Social capital and social network sites: an empirical analysis of European high school students

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Abstract: This paper shows the results of part of an empirical study which was developed in the sphere of the PACT EU project (Pathways for Carbon Transitions). The performed analysis concerns the social capital of young Europeans in terms of trust, size of personal networks, volunteering activities and usage of social network sites (SNS). The purpose of the work is, on one hand, exploratory, especially in aspects related to the comparison between relational context of social networks and virtual networks. At the same time, the research aims to confirm on this particular population some of the hypothesis coming from the literature on social capital, and to verify the existence of differences between European countries regarding relational characteristics.

Keywords: social capital, social network sites, voluntary associations, neighbourhood, networked individualism, high school students

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The PACT survey and social capital

Even though the primary goal of the PACT EU project was to study youth opinions on post-carbon society, the questionnaire used for the survey contains a wide range of questions related to social capital, belonging to non-profit organizations, and the use of online social network sites, which constitute the empirical basis for these considerations. The research involved European high school students aged 14 to 18, coming mainly from France, Germany, Italy and the United Kingdom. Data collection initially planned a snowball sampling from ten Italian high schools, followed by the publication of the survey on different internet sites, including online social network sites. The survey was performed between May and October 2009, with the CAWI (Computer Aided Web Interviewing) technique, and involved 187 classes in 42 high schools in 9 European countries[2]. A careful stage of data cleaning[3] resulted in 2,529 interviews, even though some have not been considered for the analysis that will be shown later because they lack information or are clearly incoherent on the questions on social capital. The survey is exploratory, and thus not planned with the purpose of estimation accuracy because of the modality of sampling used, however a deep investigation of the links among the variables in the research is still possible. Among the goals of this study are the comparison of the different European countries analyzed, as well as the analysis of the different socialization agencies involving youth and how influential they are in the construction of their identities. In depth analysis on specific research hypothesis from social capital literature and on the use of internet and online social networks will be shown.

European high school students' social capital

In this study the concept of social capital has been operationally defined through indicators related to two different analytical directories. The first

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[2] Other than the four already mentioned countries, there are interviews of students coming from: Austria, Belgium, Luxembourg, Romania, Slovenia and Spain.
[3] Data quality control concerned especially: age and geographical location of the interviewees, duration of the answers and response set in the array questions.

directory concerns interpersonal trust in different social circles the students can get in touch with: from the main network related to family and friends to the less formal networks such as those made up by classmates, neighbours and school teachers. This kind of trust, which we can define as particularized or even *strategic* (Uslaner, 2002), is characterized by the direct knowledge of the other and can vary on the basis of personal experience. The point of view on the analysis used in this research is in general compatible with approaches which underline social capital as made up of the resources a person can employ through his/her relations. Esser (2008) defined this as *relational social capital* and set it against *system social capital* which instead underlines nature as a collective good, as a function of the characteristics of an entire network of subjects. The second sphere is particularly related to the size of the network (Bourdieu, 1980), also on the basis of the instrumental and expressive resources it expresses and that can be activated when needed. In this case the number of people who constitute the social network of young Europeans has been quantified, on the base of the resources they offer and, in particular, in terms of emotional support, school help, object and money lending. In collecting the data, the analysis of the support network size was differentiated according to the presence or lack of a family relation with the mentioned contacts.

The analysis of the social network of the students, based on the instrumental and expressive resources in it, represents a prospective similar to Nan Lin's one (Lin, 2001). This author, though, generally prefers a more complex sampling technique to define social networks, the *position generator sampling technique*, which provides a list of relevant structural positions (typically occupations) about which the interviewee has to indicate the people he/she has a relation with. This kind of methodology is not only more demanding on the whole interview, but also seems less proper for people such as high school students and should at least be readapted to consider the life course the students are on.

