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Veröffentlichungsversion / Published Version
Zeitschriftenartikel / journal article

**Empfohlene Zitierung / Suggested Citation:**
Kmetty, Z., & Tardos, R. (2022). Party Nexus Position Generator: New tool for the measurement of political homophily and political network diversity. *Social Networks*, *70*, 112-125. https://doi.org/10.1016/j.socnet.2021.11.011

Social Networks 70 (2022) 112–125

Contents lists available at ScienceDirect

Social Networks

journal homepage: www.elsevier.com/locate/socnet

# Party Nexus Position Generator
## New tool for the measurement of political homophily and political network diversity

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ARTICLE INFO

*Keywords:*
Party Nexus Position Generator
Political nexus diversity
Political homophily
Validity
Hungary
Germany

ABSTRACT

The role of networks has been growing attention in recent decades in explaining political behaviour. Political nexus aspects also get on the agenda in studying various resources of status attainment. Despite the general realization of these relevant network implications, some conceptual and measurement issues are still debatable. In this paper, we introduce a new tool for measuring political acquaintanceship networks, the Party Nexus Position Generator (PNPG). We will show how one of the most widely used SNA-instruments, the technique of position generator, could be transformed to apply for the measurement of political networks. We tested the tool in two countries, Germany and Hungary, with surveys administered by different methods: online and face-to-face.

The presentation of findings on German and Hungarian political networks may help us understand how the broader settings affect the composition of political networks and their influences on political behavior. Results from two different countries may also contribute to assess the validity of the PNPG tools introduced by our study.

## Introduction

The role of networks has been growing attention in recent decades in explaining political behaviour (see Knoke, 1990, Zuckerman, 2005, Victor et al., 2017). Political nexus aspects also get on the agenda in studying various resources of status attainment (see Lin, 2001, Stockmann et al., 2020). Despite the general realization of these relevant network implications, some conceptual and measurement issues are still debatable. The standard way is to use simple questions or special name generators to measure the frequency of political interaction with peers and the agreement level in these discussions. However, political discussion networks (see Mutz, 2002, Klofstadt et al., 2009, Cowan and Baldassarri, 2018), most of the cases focus on close ties. Compared to political discussion networks, *political acquaintanceship networks* is a more general concept. It includes *close and more distant ties* that link ego to various political foci. *Political acquaintanceship networks* reach beyond the closer core of the family, friends, and regular contacts and they also involve ties that do not imply explicit interaction on political issues.

This paper introduces a new tool for measuring political acquaintanceship networks, the Party Nexus Position Generator (PNPG). We will show how one of the most widely used SNA-instruments, the technique of position generator, could be transformed to apply for political aspects. But in presenting these methodological objectives, a brief outline is in place regarding the principal targets of these measurements, along with their sources and possible outcomes. We highlight thereby *political homophily and political nexus diversity* as critical concepts in the study of political acquaintanceship networks.

*Political homophily* manifests both structural and cultural traits involving the *degree of closure and affective unanimity* of one's interpersonal, political milieu. Political homophily measures the degree of closeness of party-related acquaintanceship ties to one's political sympathies. Political homophily generally evolves in processes of socialization and is conditioned by the larger political-ideological milieu. Apart from its habitual or intentional origin, it may be treated with personal benefits and possible costs. *Political homophily* generally entails the *expressive advantages* of affirmed beliefs or shared participation motives and normative appreciation by one's peers with joint political goals (see Coleman, 1988). It may imply a "sense of belonging," some feeling of being "strong in unity." For smaller segments of the population, political homophily may also involve *instrumental benefits* in influencing peers (such as "my choice is firm and worth be followed"). An excessive degree of political homophily may also lead to ritualism with rigid constraints.

*Abbreviations:* PNPG, Party Nexus Position Generator; SNA, Social Network Analyis; GLES, German Longitudinal Election Studies.

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https://doi.org/10.1016/j.socnet.2021.11.011
Received 17 June 2021; Received in revised form 29 September 2021; Accepted 23 November 2021
Available online 9 December 2021

*Political nexus diversity* is a structural attribute regarding the extensity of party-related ties in one's acquaintanceship circle. With more elements of a personal choice than political homophily, it involves the cognitive benefits of access to a broader pool of information and viewpoints: "It is good to be informed and knowledgeable." But *political nexus diversity* also entails a more extrinsic instrumental value based on the advantage of being connected to various political sides. Our analyses mainly relate to the cognitive aspects, but the instrumental ones are also of relevance. On the side of drawbacks, high political nexus diversity may also signify ambiguity of political commitments. Especially in the case of a highly homophilous political environment, the position implied by extensive and diverse political ties may turn to be a source of strain rather than a personal asset.

