(0.21)	(0.36)	(0.24)	(0.22)	(0.37)	(0.27)
Divorced	-0.29***	-0.28***	-0.29***	-0.09	-0.25**	0.05
	(0.07)	(0.11)	(0.10)	(0.10)	(0.12)	(0.16)
Widowed	-0.32***	-0.60**	-0.29**	-0.27**	-0.57*	-0.16
	(0.11)	(0.28)	(0.12)	(0.13)	(0.30)	(0.14)
Never married	-0.47***	-0.60***	-0.38***	-0.20	-0.41**	-0.06
	(0.10)	(0.14)	(0.14)	(0.14)	(0.21)	(0.20)
Number of children	0.02	-0.02	0.05**	0.01	-0.04	0.05
	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)	(0.04)

Table 3. Random (RE) and fixed (FE) effects of social capital indicators on life satisfaction (continued)

Variables	*RE whole sample*	*RE male*	*RE female*	*FE whole sample*	*FE male*	*FE female*
Level of Education High school or less (ref.cat.)						
Undergraduate degree	0.02	0.05	-0.00	0.08	0.13	0.02
	(0.05)	(0.07)	(0.07)	(0.08)	(0.12)	(0.11)
Postgraduate degree	-0.06	-0.15*	0.06	0.15	0.05	0.19
	(0.06)	(0.09)	(0.09)	(0.15)	(0.21)	(0.20)
Income quintile Quintile 1 (ref.cat.)						
Quintile 2	0.21***	0.15	0.26***	0.17**	0.14	0.20**
	(0.06)	(0.09)	(0.08)	(0.07)	(0.10)	(0.09)
Quintile 3	0.27***	0.27***	0.29***	0.18**	0.14	0.23**
	(0.07)	(0.10)	(0.09)	(0.07)	(0.11)	(0.10)
Quintile 4	0.33***	0.32***	0.38***	0.24***	0.18	0.33***
	(0.07)	(0.09)	(0.09)	(0.08)	(0.11)	(0.10)
Quintile 5	0.44***	0.49***	0.44***	0.32***	0.30**	0.38***
	(0.07)	(0.10)	(0.10)	(0.08)	(0.12)	(0.11)
Self-rated health Excellent (ref.cat)						
Very Good	-0.22***	-0.24***	-0.23***	-0.03	-0.09	0.01
	(0.06)	(0.08)	(0.08)	(0.07)	(0.09)	(0.10)
Good	-0.46***	-0.48***	-0.46***	-0.20**	-0.24**	-0.18
	(0.06)	(0.09)	(0.09)	(0.08)	(0.11)	(0.11)
Fair	-0.39***	-0.48***	-0.34***	-0.19**	-0.34***	-0.09
	(0.07)	(0.10)	(0.10)	(0.08)	(0.11)	(0.11)
Poor	-0.48***	-0.54***	-0.45***	-0.32***	-0.43***	-0.26**
	(0.09)	(0.13)	(0.14)	(0.09)	(0.13)	(0.13)
Observations	4800	2253	2547	4800	2253	2547
Individuals	1600	751	849	1600	751	849
Sigma_u	1,260	1,204	1,305	1,470	1,465	1,807
Sigma_e	1,026	0.977	1,066	1,026	0.977	1,066
Rho	0.337	0.341	0.332	0.513	0.555	0.652

Note. Robust standard errors in parentheses; significance levels: *** p<0.01; ** p<0.05, * p<0.10. Wave dummies included but not reported.

6. Discussion

The relationship between subjective wellbeing and social capital has been widely examined. However, previous investigations have often produced mixed results. This is partly due to the wide variety of social capital indicators that have been implemented interchangeably. On the other hand, the predominant use of cross-section data has limited the possibility to take into account personal heterogeneity characteristics that might significantly influence both a person's self-reported wellbeing, and the social and relational aspects of his or her life and, thus, lead to spurious results.

In the present study, we addressed both of these issues by employing longitudinal data to analyse a wide range of social capital indicators and their association with SWB. By simultaneously exploring four distinct dimensions of a person's social and relational context through the adoption of 17 separate indicators, we offer a comprehensive view of their relative importance for respondents' overall life satisfaction. In addition, we highlight some gender differences in the relationship between SWB and social capital that have rarely been discussed in the reference literature.

Moreover, by taking advantage of the longitudinal nature of our data, we are able to control for personal fixed effects and, thus, account at least in part for potential endogeneity that may otherwise bias the estimates. Thus, our results differ from previous cross-sectional analyses in that they are more rigorous in the analytical strategy adopted. On the other hand, they add to previous longitudinal studies by the broad scope of the analysis of the different facets of the relationship between wellbeing and sociality.

A direct comparison between the results we obtain and past studies that have implemented different methodologies and indicators is, therefore, difficult. However, here we briefly discuss the general similarities and differences we find compared to previous analyses.