We can start commenting on the results of the early analysis, and observe that the levels of trust, measured on a Likert scale with five answering modes (plus the possibility to choose "I don't know") are definitely high for family members, where 72.6% of the interviewees declare they have a high trust (91.4% considering the answering modes "very much" and "quite a bit") and just 0.9% say they don't have any at all.

Clearly, the levels of trust decrease substantially with the distancing from stronger relationships such as the family, as can be seen in Table 1.

Table 1. Distribution of the levels of trust in the PACT sample

Trust	Family members	Friends	Classmates	Neighbours	Teachers
None	0.9%	1.2%	6.2%	20.0%	13.7%
A little	1.3%	1.5%	13.9%	27.5%	18.4%
So so	6.3%	7.5%	39.1%	31.2%	29.7%
Quite a bit	18.8%	43.0%	36.2%	18.7%	32.3%
Very much	72.6%	46.8%	4.7%	2.6%	5.9%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
N	2466	2467	2468	2464	2464

With the purpose of observing if these rates are different according to the country where the school is located, a non-parametric test[4] has been performed for the variables related to trust. The results have shown the presence of significant differences among the four countries which were the object of the survey ($p<0.01$), e.g. France, Germany, Italy and United Kingdom. Specifically, Italy shows a lower percentage of students who declare they have a high trust in family members (68.8% against an average of 74.2% for the four countries analyzed), as well as in friends (39.6% compared to the total data of 47.1%)., while Italy and the UK show higher levels of trust in classmates (both higher than 40%[5]). Concerning trust in neighbours, data for the students interviewed in the United Kingdom is clearly higher than the levels of young people in the other nations (more than 30% for the UK[6]), whereas French students are the ones who trust their teachers the most (higher than 50%[7]).

The data on trust in the family comes as a bit of a surprise as it shows

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[4] Kruskal-Wallis test for independent samples, it is used as a non-parametric alternative, for ordinal variables, of the one-way ANOVA.

[5] This data was calculated by adding the answers "very much" and "quite a bit".

[6] See previous note.

[7] See note 5.

Italy as having the lowest level among the four countries of reference. Considering the different goal of this analysis, we didn't find it useful to relate this data to the concept of *amoral familism* (Banfield, 1958) or of *parochial* civic culture (Almond & Verba, 1963). Besides, these results don't allow us to say anything about *amoral familism*, a behaviour concerning southern Italy that tends to maximize family's benefits at the expenses of those of the community. In fact, we don't have data to compare students from different areas of Italy and there are no specific variables related to civic culture. However, we tried to evaluate the data with the insertion of some terms of comparison for these results. To check the consistency of the PACT data, the relative variables of trust in the family were compared with the same data from the World Values Survey (WVS) of 2005, even if this survey had used a trust scale based on four possible answers[8] and the age of reference was definitely wider (15-29 years old). By combining the answers indicating high or medium trust for both surveys, we notice in table 2 that in the PACT survey the trust levels are a little lower compared to those of the WVS, outlining however a tendency for high levels in this indicator. The problems of comparability, though, suggest caution in the definitive conclusions.

Table 2. Comparison of the levels of trust for the four countries in the PACT survey with the data from the World Values Survey

Trust in family members	France	Germany	Italy	UK	N
PACT sample (14-18)	93.5%	93.4%	91.8%	91.7%	1816
WVS 2005 (15-29)	96.7%	98.6%	100.0%	97.7%	955

Source: PACT EU FP7 project & WVS 2005.

In reference to the Italian case, it must be underlined that other previous studies, based on the WVS or on the European Values Survey (EVS), had demonstrated that family trust is positively related with interpersonal trust (Pollini, 2008), showing also a slight increase in time compared to other European countries for the indicators related to participation in politics and civic culture in general (Sciolla, 2004).

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[8] Compared to the PACT survey, in the question on trust in the relatives of WVS the answer "so so" is missing.

Moving the focus again to the whole sample, even in this survey, the levels of correlation among the variables related to trust in different social circles of the students are significant at a statistical level, as can be seen on table 3.