Besides our principal focus on the individual level, some macro-level implications should be touched on as well. The prevalence of a high level of political homophily may be a sign of solid political cohesion from one angle, segregation, and exclusion from another one. A high level of political nexus diversity may indicate a well-integrated community with intensive information flows but may also exhibit elements of political ambivalence and some lack of transparency.

In the first part of the paper, we present the conceptual background of political homophily and political network diversity and the standard tools for measuring these concepts. The introduction of the PNPG battery will follow this part. We tested the tool in two countries, Germany and Hungary, with online and face-to-face surveys administered by different methods. In the analysis part, we present the versatile application of the PNPG tool. We also show possible directions of the substantive applications of the tool and test its plausible functioning. Not going into specific causal hypotheses at the present stage, we assess the validity of some fundamental relationships related to aspects of political involvement on the one hand and socio-cultural background variables on the other.

The findings will be examined thereby in the light of some *lead assumptions* suggested by previous literature. The balanced role of parallel mechanisms related to political homophily and political nexus diversity is to be studied by contextual differences of the political settings as permitted by the country-cases of our survey research design. Another line of examining the role of situational factors in the differential functioning of the related mechanisms yields itself by the availability of various sub-samples in the Hungarian country-case: one from a period well ahead of an electoral campaign and another from its direct period. The plausibility of these findings may ground more specific hypotheses for future research that will be outlined in the conclusions of our paper.

## Conceptual backgrounds

The paper focuses on the measurement of *political acquaintanceship networks. As noted above,* they overlap but are not identical to political discussion networks. Compared to the more direct influence of political discussion networks, political milieus of a broader scope may exert a more latent influence on political behaviour. However, compared with larger surroundings such as the neighbourhood or district, this influence may still manifest in more immediate, tangible ways.

The two key attributes of political acquaintanceship networks: political nexus diversity and political homophily, have been introduced in the first section. *Political nexus diversity* measures the extensity of party-related ties in one's acquaintanceship circle. Having no tie at all and being linked to all parties are two poles of the scale. The more extensive and such relations, the more diverse they are expected concerning the political spectrum.[1] *Political homophily*, the counterpart of this structural pair, measures the degree of closeness of party-related acquaintanceship ties to one's political sympathies. The more constrained one's party contacts are about political sympathy, the more homophilous one's milieu is concerning politics. Political homophily could be measured on both individual and aggregate levels. In this paper, we rely on the former approach, concerning the compositional character of ego's political milieu.[2]

The classic network homophily theory departs from the "like attracts like" principle. It takes account of aspects like proximity in beliefs, group belonging, or socio-demographic similarities. In an introductory paper on the homophily concept, Lazarsfeld and Merton (1954) distinguished "status homophily" and the more belief-based "value homophily." A comparative typology was applied by (McPherson et al., 2001), with demographically (randomly) conditioned "baseline" homophily on the one hand and its "inbreeding" counterpart on the other, the latter involves the element of personal preferences as well. Treating homophily in a purely structural sense like recently by Smith et al. (2014), or Kmetty et al. (2017) may reveal critical dynamic aspects of the conditions facilitating or limiting the emergence of network homophily. However, a purely structural approach of political homophily may significantly subtract from the analytical strength by eliminating expressive motives, value commitments, and interpersonal attitudinal constraints.

To grasp political homophily in such a broader sense, we have to include both structural and expressive elements of political networks to understand better aspects like motives of political participation or polarization tendencies.

It is not easy to empirically tackle political homophily in its conceptual complexity. The comprehensive review of network homophily by (McPherson et al., 2001) does not deal with the political aspect in a pronounced way. Boutyline and Willer (2017), when summing up the measurement difficulties, highlight the problem of self-reports in the survey-based ego-network studies. Some element of subjective bias is inherently present related to value-based homophily of any kind.

The famous Thomas theorem is relevantly referred to in this context by DiPrete et al. (2011). A milieu that is personally defined, conditioned by ego's perceptions and attachments, as homophilous will prove as such in its consequences. Depending on one's preferences, interaction density and selective perception tend to screen and channel various, even quite heterogeneous influences along predisposed paths. Structural homogeneity and segregation are only partially responsible for behavioural effects apart from the interactive processes implied by network homophily.

Another difficulty noted by Boutyline & Willer, ibid, concerns the typically employed methodology for measuring political homophily that does not reach beyond the set of close ties. (DiPrete et al., 2011) study deploying the technique of summation method, among an array of dividing issues also for some aspects of political ideology, made an important step to cover a broader range of contacts. Our study joins this line of methodological attempts as our proposed tool also targets an extended range of connections. We built our tool on the traditional position generator methodology introduced by Lin and Dumin (1986). However, instead of occupations, we focus on political party ties. The

[1] In an extended interpretation, interpersonal party ties also play a role in the relationships between various parties (see on related dualities of persons and higher-level entities Breiger, 2010).