With regard to the personal relationships dimension of social capital examined, our evidence partially confirms previous findings (Pichler 2006; Powdthavee 2008; Helliwell & Barrington-Leigh 2010; Leung et al. 2011) of a positive association existing between people's overall life satisfaction and more frequent contacts with closely related people. However, we find a statistically significant relationship only within the family - the less frequent the interactions with family members, the lower the SWB levels. The frequency of meeting with friends, on the other hand, is not related to any substantial differences in the overall life satisfaction of the respondents in our sample. Finally, we find no confirmation of Peasgood (2007) evidence that a higher intensity of interactions with neighbours is associated with greater happiness.

In line with a social support paradox that has been examined in the literature (Gable & Bromberg 2018), our results suggest that being the provider or recipient of various kinds of assistance or help within one's social network, can have differential implications in terms of a person's overall life satisfaction, and vary by gender. For instance, once individual fixed effects are controlled for, our results suggest that receiving financial support is negatively associated with women's wellbeing levels. At the same time, providing such support has a similar in magnitude, boosting effect on male's satisfaction with life.

Unfortunately, without more detailed information on the specific structure of a respondent's network and the different interconnections that occur within it, we are unable to make a more nuanced analysis of the different facets of social support and its implications in terms of people's wellbeing. For instance, we cannot verify whether there is a certain degree of reciprocity and relational goods potentially arising from it, which underlies the positive associations recorded for some types of support. Interestingly, however, our results seem to confirm the idea (Rafaeli & Gleason 2009) that sometimes it is rather the perception of others' willingness to help in case of need that is more important for people's wellbeing, than actually receiving the support itself (that in some cases is even linked to lower SWB levels). The strong positive association we find between life satisfaction and the perceived possibility to count on a neighbour's help if needed, goes in this direction.

With regards to the civic engagement of the respondents in our sample, contrary to previous analyses (Pichler 2006; Leung et al. 2011), we do not find evidence of a positive relationship between their overall life satisfaction and performing voluntary activity or participating in social organizations. Instead, we find evidence of a significant association between men's SWB levels

and attendance of meetings of professional organizations, however, a positive relationship and not a negative as reported in another study (Leung et al. 2011).

Another form of associative activity we have examined is the frequency of attendance of religious services. While its positive association with life satisfaction has been confirmed in a number of studies (Helliwell 2003; Helliwell & Putnam 2004; Hayo 2007), this statistically significant relationship disappears once we control for individual fixed effects. This evidence might suggest that the beneficial influence of religious practice on SWB is largely due to factors of personal heterogeneity that studies using cross-sectional data, such as those mentioned above, fail to account for.

Finally, the indicators with which we tried to account, at least in part, for the overall quality of the social fabric of a respondent's background, capturing her sense of safety and belonging in/to the community, and beliefs about the concern of others for those around them, show a significant positive association with life satisfaction. These findings somehow confirm the extensive literature (Frey & Stutzer 2002; Helliwell & Putnam 2004; Helliwell 2006; Hudson 2006; Bjørnskov 2008; Helliwell & Wang 2011) that emphasizes the great importance of trust in others for people's wellbeing. Although weaker than other social determinants of SWB such as frequency of contacts with family members, these proxies for the cohesion of the social context in which a person lives retain their significance in both specifications of the regression model and appear to be uniformly relevant for males and females.

7. Conclusion

Our study is clearly not without limitations. For example, although the use of longitudinal data on a nationally representative sample of US adults allows us to control for time-invariant sources of individual heterogeneity (FE regression model), this analytical strategy can only partially address the problem of unobserved heterogeneity, which may also be time-varying. A possible solution to this problem would be to adopt the instrumental variable approach. It is not, however, straightforward to find suitable variables strongly associated with the various dimensions of social capital explored in our study, and at the same time linked with the outcome variable SWB exclusively through them. A second limitation of our analysis is that we are not able to fully address the issue of potential reverse causality between our dependent variable and the social capital regressors in the implemented models. Finally, we have here only explored the relationship between a single-item measure of SWB, namely life satisfaction, and the so-called social context of wellbeing, without taking into account the inherently multidimensional nature of human wellbeing.

Despite these limitations, our analysis offers a reliable account of the wellbeing implications of different aspects of social capital. Even after controlling for various observed heterogeneity factors and unobserved individual characteristics over time, our results confirm the existence of a robust relationship between some social capital indicators and respondents' overall satisfaction.