Table 3. Spearman's rho correlation coefficients° on trust variables

Trust in:	*Family members*	*Friends*	*Classmates*	*Neighbours*	*Teachers*
Family members	1	0.186**	0.217**	0.180**	0.187**
Friends		1	0.422**	0.147**	0.127**
Classmates			1	0.354**	0.254**
Neighbours				1	0.412**
Teachers					1

° Listwise deletion, N=2453 **Correlation is significant at the 0.01 level (2-tailed)

Focusing now on the data related to the extension of the support network, students can count on a mean number of contacts in and out of the family of about 8.9 relatives and 7.9 non relatives, with differences among countries as shown in the table 4. Both for relatives and for other supporting people, the differences among the means of the different countries are significant, as calculated with the ANOVA procedure ($p<0.01$ for both variables) as well as with non-parametric tests (Kruskal-Wallis test for independent samples).

When comparing Italy's data, the number of people mentioned (an average of about 15) is clearly higher than in other social capital surveys, such as the data presented by Donati & Tronca (2008), where in a national sample of about 2,000 subjects of ages between 18 and 65, the mean number of trustworthy relationships was 4.8. It is clear the two data are not comparable, in terms of representation and even more so regarding the considered ages. Even so, the comparison has been offered to show how life cycles influence in a decisive way the perception of the number of trustworthy relationships and the real possibility to receive support from one's relational network. In fact, a more recent survey (Di Nicola *et al.,* 2011) using a national probability sample has shown how the width of support networks notably decreases as the interviewee ages.

Table 4. Average size of the support networks in the four countries object of the survey

Country		Relatives you can count on	Non relatives you can count on
France	Mean	8.21	6.96
	N	282	282
	Std. Deviation	7.206	7.897
	Median	6.00	5.00
Germany	Mean	9.90	8.27
	N	522	522
	Std. Deviation	7.688	8.236
	Median	8.00	6.00
Italy	Mean	7.49	7.48
	N	570	570
	Std. Deviation	6.448	8.717
	Median	6.00	5.00
UK	Mean	10.71	8.94
	N	464	464
	Std. Deviation	9.547	9.718
	Median	8.00	6.00

Non-profit and volunteer work

Some very interesting information for the analysis of the social capital in the PACT questionnaire are those related to non-profit organizations and volunteer activities. 30.4% of the interviewed students declared they do some unpaid volunteering work and the main reasons mentioned are that *it is right to help those in need* (33.2%) and that *it makes them feel good* (30.6%). Instead, 54.8% of those who declared they don't do any volunteering work justify it by explaining they *don't have the time to*, whereas 19.5% say *they dislike working for free*.

Table 5 shows significant differences (Pearson χ^2 2-sided, *p*<0.01) among the four considered countries, especially in the data related to Italy where students state they do volunteer work in a smaller amount (about 10% less) than their European colleagues.

On the other hand, if we look at the total data related to the number of organizations the students are members of, only 28% of the sample states they are not part of any organization, including associations, sport clubs, non-profit and religious organizations.

Among association members, 60.5% spend most of their time in sport clubs, leaving behind other types of organizations such as cultural (10.6%), or free time and tourism associations (9%).

Table 5. Percentage of students who do volunteer work or are members of at least one association

	France	Germany	Italy	UK
Do volunteer work	33.3%	33.3%	23.9%	33.2%
Part of an association (at least one)	76.6%	77.0%	64.1%	71.1%

As can be seen in the data in table 5, Italy clearly shows lower levels (Pearson χ^2 2-sided, *p*<0.01) also in the case of organization participation when compared to the three other countries.