[2] The typological design by Borgatti et al. (1998) for classifying network measures of social capital (with no specific reference to political aspects) posits homophily as a group-level trait of social cohesion with an ambivalent nature of limiting exposure to ideas and improving communication at the same time. The latter attributes could be regarded as situational givens for an individual, close to „heterogeneity" and „compositional quality" evidently classified as ego-network characteristics. Though the term „nexus diversity" obtains no explicit reference in the classification design at issue, the related measure „size/degree" is an ego-network trait taken into account as an individual-level measure of social capital.

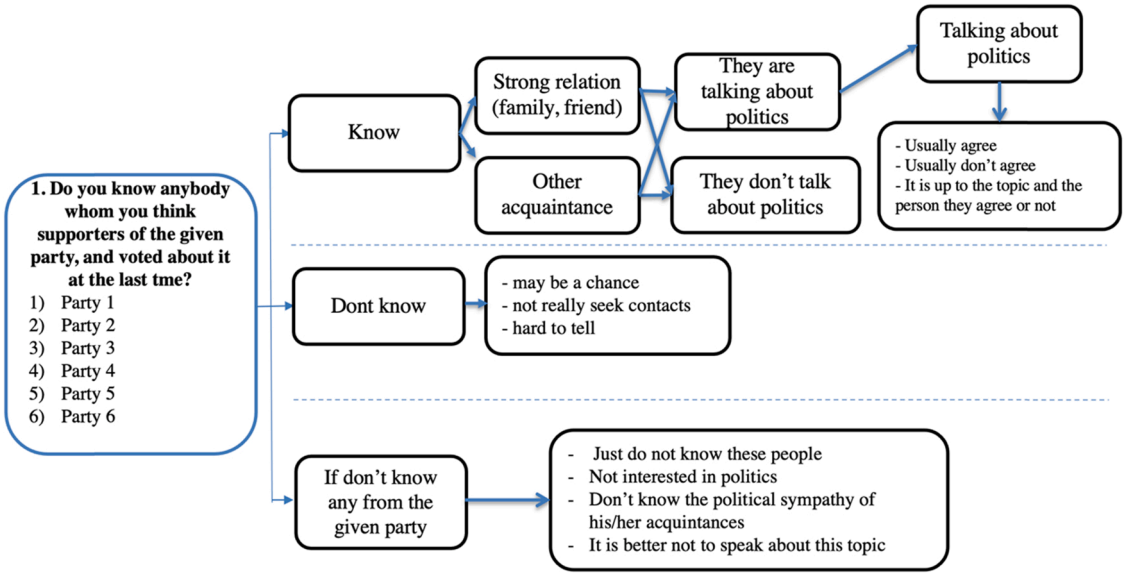


**Fig. 1.** The structure of the PNPG module.

Party Nexus Position Generator[3] does not only target a wider circle of acquaintanceship than previous models but the module is also extended with further elements linked with the complex concept of political homophily.

One advantage of our tool of Party Nexus Position Generator, compared to some former instruments, is its versatility in accessing various types of ties by the same methodological apparatus. Political ego-network name generator techniques, e.g., generally permit to map only the core tie political characteristics. Other methods directly approaching political discussion partners may extend to a broader circle of relations but are limited by direct political communication. The sources of various relevant influences may go beyond the circle of face-to-face interactions. The simple knowledge of the political affiliations of some significant others may also present itself as a stimulus of political behaviour. PNPG avoids these related limitations, while its set equipped with several sub-questions permits to differentiate between different degrees of relational proximity.

In explaining his strength-of-strong-tie proposition Lin (2001) points to essential implications of homophily mostly related to outcomes like common sentiments, trust, and feelings of obligation. The concept of Nan Lin is somewhat similar to (Coleman, 1988) focus on network density and closure regarding the efficiency of social capital and with Granovetter's (1973) principle of strength of ties stating the role of strong ties. The dynamic approach by Boutyline and Willer (2017) emphasizes the role of shared interest and density of interaction concerning the origins of homophily, with special regard to choice homophily. Though core ties are not unconditionally related to homophily, most evidence and conceptual considerations argue for their being related. In our approach, besides *core ties*, additional components like consensual communication *(political interaction based on shared views)*, and the closeness of *political sympathies/antipathies* are also vital parts of the concept of political homophily.

Though political homophily is coupled with strong and nexus diversity with weak ties, non-typical conceptual pairs also play a role. Political homophily in our conceptualization may also build on looser ties of acquaintance, just as political nexus diversity on friendly and kin ties. We will employ the *core/non-core* distinction for differentiating between kin and friend contacts on the one hand and looser contacts of political acquaintanceship on the other. Another difference involving the presence or absence of consensual political communication will be about *close and distant* relations in the operationalization of political homophily.