Among possible directions for future research, we can list the broadening of the spectrum of SWB dimensions considered, so as to take into account also its affective components (Diener 1984) in order to explore more deeply the various implications that a richer and more vibrant social life and a more cohesive social fabric might have on human wellbeing. Moreover, a further interesting enrichment of our analysis might consider comparing the relationship between social capital and this account of hedonic wellbeing that primarily reflects people's immediate experience of their lives (Diener et al. 1999), with that observed with respect to a, so-called, eudaimonic idea of wellbeing intended to capture a person's flourishing or, in other words, the realisation of his or her full potential (Ryan & Deci 2001). For instance, dimensions of wellbeing

that reflect, among others, the sense of personal growth and life purpose (Ryff 1989; Ryff 2014) may be differently associated with social and relational factors such as those examined in this study, as hedonic and eudaimonic accounts were found not to be perfectly overlapping but rather to capture complementary but distinct patterns of wellbeing (Pancheva et al. 2021).

The evidence of a consistent relationship between different social capital dimensions and wellbeing suggests that it may be worth considering the use of such indicators for informing policies that attempt to foster the quality of human life. Although it might be hard to imagine and design interventions directly affecting the realm of personal relationships and social support provided and received among closely related persons, it is important not to underestimate the impact that factors such as economic stress, work-family balance, and so forth, may have on it. At the same time, a vibrant associative life, strong social norms and generalised trust can be seen as collective resources that have both individual and societal beneficial effects (Putnam 2000; Helliwell & Putnam 2004), and therefore deserve to be taken into account by decision-makers when formulating policy objectives and assessing the impact of interventions undertaken.

Conflict of interest statement

The authors report no conflicts of interest.

Authors

Marta G. Pancheva
University Institute Sophia
marta.pancheva@sophiauniversity.org

Alejandra Vásquez
BERG - Behavioural Economics Research Group
University of Cagliari
alejandra.vasquez@pucv.cl

Authors' Contributions

M.G.P. and A.V. are equal first authors.

Acknowledgments

We are grateful to Carol D.Ryff and the entire Midlife in the U.S. team for conducting such a rich and valuable study. Special thanks to Mario Lucchini and Benedetto Gui for their suggestions and comments on earlier drafts of this manuscript.

Publishing Timeline

Received 19 August 2021
Revised version received 10 March 2022
Accepted 12 March 2022
Published 1 June 2022

References

Aguilera, M. B. (2002). The impact of social capital on labour force participation: evidence from the 2000 Social Capital Benchmark Survey, *Social Science Quarterly, 83*(3), 853-874. https://doi.org/10.1111/1540-6237.00118

Aknin, L. B., Barrington-Leigh, C. P. Dunn, E. W., Helliwell, J. F., Burns, J., Biswas-Diener, R., Kemeza, I., Nyende, P., Ashton-James, C. E., and Norton, M. I. (2013). Prosocial spending and well-being: Cross-

cultural evidence for a psychological universal. *Journal of Personality and Social Psychology*, 104(4), 635-652. https://doi.org/10.1037/a0031578

Bartels, M. (2015). Genetics of wellbeing and its components satisfaction with life, happiness, and quality of life: A review and meta-analysis of heritability studies, *Behavior Genetics,* 45, 137-156. https://doi.org/10.1007/s10519-015-9713-y

Bartolini, S., Bilancini, E., Pugno, M. (2009). American decline in social capital and happiness. Is there a linkage? Mimeo University of Siena

Becchetti L., Pelloni, A., and Rossetti, F. (2008). Relational Goods, Sociability, and Happiness. *Kyklos,* 61(3), 343-363. https://doi.org/10.1111/j.1467-6435.2008.00405.x

Becchetti L., and Pelloni, A. (2013). What are we learning from the life satisfaction literature? *International Review of Economics*, 60, 113-155. https://doi.org/10.1007/s12232-013-0177-1

Berkman, L. and Glass, T. (2000). Social integration, social networks, social support and health, in Berkman, L. and I. Kawachi (Eds.) *Social Epidemiology*, Oxford University Press, Oxford

Bjørnskov, C. (2003). The Happy Few: Cross-Country Evidence on Social Capital and Life Satisfaction, *Kyklos*, 56 (1), 3-16. https://doi.org/10.1111/1467-6435.00207

Bjørnskov, C. (2008). Social Capital and Happiness in the United States. *Applied Research Quality Life*, 3(1), 43-62. http://dx.doi.org/10.1007/s11482-008-9046-6

Boarini, R. et al. (2012). What Makes for a Better Life?: The Determinants of Subjective Well-Being in OECD Countries – Evidence from the Gallup World Poll, *OECD Statistics Working Papers*, 2012/03, OECD. http://dx.doi.org/10.1787/5k9b9ltjm937-en

Bourdieu, P. (1986), 'The Forms of Capital', in Richardson, John G. (ed.), *Handbook of Theory and Research for the Sociology of Education,* New York: Greenwood.