The presence of variables related to volunteer work and non-profit organizations is an invitation to verify the hypothesis of a link between trust and participation in an association (Putnam, 1993; 2000). Nevertheless, it must be said that many studies haven't found strong evidence of this link (Stolle, 1998): for example, the existence of a virtuous circle between the two spheres hasn't been confirmed, and the causal direction goes from trust to participation in associations (Uslaner, 2002). Hooghe (2008) has rather suggested there is a mechanism of self-selection in the association membership, who would show higher levels of education and income, and as a consequence different civic behaviours. These characteristics cannot be verified with the available data. One of the most promising ways to analyze the links between trust and participation seems to be the *institutional approach* (Rothstein & Stolle, 2002) which, against Putnam's hypothesis, puts in the foreground the quality of legal and

administrative institutions as a source of social capital and generalized trust. Clearly, this approach cannot be easily applied to this context, so that the analysis will concentrate on the relations between membership to non-profit organizations and levels of trust of young Europeans, also on the basis of the number of associations the interviewed are members of (Wollebaek & Selle, 2008).

Concerning volunteer work, it has been verified if the global sample showed differences in the levels of trust between those who stated they did this kind of work and those who didn't. The level of trust shows significant differences (Mann-Whitney U test; $p<0.01$) for all the considered social circles, except for that constituted by family members. The table 6 shows the median values of trust score distribution in different social circles, calculated with the distinction between those who do volunteer work and those who don't.

Table 6. Comparison of trust score (medians) between those who do volunteer work and those who don't do any

Trust scores: Grouped Medians	Family members	Friends	Classmates	Neighbours	Teachers
Do volunteer work	4.73	4.49	3.39	2.75	3.21
Don't do volunteer work	4.69	4.37	3.23	2.47	3.05

Thus, if we rule out the variable related to family trust, all other trust indicators turn out significantly higher for those who do unpaid voluntary work, even though the trust scores of the two groups are quite close. We will now verify if this result is generally valid for those who are members of one or more non-profit organizations, comparing the levels of trust on the base of the number of associations to which each student is a member of. Also in this case we notice a statistically significant relation between being members of non-profit organizations and the level of trust in different social circles, including also family trust this time. The result is remarkable both on the basis of Spearman's rank correlation coefficient, and performing Kruskal-Wallis's test for independent samples.

Table 7. Analysis of the relation between trust levels and the number of associations the student is a member of (Spearman's correlation and Kruskal-

Wallis test)

Trust in:	Spearman's rho with "number of associations you are part of"	Independent samples Kruskal-Wallis test (sig.)
Family members	0.059**	0.002
Friends	0.115**	0.000
Classmates	0.099**	0.000
Neighbours	0.119**	0.000
Teachers	0.074**	0.001

**Correlation is significant at the 0.01 level (2-tailed).

To sum up, in the specific student population who were interviewed in some European high schools, even without possibility to generalize because the sample was not representative, we can find some links (as suggested by literature) between interpersonal trust and participation to volunteer work, but also on the basis of the number of associations the student is a member of.

European students and social network websites

The perspective used in this analysis of social capital, which focuses attention on resources deriving from the networks of relationships, is compatible with some reflections about virtual networks. Some of the following results show the existence of an overlap between online and offline contacts, so social network sites (SNS) can constitute a different medium in order to create or strengthen social relationships.

Next to the typical questions used to collect data on the social capital, a sub-section of the PACT questionnaire was added in order to analyze the participation to online SNS, where the students were asked to show what websites they are registered in, the frequency of use and the geographical location of their contacts. Globally, 82.8% of the interviewees was member of at least one of the online social networks indicated, and among these young people 64.5% declared they used the site once or more daily. The table 8 shows the incidence of each social network site within the sample.

Table 8. Percentage of students who are registered in each of the indicated SNS

SNS	Students registered in
Facebook	51.7%
Myspace	14.7%
MSN	75.3%
Linkedin	0.3%

In analyzing these results, we need to say that at the moment the questionnaire was being created, in 2009, a site like Twitter, which has nowadays great success, was not included, and Facebook was at the time in a phase of fast growth, in which the users of the social network practically doubled every year (Zuckerberg, 2009; 2010).