Besides expressive motives implied by political homophily, instrumental ones can also have some role for smaller segments of active partisans. Firm embedment in a specific circle of acquaintanceship can yield linkages to more tangible resources of institutional or material positions. Such benefits may offset the personal costs of constraints entailed by network density and closure. More pronouncedly, *with a focus on the instrumental resources* accessed by political ties, our application of position generator permits targeting the network trait of *party nexus diversity*. The recent study by Stockmann et al. (2020) introduced a related application of position generator for network diversity based on connections to various institutional roles under monolithic non-competitive political settings. Party systems with more competition can also give room to public connections for personal benefits. While this sort of tangible exploitation of diverse network resources is relatively limited, being diversely connected to various political forces can be beneficial for citizens. Country-level contextual factors can largely condition the relative benefits of diverse or relatively densely knit political networks, such as concerning the level of political participation. The presentation of findings on German and Hungarian political networks may help us understand how the broader settings affect the composition of political networks and their influences on political behavior. Results from two different countries may also contribute to testing the validity of the PNPG tools introduced by our study.

## Some features of the two country-cases: Germany and Hungary

Although the selection of the two country-cases was conditioned by data availability, the two country cases are also of substantive interest, representing different contexts by the degree of pluralism regarding the infrastructure of political communication. Though both the German and the Hungarian scene witnesses tendencies by political forces to narrow electoral competition on target audiences in a tailored segmentation, the Hungarian political milieu is also featured by notable governmental efforts to define the tone and direction of political-ideological communication. Direct control of public service media and central allocation of resources to various channels also play a part in Hungary. Ideological

[3] The initial label of the instrument „political position/party generator" has been later somewhat modified in order to distinguish it from other types of political position generators related to various institutional roles and administrative positions.

persuasion and negative campaigning intensified in the wake of the migration crisis from 2015 on. Still, its manifestations were present throughout the last decade. They obtained a substantial boost by 2014 that was in the centre of our surveys and a triple occasion of the parliamentary, EP, and municipal elections in the Hungarian case.

Though the methodological focus of the present study targets the plausibility of the PNPG tool, the contextual characteristics of the two country-cases as outlined above add to the instrument's test under various contextual settings. So it may be interesting how the mechanisms of political homophily and nexus diversity manifest themselves in the two country-cases and to see whether the degree of pluralism has a bearing on their interplay and balanced functioning. Findings in concert with expectations suggested by current research may allow for more clear-cut hypotheses to lead future research as detailed in our paper's conclusions.

## The PNPG module

The construction of the political position generator (PNPG) network instrument for measuring the size and heterogeneity of political networks is an adaptation of the general setup of the Lin and Dumin (1986) position generator instrument. While the classical core of the instrument contains a roster of occupations capturing one's social milieu,[4] the application of the technique to the measurement of political acquaintanceship network positions is produced by the use of a roster of parties.

Fig. 1 presents the structure of the PNPG module.

The core question is whether respondents have supporters from distinct parties of that roster among their acquaintances.[5] Here is the exact question we used in PNPG:

*Next you can see a list of parties. Please, mark each of them, if you know any people in person, who supports that party, meaning, voted for it at the previous, or possibly votes for at the next election.*

X. List of parties

Following the core question, some sub-questions are asked depending on the presence of certain party ties. If the respondent knows someone from a certain party, we ask the following 2 questions:

*Is any of the people you know related to these parties either a family member or a friend of you?*

1. *Yes*
2. *No*

*Are there any of the people, whether of a closer or a more distant relationship, with whom you occasionally discuss political matters? If so, how much do you generally agree on these matters?*

*0. No political discussions at all.*
1. Mostly agree.
2. Mostly do not agree on political matters.
3. It varies depending on issues and persons.

We ask a further question regarding those parties, which are not mentioned before:

*These are the parties you have not mentioned with regard to personal acquaintance. Thinking of each of them, which do you find more fitting:*

1. *It may be a chance that you do not know any supporters of that party, or.*
2. You do not really seek contacts with supporters of that party.
9. Do not know, hard to tell.

At the end of the module, we ask an extra question from those, who doesn't mention any party ties. Here we focus on the motivation behind the lack of party ties.

*What do you think of not knowing any supporters of any of these parties, what may be the reason? Which do you find fitting of the following? (multiple answers).*

1. You simply do not know such people in your surroundings.
2. You are not interested in politics.
3. You have no idea at all, which parties are supported or not by which people.
4. Other reasons, like…….
8. Do not know.
9. No answer.

The face-to-face version of PNPG was applied in several Hungarian surveys between 2003 and 2009 (see Angelusz and Tardos, 2006). Its online version (Kmetty and Tardos, 2012) was inspired by a call for modules by the GLES series. In the next section we introduce three surveys between 2013 and 2015 which we use in this paper, to assess the potential of PNPG module in measuring political ties.