Bruni, L., and Stanca, L. (2008). Watching alone. Happiness, relational goods and television. *Journal of Economic Behavior and Organization*, 65(3-4), 506-528. https://doi.org/10.1016/j.jebo.2005.12.005

Clark, A. E. and Lelkes, O. (2005). Deliver Us from Evil: Religion as Insurance. *PSE Working paper*, n. 43.

Coleman, J. (1988). Social Capital in the Creation of Human Capital. *American Journal of Sociology*, 94: S95-S120. Retrieved August 18, 2021, from http://www.jstor.org/stable/2780243

Coleman, J. (1990), Foundations of Social Theory, *Harvard University Press*, Cambridge.

Diener, E. (1984). Subjective Well-Being. *Psychological Bulletin,* 95(3), 542-575. https://doi.org/10.1037/0033-2909.95.3.542

Diener, E., Suh, E. M., Lucas, R.E., and Smith, H. L. (1999). Subjective Well-Being: three decades of progress. *Psychological Bulletin,* 125(2), 276-302. https://doi.org/10.1037/0033-2909.125.2.276

Diener, E., and Seligman, M. E. P. (2002). Very happy people. *Psychological Science*, 13(1), 81-84. https://doi.org/10.1111%2F1467-9280.00415

Dolan, P., Peasgood, T., and White, M. P. (2008). Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective wellbeing. *Journal of Economic Psychology*, 29(1), 94-122. https://doi.org/10.1016/j.joep.2007.09.001

Ellison, C. G. (1991). Religious Involvement and Subjective Well-Being. *Journal of Health and Social Behavior*, 32(1), 80-99. https://doi.org/10.2307/2136801

Ellison, C. G. (1994). Religious Involvement, Social Ties, and Social Support in a Southeastern Community. *Journal of the Scientific Study of Religion*, 33(1), 46-61. doi: https://doi.org/10.2307/1386636

Ferrer-i-Carbonell A., and Frijters, P. (2004). How important is Methodology for the estimates of the determinants of Happiness?. The Economic Journal, 114(497), 641-659. https://doi.org/10.1111/j.1468-0297.2004.00235.x

Frey, B. and Stutzer, A. (2002). *Happiness and Economics – How the Economy and Institutions affect Well-Being*. Princeton University Press: Princeton.

Frey B. S., Benesch C., Stutzer A. (2007). Does watching TV make us happy? *Journal of Economic Psychology,* 28(3), 283–313. https://doi.org/10.1016/j.joep.2007.02.001

Gable, S. L., and Bromberg, C. (2018). Healthy social bonds: A necessary condition for well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. Salt Lake City, UT: DEF Publishers.

Greene, K.V., and Yoon, B.J. (2004). Religiosity, Economics and Life Satisfaction. *Review of Social Economy,* 62(2), 245-261. https://doi.org/10.1080/00346760410001684460

Gui, B. (2005). From transactions to encounters. The joint generation of relational goods and conventional values. In: Gui B, Sugden R (eds) *Economics and social interaction: accounting for interpersonal relations*. Cambridge University Press, Cambridge.

Hayo, B. (2007). Happiness in Transition: An Empirical Study on Eastern Europe. *Economic Systems*, 31(2), 204-221. https://doi.org/10.1016/J.ECOSYS.2006.08.003

Helliwell, J. F. (2003). How's Life? Combining Individual and National Variables to Explain Subjective Well-Being. *Economic Modelling*, 20(2), 331-360. https://doi.org/10.1016/S0264-9993(02)00057-3

Helliwell, J. F. (2006). Well-Being, Social Capital and Public Policy: What's New?. *The Economic Journal*, 116(510), 34-45. https://doi.org/10.1111/j.1468-0297.2006.01074.x

Helliwell, J. F., and Putnam, R. (2004). The social context of well-being. *Philosophical Transactions of the Royal Society London*, 359 (1449), 1435–1446. https://doi.org/10.1098/rstb.2004.1522

Helliwell, J. F., and Barrington-Leigh, C. (2010). How Much Is Social Capital Worth?. *National Bureau of Economic Research*, Working paper, n. 16025.

Helliwell, J. F., and Wang, S. (2011). Trust and well-being. *International Journal of Wellbeing*, 1(1), 42-78. 10. https://doi.org/5502/ijw.v1i1.9

Helliwell, J. F., Aknin, L. B., Shiplett, H., and Wang, S. (2018). Social capital and prosocial behavior as sources of well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. DEF Publishers: Salt Lake City, UT.

Hudson, J. (2006). Institutional trust and subjective well-being across the EU. *Kyklos*, 59(1), 43-62. https://doi.org/10.1111/j.1467-6435.2006.00319.x

Iacoboni, M. (2009). Imitation, empathy, and mirror neurons. *Annual Review of Psychology*, 60, 653-670. https://doi.org/10.1146/annurev.psych.60.110707.163604.