Significant differences in the use of SNS are visible, as can be seen in table 9, if we compare the four surveyed countries as regards to these variables. The most pronounced differences are found above all in what concerns the registration to SNSs by the German students, which are much less in number than those of the colleagues in other reference countries, and in the daily use by the French students, which shows a of about 10% lower, compared to the other countries. The statistical significance of these differences is widely confirmed by the performed tests ($p<0.01$).

Table 9. Comparison of the use of SNS of the four PACT survey countries

	France	Germany	Italy	UK
Registered in a SNS	92.9%	68.2%	90.2%	85.8%
Using a SNS at least once a day	55.0%	66.7%	66.5%	64.6%

As mentioned in the abstract, one of the main goals of this analysis was the comparison of the social-relational context of the social networks and the social-relational context coming from virtual networks. Especially interesting is the interaction between the social capital in the territory where the students live (above all with reference to their neighbourhood) and the social capital constituted through social network sites, in terms of

coexistence between face to face relationships and virtual ones, considering also the meaning of community from this double point of view. Different authors agree in redefining a community by going past territorial barriers. Wellman (2007), for example, on the base of empirical researches, notices the lack of decline in communities and invites their study in the perspective of network rather than neighbourhood. According to Scanagatta (2010), nowadays the idea of community cannot ignore the growth of online networks, and the author warns that with the spread of globalization the importance of local communities grows. Di Nicola (2010), too, highlights how the community is nowadays not necessarily linked to a territory, but it's connected to the individual's social relations, as he/she can build his/her identity and obtain recognition through them (Honneth, 1992). In the case of online communities, recognition is mediated through the technical characteristics of the SNS (Boccia Artieri, 2008), favouring specific aspects (for example professional ones in Linkedin or artistic and musical ones in Myspace), based on the practices of the virtual place of interaction.

We have tried to study in depth the relation between real and virtual networks, through specific literature on the topic, and on the basis of some information from the PACT survey. What must be emphasized in the first place, among the more clearly evident results of this research area, is the correspondence between online and offline relations. More precisely, a number of studies (Wellman *et al.*, 1996; Uslaner, 2000; Subrahmanyam *et al.*, 2008) have emphasized a large overlapping of the two kinds of relations, so that SNS contacts are for the greatest part between people who also meet face to face, and therefore live close to each other. Distance is a key factor for the existence of friendship in young people, as it has a negative action on it, especially in early adolescence (Preciado *et al.,* 2011). This trend meets positive signals also in the PACT survey sample, where the contacts' geographical location was analyzed. In the whole sample, over 80% of SNS users states they have contacts within their neighbourhood and 94% of them states they have contacts outside the neighbourhood but within the same city[9]. Similar data is related to those who declare to have contacts in their country but not in the same city (93.4%), whereas the

[9] The original question graduated the presence of this kind of contacts with a scale between "a lot" to "nobody" whereas in this analysis what is interesting is the presence, or lack of, contacts in a specific geographical area.

incidence of those who have contacts abroad decreases to 65%, a figure that seems anyway high considering it concerns high school students.

Trying to observe the phenomenon from a wider point of view, the bibliography on this topic shows how the use of SNSs such as Facebook can help in maintaining a relationship and thus facilitates the conservation of the social capital when a subject moves to another city (for example after high school). The SNS can thus be considered a factor of consolidation in the relationship, which helps in creating bridging social capital (Ellison *et al.,* 2007; Steinfield *et al,.* 2008).