## Data and methods

This paper uses three data sources to test the PNPG module: one from Germany and two from Hungary. The prior derives from the early 2015 survey of the online tracking series, German Longitudinal Election Studies (GLES T27). This study population is comprised of German people who were at least 18 years old living in Germany and used the Internet at least once a week. A quota sampling was used, including gender, age, and education as selection variables.[6] The sample size was 1000.

In the Hungarian case, two data files were merged[7] from a module of a 2013 survey by TARKI (under the aegis of its Political Cleavages research program under the aegis of the National Research Foundation) and another one from 2014 conducted by the MTA-ELTE Peripato Research Group (in the frames of the Crisis and Innovation project). Both surveys were face-to-face interviews of representative samples covering the Hungarian population over the age of 18 years. The former survey used a PAPI, the latter a CAPI technique. The sample size was 1000 in both studies, totalling 2000. Respondents who did not answer the political position generator question module were omitted as our analysis mainly relies on these questions. In both samples (Germany and Hungary), 3.8% of the respondents were left out because they didn't answer the PNPG block (no significant relationship were found with the demographic variables). But we found in both countries that people with lower political interests had a higher chance to jump the question block.

[4] Persson (2014) presents a deployment of this technique based on occupational ties with regard to the mediating role of network position on party membership, a more engaged form of political participation, with a focus on stronger ties among such contacts.

[5] Known by name, and greeted when meeting.

[6] The study used the LINK internet panel. Panel members were recruited by phone, see: https://www.link.ch. More information is available about the methodology and the sampling:https://dbk.gesis.org/dbksearch/download.asp?id=56454

[7] The two surveys were conducted within a year, and the same political position generator module was used. We had two reasons for merging the samples. In addition to obtaining a sufficient sample size for our analysis, we also attempted to balance the effects of political discussion during campaign periods. (The second survey took place right after the 2014 general election and before the EU parliamentary election in Hungary during a more turbulent period with relatively higher political interest and more robust political debates.) As will be shown, this difference in campaign settings has also allowed for testing one type of external validity.