Kaul, M., and Lakey, B. (2003). Where is the support in perceived support? The role of generic relationship satisfaction and enacted support in perceived support's relation to low distress. *Journal of Social and Clinical Psychology*, 22(1), 59-78. https://doi.org/10.1521/jscp.22.1.59.22761

Kawachi, I. and Berkman, L. (2001). Social ties and mental health, *Journal of Urban Health*, 78(3), 458-467. https://doi.org/10.1093/jurban/78.3.458

Kilts, C. D. (2002). A Neural Basis for Social Cooperation. *Neuron*, 35(2), 395-405. https://doi.org/10.1016/s0896-6273(02)00755-9.

Lelkes, O. (2006). Knowing what is good for you. Empirical analysis of personal preferences and the objective good, *Journal of Socio-Economics*, 35(2), 285-307. http://dx.doi.org/10.1016/j.socec.2005.11.002

Leung, A., Kier, C., Fung, T., Fung, L., & Sproule, R. (2011). Searching for happiness: the importance of social capital. *Journal of Happiness Studies*, 12, 443-462. https://doi.org/10.1007/s10902-010-9208-8

Levitt, S. D., and List, J. A. (2007). What Do Laboratory Experiments Measuring Social Preferences Reveal About the Real World?. *The Journal of Economic Perspectives*, 21(2), 153-174. https://doi.org/10.1257/jep.21.2.153

Lin, N. (1999), Social Networks and Status Attainment, *Annual Review of Sociology*, 25, 467-487. http://www.jstor.org/stable/223513

Lin, N. (2001), Social Capital: A Theory of Social Structure and Action, *Cambridge University Press*, Cambridge.

Loury, G. C. (1977). A Dynamic Theory of racial Income Differences. In Women, Minorities, and Employment Discrimination, *ed. PA Wallace, AM La Mond*, 153-186. Lexington, MA: Heath.

Lucas, R. E. (2018). Exploring the associations between personality and subjective well-being. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*, Salt Lake City, UT: DEF Publishers.

Lucchini, M., Della Bella, S., and Crivelli, L. (2015). Social capital and life satisfaction in Switzerland. *International Journal of Happiness and Development*, 2(3), 250-268. https://doi.org/10.1504/IJHD.2015.072186

Maisel, N. C., and Gable, S. L. (2009). The paradox of received social support: The importance of responsiveness, *Psychological Science*, 20(8), 928-932. https://doi.org/10.1111/j.1467-9280.2009.02388.x

McCullough, M. E., and Larson, D. B. (1999). Religion and Depression: A Review of the Literature. *Twin Research*, 2(2), 126-136. https://doi.org/10.1375/136905299320565997

Meier, S., and Stutzer, A. (2008). Is volunteering rewarding in itself?, *Economica*, 75(297), 39-59. http://www.jstor.org/stable/40071730

Pancheva, M. G., Ryff, C. D., and Lucchini, M. (2021), An Integrated Look at Well-Being: Topological Clustering of Combinations and Correlates of Hedonia and Eudaimonia, *Journal of Happiness Studies*, 22(5), 2275-2297. https://doi.org/10.1007/s10902-020-00325-6

Peasgood, T. (2007). Does talking to our neighbours enhance our satisfaction with life?. Proceedings of the Paper Presented at the Meeting of the International Conference of Policies for Happiness, Certosa di Pontignano, Siena.

Pichler, F. (2006). Subjective Quality of Life of Young Europeans. Feeling Happy but Who Knows Why?. *Social Indicators Research*, 75, 419-444. https://doi.org/10.1007/s11205-004-4337-2

Portes, A. (1998). Social Capital: its origins and applications in modern sociology, *Annual Review of Sociology*, 24, 1-25. https://doi.org/10.1146/annurev.soc.24.1.1

Powdthavee, N. (2008). Putting a Price Tag on Friends, Relatives, and Neighbours: Using Surveys of Life Satisfaction to Value Social Relationships. *The Journal of Socio-Economics*, 37(4), 1459-1480. https://doi.org/10.1016/j.socec.2007.04.004

Putnam, R. D. (1993*). Making Democracy Work. Civic Traditions in Modern Italy*, Princeton University Press: Princeton.

Putnam, R. D. (2000). *Bowling Alone and the Revival of American Community*, Simon and Schuster: New York.

Rafaeli, E., and Gleason, M.E.J. (2009). Skilled support within intimate relationships. *Journal of Family Theory and Review*, 1(1), 20-37. https://doi.org/10.1111/j.1756-2589.2009.00003.x

Røysamb, E., and Nes, R. B. (2018). The genetics of wellbeing. In E. Diener, S. Oishi, & L. Tay (Eds.), *Handbook of well-being*. Salt Lake City, UT: DEF Publishers.