Some of the different types of online communities focus the attention on issues concerning a specific geographical area (DiMaggio *et al.,* 2001), defining a new concept of neighbourhood, about which we want to discuss with the available data. The process which sees the involvement in relationships both on a local level and at large distance is known as *glocalization* (Wellman & Hampton, 1999). With reference to the neighbourhood, it has been found that the use of the internet can strengthen neighbour relations (Boase & Wellman, 2006), increasing the value of the connectivity of online relations for specific actions on a local level, according specific community needs. With reference to this, some questions concerning relations with the neighbourhood and especially the possibility to count on neighbours to jointly act in case of necessity were included in the PACT survey. In general, 38.3% of the sample stated they agree ("tend to agree" or "strongly agree") on this possibility, so it would be interesting to observe if there is a relation between this attitude and the use of SNSs[10] is positively correlated to the level of agreement on the possibility of a joint action on issues related to the neighbourhood, even if the coefficient is quite low (Spearman's rho=0.078, $p<0.01$). The Mann-Whitney U test – applied to the variable relative to neighbourhood joint actions compared to the intensive SNS use (at least once a day) – is significant ($p<0.05$), as significant it is also in respect of being registered to at least one SNS ($p<0.01$). Thus, the use of SNSs has basically a positive effect of neighbourhood relations, even if the extent is limited, probably also because of the interviewee's age.

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[10]   From "one or twice a month" to "more times a day".

Going back to the topic of *glocalization*, we can see how in the PACT sample the contemporary presence of local level and large distance relations is confirmed. The students who state they have online contacts with people from the same city and/or neighbourhood claim they have at the same time online contacts through SNSs also with people out of their city in 90.7% of the cases, and with people living in other countries in 63.3% of the cases. According to Wellman, this is one of the main attributes of what he called *networked individualism* (Wellman, 2001); this is also characterized by the presence of sparsely knit personal networks which include densely knit groups, and by the fact that relations can be easily made and broken. These last two characteristics cannot be verified in the PACT survey, but it is worth to notice, also from the point of view of similar future surveys, the fact that face to face relations, such as the neighbourhood ones, are by now just a very little part of the social network of a person. Besides, if we think from a networking point of view, the different social circles to which a person belongs give the possibility to act as a broker among closed groups in one's social network, with competitive advantages on resources accessed and flow of information control (Burt, 1992). As regards to how easily relationships are made and broken, it is clear that the various socialization contexts and agencies the students relate with (school, friends, sport clubs or volunteer organizations, neighbourhood, etc.) can generate weak ties (Granovetter, 1973), which are often temporary by nature.

Conclusions

In short, the analysis and tests performed show how the young Europeans interviewed state they have wide social networks, constituted by about 15-20 relatives and friends who can give social support. The differences among the countries of reference are not striking. Trust levels are high for strong links (family and close friends) and positively correlated within the considered social circles, even if showing not very high coefficients. The volunteer work and non-profit organization sphere is linked to slightly higher levels of trust in each social circle, and this confirms what is evident in part of the literature about this topic. Regarding

the use of SNSs, it seems confirmed that most of the online and offline contacts are overlapping, and this facilitates the strengthening and maintaining of the relationships in case the involved subjects move away. The contemporary presence of this kind of contacts and other contacts located in other cities or abroad recalls the concept of *glocalization*, part of Wellman's theory of *networked individualism*. According to this theory the idea of a society based on individuals involved in different and heterogeneous social networks replaces the vision of a society based on groups.

The idea of a displacement in social relationships, from well defined physical spaces such as the neighbourhood – which is nowadays just a small part of a person's complex social networks – towards a complementary system of online and offline relationships which allows keeping long distance relationships, suggests higher facility in the access to diverse information and support, as they are coming from people with different backgrounds. If relationships don't seem to develop among groups anymore, but among people, we must add that the tools which mediate contacts among people (email, SNS, etc.) facilitate a type of one-to-many or many-to-many communication, although the components of one's social network can also not know each other personally, and this is one of the most obvious discontinuity compared with a group based society. According to this logic, interaction becomes customized on the basis of a person's preferences, even though this interaction can result transitory on the basis of how easily relations are made and broken.

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