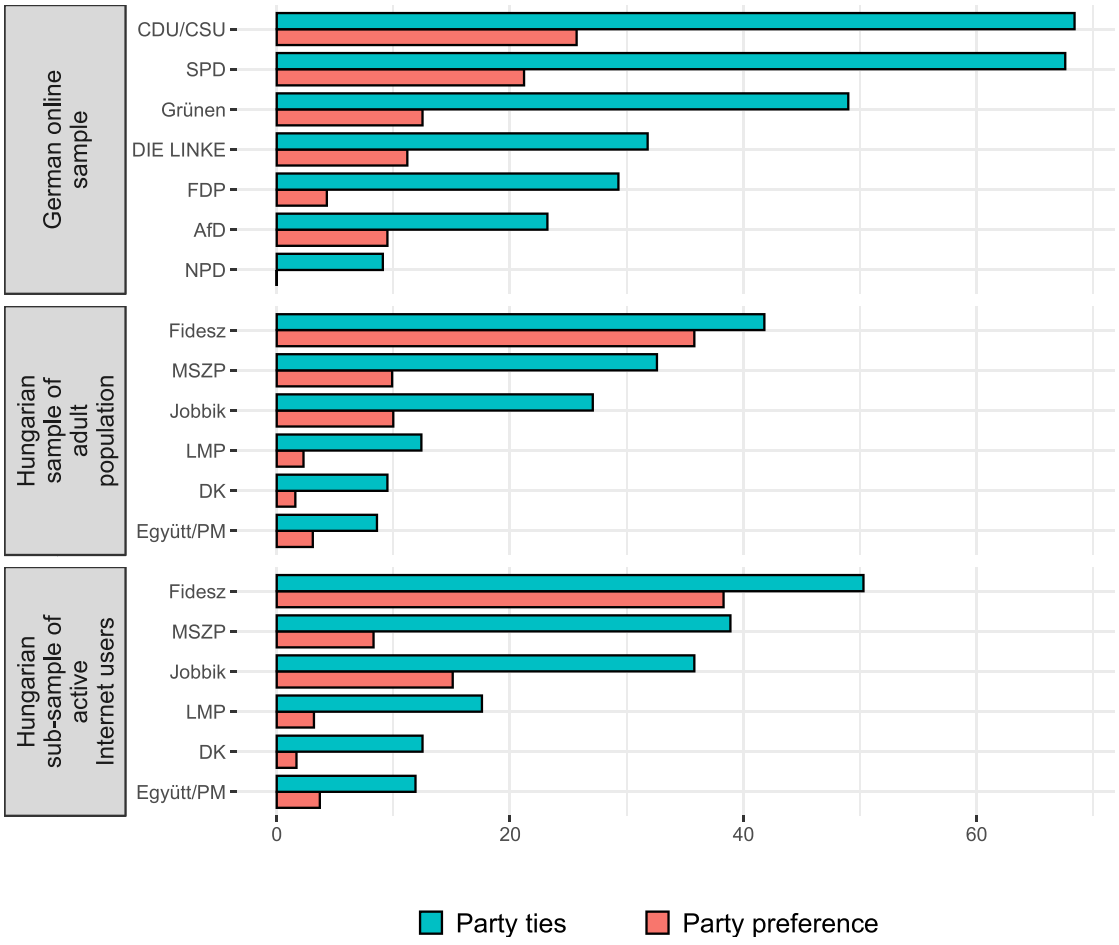


**Fig. 2.** Party ties and party preferences.

The effect was stronger in Germany (the eta$^2$ value here was 0.026 here). But with a view to the generally lower level of political interest in the Hungarian samples, the rate of those not mentioning any political party was substantial, as already noted concerning the country-cases. The inclusion of various study populations presents a critical check of the related attrition bias.

In the Hungarian study, we additionally created a sub-sample consisting of only the Internet users in order to mirror the German online survey population. Those not using, or only sporadically using the Internet, and those with a very low level of political interest (1 on a 1–5 scale) were thereby eliminated from the sub-sample of Hungarian Internet users.[8] The final sample size, following the above-mentioned adjustments, of the German data consists of 990; the joint Hungarian sample had 1938 respondents while the Hungarian Internet user sub-sample consists of 906.

We could calculate political homophily value for those respondents who had at least one existing party nexus. Fifteen percent had no political party nexus in Germany and 40%, in Hungary. In Germany, people with lower political interest and lower subjective class identification had a higher chance to have zero party nexus. Besides these variables, gender, age and education also proved significant in Hungary as to being without political nexus. Low political interest had a powerful effect thereby (Cramer V: 0,25). When analysing political homophily-related variables and results, we must be aware that we deal with a population with a higher political interest than the average and somewhat higher status (at least in Hungary). On account of the methodological conclusions, we will return to the sources of difference between German and Hungarian results and consider, besides substantive reasons, the possible impacts of the methodological differences of (online vs. face-to-face) survey administration on the response style.

We will introduce the two main variables of our study, **political nexus diversity** and **political homophily** and other variables extracted from the module in the later sections in detail. Here we present all the remaining variables we used in this study.

**Political interest** was measured by a 5-point scale question in each survey. A 3-category index measured **electoral turnout** (of repeated absence, casual, and regular participation) based on retrospective voting

[8] Political interest in our online sample appeared with much higher scores than in the internet user sub-sample of our face-to-face offline survey. This higher value may be due to a survey mode effect, at least what concerns Hungary. Twenty percent of the (offline sub-sample) internet users had a low political interest in the Hungarian sample and only 4% in the German online sample.On top of that, parallel with the 2014 MTA-ELTE-Peripato face-to-face survey, a limited online survey (not containing the party position generator module) was also conducted in Hungary. In that Hungarian online sample, the low political interest variable was close to zero. To balance this survey mode effect, we chose to omit the low political interest people from the Hungarian internet sample. We tried to select a sub-sample in Hungary, which was close to the characteristic of the online German sample.

in the last and the intention of voting in the upcoming national elections.[9] **Party sympathy** was measured by a 1–7 scale for each party. A higher value means higher sympathy. This political thermometer block was one of the building stones of our political homophily indices. **Party preference** was measured by the question of intended vote on party lists on the fictive occasion of an "election next Sunday".

The variable of **political distinction** is based on respondents' evaluations of various parties as to how attractive or unattractive they were (see party sympathy). We calculated the standard deviation and the range of party sympathy variables per respondent and created the political distinction variable by principal component analysis.

Besides the politics-related variables, we also used some basic demographic variables in the analysis, mainly for control purposes. **Age** was measured in years. In the **gender** variable, we coded Male to 1 and Female to 2. **Education** was measured on a 4-level-scale - 1: Primary, 2: Vocational, 3: High school, 4: University. The **subjective class** variable was aggregated from a 5-point-scale into two categories: 1: Lower and working, 2: Middle or higher. We also used a subjective income variable in the analysis. It was measured in a 5 point scale: 1: bad, 2: rather bad, 3: middle, 4: rather good, 5: good. The last demographic variable was **religiousness** measured on a three-level-scale (from "strong" to "not any" religiousness. The summary statistics for the variables used in the analysis is available in the online appendix.

*Basic measures and index components*

The PNPG module offers many ways to measure the political ties of respondents. In this section, we present some basic measures of the module. We do not want to go into deeper substantive analyses (e.g., of causality) to analyse the results in detail; instead, we focus on the methodological consequences implied by the plausibility of the results. We will first present a party-level analysis of the presence of acquaintance ties for the core question. Then we will analyse more aggregated measures, including for the further questions as well. Here we also introduce the primary indices we extract from the module. As described in the data and methods section above, we use three samples in this study – a German online sample, a Hungarian adult sample, and a Hungarian sample consisting of only active internet users. The three different samples help us to understand how the module works in different contexts.