Rizzolatti, G., Fadiga, L., Fogassi, L., and Gallese, V. (1997). The space around us, *Science*, 277 (5323), 190-191. https://doi.org/10.1126/science.277.5323.190

Rodríguez-Pose, A. and von Berlepsch, V. (2014). Social Capital and Individual Happiness in Europe. *Journal of Happiness Studies*, 15, 357-386. https://doi.org/10.1007/s10902-013-9426-y

Ryan R. M., and Deci, E. L. (2001). On happiness and human potentials: A review of research on hedonic and eudaimonic well-being. *Annual Review of Psychology*, 52, 141-166. https://doi.org/10.1146/annurev.psych.52.1.141.

Ryff, C. D. (1989). Happiness is everything, or is it? Explorations on the meaning of psychological wellbeing, *Journal of Personality and Social Psychology*, 57, 1069-1081. https://doi.org/10.1037/0022-3514.57.6.1069

Ryff, C. D. (2014). Psychological well-being revisted: Advances in the science and practice of eudaimonia, *Psychotherapy and Psychosomatic*s, 83, 10-28. https://doi.org/10.1159/000353263

Scrivens, K., and Smith, C. (2013). Four Interpretations of Social Capital: An Agenda for Measurement. OECD Statistics Working Papers, 2013/06, OECD Publishing, Paris.

Shrout, P. E., Herman, C.M., and Bolger, N. (2006). The costs and benefits of practical and emotional support on adjustment: A daily diary study of couples experiencing acute stress. *Personal Relationships*, 13, 115-134. https://doi.org/10.1111/j.1475-6811.2006.00108.x

Siedlecki, K. L. Salthouse, T. A., Oishi, S., Jeswani, S. (2014). The Relationship Between Social Support and Subjective Well-Being Across Age. *Social Indicators Research*, 117(2), 561-576. https://doi.org/10.1007/s11205-013-0361-4.

Stiglitz. J., A. Sen and J-P. Fitoussi (2009). Report by the Commission on the Measurement of Economic Performance and Social Progress, https://ec.europa.eu/eurostat/documents/8131721/8131772/Stiglitz-Sen-Fitoussi-Commission-report.pdf

Stutzer, A. (2004). The role of income aspirations in individual happiness, *Journal of Economic Behavior & Organization*, 54, 89-109. https://doi.org/10.1016/j.jebo.2003.04.003

Thomas, P. A. (2010). Is It Better to Give or to Receive? Social Support and the Well-being of Older Adults. *The Journals of Gerontology: Series B*, 65B(3), 351-357. https://doi.org/10.1093/geronb/gbp113

Uhlaner, C.J. (1989). Relational goods and participation: incorporating sociability into a theory of rational action, *Public Choice Journal*, 62(3), 253-285. http://www.jstor.org/stable/30025077

Van Lange, P. A. M., Balliet, D. P., Parks, C. D., and van Vugt, M. (2013). *Social Dilemmas: Understanding Human Cooperation*. Oxford University Press: Oxford.

Zak, P. J., Kurzban, R., and Matzner, W.T. (2005). Oxytocin Is Associated with Human Trustworthiness. *Hormones and Behavior*, 48(5), 522-527. https://doi.org/10.1016/j.yhbeh.2005.07.009

APPENDIX

Table A1. Summary Statistics.

Variable		Mean	Std. Dev.	Min	Max	Observations	
Dimension 1: Personal Relationships							
Frequency contacts with family: Several times a week	overall	0.66	0.47	0	1	N =	4800
	between		0.35	0	1	n =	1600
	within		0.32	0	1.33	T =	3
Frequency contacts with family: Once a week	overall	0.18	0.38	0	1	N =	4800
	between		0.25	0	1	n =	1600
	within		0.29	-0.48	0.85	T =	3
Frequency contacts with family: Several times a month	overall	0.09	0.29	0	1	N =	4800
	between		0.18	0	1	n =	1600
	within		0.22	-0.58	0.76	T =	3
Frequency contacts with family: Once a month or less	overall	0.06	0.24	0	1	N =	4800
	between		0.17	0	1	n =	1600
	within		0.17	-0.61	0.73	T =	3
Frequency contacts with friends: Several times a week	overall	0.58	0.49	0	1	N =	4800
	between		0.36	0	1	n =	1600
	within		0.34	-0.09	1.24	T =	3
Frequency contacts with friends: Once a week	overall	0.17	0.38	0	1	N =	4800
	between		0.23	0	1	n =	1600
	within		0.29	-0.49	0.84	T =	3
Frequency contacts with friends: Several times a month	overall	0.13	0.33	0	1	N =	4800
	between		0.21	0	1	n =	1600
	within		0.26	-0.54	0.79	T =	3
Frequency contacts with friends: Once a month or less	overall	0.13	0.33	0	1	N =	4800
	between		0.24	0	1	n =	1600
	within		0.23	-0.54	0.79	T =	3
Frequency contacts with neighbours Several times a week	overall	0.81	0.39	0	1	N =	4800
	between		0.27	0	1	n =	1600
	within		0.28	0.14	1.48	T =	3
Frequency contacts with neighbours Several times a month	overall	0.15	0.36	0	1	N =	4800
	between		0.23	0	1	n =	1600
	within		0.27	-0.51	0.82	T =	3
Frequency contacts with neighbours Never or hardly ever	overall	0.04	0.19	0	1	N =	4800
	between		0.12	0	1	n =	1600
	within		0.14	-0.63	0.70	T =	3