On average, we measured a higher level of party ties in the German sample. Close to 70% of the respondent had ties to CDU/CSU and SPD. In Hungary, the probability of having a political tie was higher in the internet sample. That is also in line with our expectations as the internet sample had a higher general level of political interest.

In addition to the rates of distinct party ties in the three samples, we also displayed the respective party preferences on Fig. 2. It provides a first impression of how a higher party preference level correlates with a higher tie ratio, even if there are some outliers in this respect.[10] As noted above regarding various biases, respondents may not immediately follow their peers' fluctuating party support, especially if this tie is not so close. The PNPG module measures what we think/know about our peers, to a certain extent apart from their currently existing party affiliations. This consideration distracts from the relevance of this type of such divergence concerning the sources of possible bias in the indicators at issue when considering how we define the actual situation during various communication events. Even if a respondent's peer supports other political sides than (s)he but this respondent believes they share the same side, (s)he will tend to be more confident to go into political affairs. Such confidence from feelings of shared support may extend from talk to other forms of participation as well.

We used the above base question of the module on party ties to measure **political nexus diversity**. We calculated this measure likewise its occupational correspondent is calculated from the standard position generator, by aggregating the number of parties with ties. As the number of parties included was different for Hungary and Germany (nine, respectively, seven), we divided the variable with the number of parties in the given sample.

We also used this block to calculate a **sympathy ratio** variable. The sympathy **ratio** is the ratio of party ties with a high sympathy level (greater than five on a 1–7 scale) divided by the number of parties with ties.

The next sub-question of the PNPG module was about the character of relationships manifested by party ties. *Core ties* (represented by family or friendly relations) were more common than more distant types of acquaintanceship, totalling 58, respectively, 68% and 69% in the German and Hungarian samples. Agreeing with the expectations again as presented on account of the two country-cases, German respondents not only had more party ties on the whole than Hungarians, but they also had a higher chance to discuss politics with these peers, as shown by the next question of the module. These ratios were 84% in the German online, 64 in the Hungarian adult population sample, and 67 in the Hungarian internet sub-sample. The following sub-question on the consensual character of such discussions presented the moderate difference between the samples, totalling 30–40% regarding full consensus (as expressed by the variable communication proximity), with somewhat higher ratios in the Hungarian samples.

To represent various degrees of relational proximity, we applied the instrument of party thermometer and calculated various measures of affective proximity depending on the character of ties. We created a set of variables used as additional measures for the construction of the key indexes. Including the feeling thermometer module, these are based on the sympathy mean of party ties of core relations where the respondent reported agreement or disagreement. The respective variables are called *"consensual core tie sympathy"* and *"non-consensual core tie sympathy,"* then for party ties involving no political communication, *"core tie nexus sympathy, with no interaction."* We also calculated a no nexus sympathy measure, with the mean value related to parties with no linkage. Furthermore, a comprehensive measure was calculated for lacking party ties, or those with no agreement, or communication at all, called "*distant ties sympathy."* The above five sympathy measures manifest different levels of affective proximity, as they will be next presented in order from low to high: no nexus sympathy, distant nexus sympathy, non-consensual core tie sympathy, core tie nexus sympathy without interaction, and consensual core tie sympathy.

Based on the initial indices, we created some more complex variables introduced in the upcoming part of the paper. Attraction differential is the difference between the mean scores of close (from consensual to no-interaction strong tie) and distant (from non-consensual to weak or none) party relationships. We also extracted a dummy variable – communication proximity - that measures if someone had any tie of general agreement with political discussion partners.

As a final part of the module, we also asked about the missing party ties. If a respondent had no tie to a party, we inquired if it was due to chance only or maybe avoidance of contacts with party supporters. The aggregate measure of *intentional avoidance of party ties* presented much higher scores in Hungary (69% in the Hungarian adult population and

[9] In the case of all three databases, the turnout variable was built on two questions: 1. Did you participate in the last national election 2. Are you planning to participate in the upcoming national elections? The latter was measured by a 4-point scale (1: I will surely not participate, 4: I will surely participate). We coded casual participation if the respondent participated in the last election but not planning (answer 1–2) to participate in the upcoming election and the reversed version of this variable pair. We coded regular participation if someone participated in the last elections and intended to participate in the forthcoming election.

[10] The Hungarian Socialist Party (MSZP) is a good example of this. Many people had ties with someone who supported this party, though the actual party preference was relatively low. MSZP was a well-established party in Hungary, especially during its leading governmental role between 2002 and 2010, but they lost many voters after 2010.