Table A1. Summary Statistics. (continued)

Variable		Mean	Std. Dev.	Min	Max	Observations	
Dimension 2: Social Network Support							
Emotional support received (hr in a typical month)	overall	38.59	75.06	0	720	N =	4800
	between		52.17	0	433.67	n =	1600
	within		53.97	-333.41	518.26	T =	3
Emotional support given (hr in a typical month)	overall	64.25	96.75	0	720	N =	4800
	between		68.89	0	566	n =	1600
	within		67.94	-327.74	541.25	T =	3
Financial support received (typical month)	overall	0.14	0.35	0	1	N =	4800
	between		0.24	0	1	n =	1600
	within		0.24	-0.53	0.81	T =	3
Financial support given (typical month)	overall	0.76	0.42	0	1	N =	4800
	between		0.29	0	1	n =	1600
	within		0.30	0.09	1.43	T =	3
Unpaid assistance received (typical month)	overall	0.42	0.49	0	1	N =	4800
	between		0.34	0	1	n =	1600
	within		0.35	-0.24	1.08	T =	3
Unpaid assistance given (typical month)	overall	0.76	0.42	0	1	N =	4800
	between		0.29	0	1	n =	1600
	within		0.30	0.10	1.43	T =	3
Can count on neighbour's help in case of need: A lot	overall	0.62	0.48	0	1	N =	4800
	between		0.36	0	1	n =	1600
	within		0.31	-0.04	1.28	T =	3
Can count on neighbour's help in case of need: Some	overall	0.23	0.42	0	1	N =	4800
	between		0.27	0	1	n =	1600
	within		0.32	-0.43	0.90	T =	3
Can count on neighbour's help in case of need: A little	overall	0.11	0.31	0	1	N =	4800
	between		0.21	0	1	n =	1600
	within		0.23	-0.55	0.77	T =	3
Can count on neighbour's help in case of need: Not at all	overall	0.03	0.17	0	1	N =	4800
	between		0.12	0	1	n =	1600
	within		0.13	-0.63	0.69	T =	3

Table A1. Summary Statistics. (continued)

Variable		Mean	Std. Dev.	Min	Max	Observations	
Dimension 3: Civic Engagement							
Volunteer	overall	0.40	0.49	0	1	N =	4800
	between		0.35	0	1	n =	1600
	within		0.33	-0.26	1.06	T =	3
Attend professional org. meetings	overall	0.15	0.36	0	1	N =	4800
	between		0.26	0	1	n =	1600
	within		0.25	-0.50	0.82	T =	3
Attend sports or social org. meetings	overall	0.31	0.46	0	1	N =	4800
	between		0.34	0	1	n =	1600
	within		0.31	-0.35	0.97	T =	3
Frequency attendance religious services: Once or more times a week	overall	0.39	0.49	0	1	N =	4800
	between		0.42	0	1	n =	1600
	within		0.24	-0.27	1.07	T =	3
Frequency attendance religious services: Several times a month	overall	0.28	0.45	0	1	N =	4800
	between		0.32	0	1	n =	1600
	within		0.30	-0.38	0.94	T =	3
Frequency attendance religious services: Never	overall	0.32	0.46	0	1	N =	4800
	between		0.38	0	1	n =	1600
	within		0.26	-0.34	0.98	T =	3
Dimension 4: Trust and Cooperative Norms							
Feel safe out alone night-time	overall	0.60	0.49	0	1	N =	4800
	between		0.39	0	1	n =	1600
	within		0.29	-0.06	1.26	T =	3
Don't feel belong to community	overall	0.33	0.47	0	1	N =	4800
	between		0.34	0	1	n =	1600
	within		0.32	-0.33	1.00	T =	3
Don't think people care about others	overall	0.06	0.24	0	1	N =	4800
	between		0.16	0	1	n =	1600
	within		0.18	-0.60	0.73	T =	3

Table A1. Summary Statistics. (continued)

Variable		Mean	Std. Dev.	Min	Max	Observations	
Overall life satisfaction	overall	7.88	1.47	0	10	N =	4800
	between		1.19	2.66	10	n =	1600
	within		0.86	3.21	12.21	T =	3
Age	overall	54	13.03	24	92	N =	4800
	between		10.76	33.33	83	n =	1600
	within		7.35	44.01	63.68	T =	3
Male	overall	0.47	0.49	0	1	N =	4800
	between		0.49	0	1	n =	1600
	within		0	0.47	0.47	T =	3
Female	overall	0.53	0.49	0	1	N =	4800
	between		0.49	0	1	n =	1600
	within		0	0.53	0.53	T =	3
Married	overall	0.71	0.45	0	1	N =	4800
	between		0.38	0	1	n =	1600
	within		0.23	0.04	1.38	T =	3
Separated	overall	0.01	0.12	0	1	N =	4800
	between		0.07	0	1	n =	1600
	within		0.09	-0.65	0.68	T =	3
Divorced	overall	0.13	0.33	0	1	N =	4800
	between		0.28	0	1	n =	1600
	within		0.17	-0.53	0.79	T =	3
Widowed	overall	0.05	0.23	0	1	N =	4800
	between		0.18	0	1	n =	1600
	within		0.14	-0.61	0.72	T =	3
Never married	overall	0.08	0.27	0	1	N =	4800
	between		0.25	0	1	n =	1600
	within		0.09	-0.58	0.74	T =	3
Number of children	overall	2.26	1.61	0	13	N =	4800
	between		1.46	0	9	n =	1600
	within		0.67	-3.06	6.59	T =	3

Table A1. Summary Statistics. (continued)

Variable		Mean	Std. Dev.	Min	Max	Observations	
Education: Compulsory school or less	overall	0.47	0.49	0	1	N =	4800
	between		0.46	0	1	n =	1600
	within		0.18	-0.19	1.14	T =	3
Education: Undergraduate degree	overall	0.35	0.47	0	1	N =	4800
	between		0.43	0	1	n =	1600
	within		0.21	-0.31	1.02	T =	3
Education: Postgraduate degree	overall	0.17	0.38	0	1	N =	4800
	between		0.36	0	1	n =	1600
	within		0.12	-0.49	0.84	T =	3
Equivalised disposable household income	overall	82717.64	64893.9	0	300000	N =	4800
	between		52777.02	2854.66	300000	n =	1600
	within		37775.19	-117282	270684.3	T =	3
Self-rated health: Excellent	overall	0.11	0.32	0	1	N =	4800
	between		0.21	0	0.66	n =	1600
	within		0.24	-0.55	0.78	T =	3
Self-rated health: Very good	overall	0.29	0.45	0	1	N =	4800
	between		0.25	0	1	n =	1600
	within		0.37	-0.36	0.96	T =	3
Self-rated health: Good	overall	0.31	0.46	0	1	N =	4800
	between		0.31	0	1	n =	1600
	within		0.33	-0.36	0.97	T =	3
Self-rated health: Fair	overall	0.19	0.39	0	1	N =	4800
	between		0.20	0	1	n =	1600
	within		0.34	-0.46	0.86	T =	3
Self-rated health: Poor	overall	0.08	0.27	0	1	N =	4800
	between		0.15	0	0.66	n =	1600
	within		0.22	-0.58	0.74	T =	3

Table A2. Correlation matrix social capital variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	1																
2	0.2	1															
3	0.17	0.1	1														
4	-0.04	-0.1	-0.03	1													
5	-0.04	-0.07	-0.03	0.57	1												
6	0.02	-0.02	0.04	0.05	0.05	1											
7	-0.07	-0.1	-0.04	0.14	0.15	0.04	1										
8	0.15	0.09	0.34	-0.02	-0.03	0.03	-0.07										
9	-0.04	-0.1	-0.03	0.16	0.11	0.21	0.07	-0.05	1								
10	-0.09	-0.17	-0.05	0.21	0.19	0.08	0.14	-0.06	0.31	1							
11	-0.16	-0.05	-0.07	0.12	0.1	0.03	0.18	-0.13	0.13	0.13	1						
12	-0.08	-0.01	-0.01	0.07	0.06	0.01	0.09	-0.02	0.05	0.09	0.17	1					
13	-0.18	-0.05	-0.06	0.1	0.08	0.02	0.12	-0.1	0.09	0.09	0.27	0.22	1				
14	0.1	0.14	0.13	-0.06	-0.04	-0.02	-0.21	0.13	-0.05	-0.11	-0.25	-0.07	-0.13	1			
15	-0.03	0.05	-0.07	0.01	0.03	-0.05	0.03	-0.16	-0.03	-0.01	0.02	0.05	0.06	0.03	1		
16	-0.22	-0.14	-0.2	0.07	0.07	-0.01	0.13	-0.32	0.07	0.12	0.22	0.1	0.17	-0.26	0.12	1	
17	-0.08	-0.03	-0.1	0.06	0.04	-0.03	0.07	-0.14	0.01	0.02	0.1	0.05	0.07	-0.08	0.08	0.3	1