**Table 1**
Party average attraction scores of various tie segments in the German and Hungarian samples (feeling thermometer 1–7 scale, mean scores).

| | Egoparty | Alter nexus party attraction | | | | No nexus sympathy |
|---|---|---|---|---|---|---|
| | | Consensual core tie sympathy | Core tie nexus sympathy, with no interaction | non-consensual core tie sympathy | Distant nexus sympathy | |
| German online sample | 6,21 | 6,14 | 4,35 | 3,82 | 2,97 | 2,83 |
| Hungarian adult sample | 5,87 | 6,17 | 4,11 | 2,44 | 2,89 | 2,77 |
| Hungarian sub-sample of active Internet users | 5,78 | 6,08 | 4,15 | 2,60 | 2,88 | 2,77 |

65 in the Hungarian active internet users' sub-sample, compared to only 34% in the German online sample) which may be regarded as an essential addition to the findings on political homophily. As to distinct party ties, the features of intentional party avoidance were general in Hungary, while they were more selective in the German case concerning certain parties. We measured political nexus avoidance based on this block. **Political nexus avoidance** is measured by the ratio of mentions of *intentional lack of ties* related to distinct parties among the total number of lack of ties with various parties.

*Index construction*

*Political homophily*

One significant benefit provided by introducing the party-nexus position generator (PNPG) is related to its multi-layered apparatus for tackling the complex concept of political homophily. Research antecedents (see Mutz, 2002, Klofstadt et al. 2009, Cowan and Baldassarri, 2018) followed the ego-network approach. They used an indirect approach to alters' political preferences utilizing general name-generator techniques or directly inquired about political discussion partners and political affiliations. The scope of these methodologies was mainly limited to the core ties of family or friendship relationships. It is doubtless that core ties are a principal source of political homophily and cohesion, as has been recently confirmed by family-focused studies of political socialization and polarization (see Iyengar et al., 2018). But critical approaches (like by DiPrete et al. 2011) also extend their scope to a broader pool of political acquaintanceship. And the recent study by (McPherson and Smith, 2019) applies the homophily principle for a very broad multi-dimensional Blau-space (Blau, 1994), pointing out spectacular homophily effects for political issues.

Another source of complications has to do with the binary or multiple characters of the party system. Most classical approaches, but some newer ones too (like Boutyline and Willer, 2017), were designed on the dichotomous setup of the American political landscape. The simplicity of two-party systems facilitates a relatively simple index construction. Suppose it is about an ego-network data source. In that case, one only has to compare ego's preferred party (the Democrats or Republicans) with those of the core (or political) discussion partners, and the solution is readily at hand. If alters' parties are all the same sort, we may speak of complete political homophily; no coincidence at all presents the rare case of complete heterophily on the opposite pole. Multiple-party systems pose more difficulties. The existence of party families based on ideological proximity or joint coalitional past and its role in processes of party choice (Oscarsson and Oskarson, 2019) may help in this regard. A looser definition of political homophily may extend to political kinship as well. Our first operational attempt of homophily was built on the party preference of the ego and the PNPG module. This approach turned out, however, fragile in the light of later elaborations. While under specific political settings, with some clarity of ideological division, it may prove a feasible solution; however, it leads to messy results where more than one dividing line is at play.

Thomassen and Rosema (2009) argued for conceptualizing partisanship in party evaluations instead of party identification. This line offered a plausible alternative for our objectives, too, not only about the practical problem of missing or hidden party identification in many cases but also regarding our attempt to represent the value aspect of political homophily in terms of attraction. Thus, instead of party preference, we decided to build our homophily indicator, in addition to political nexus data, on party evaluations.

The lessons of the evidence presented above speak for the inclusion of a complex methodology for measuring political homophily. The index needs to address the degree of attraction toward parties/political blocs jointly favored and the presence of consensual communication with political partners and by mapping a relatively wide circle of acquaintanceship. To measure the homophily indicator, we employed the multiple potentials of the party-nexus position generator and the party feeling thermometer available in both our German and Hungarian databases. This complex approach allowed for constructing a composite index based on attraction and communication proximity measures, with several sub-components in these regards.

The presence of a strong relationship between the intensity of consensual interaction with political partners and the degree of attraction toward respective parties manifests a vital prerequisite for our index construction. Its realization in all study populations is presented by Table 1, as shown by the mean party sympathy values of various segments of our samples.[11]

The party average attraction scores of various tie segments present a solid downward slope from the most pronounced homophily orientation to the non-consensual or no-nexus relations. Also, the data agree concerning the exceptionally sharp division related to the partners' agreement in political communication surpassing the influence of no communication. The divide related to consensual political interaction is particularly pronounced in the Hungarian case.

Also backed by this evidence of relationship- and interaction-based political attraction, three components have been defined as the basis of our composite index of political homophily: 1. *Attraction differential*; the difference between the mean scores of close (from consensual to no-interaction strong tie) and distant (from non-consensual to weak or none) party relationships, 2. *Communication proximity*; the presence of at least one core tie party nexus with consensual communication, 3. *Sympathy ratio*; the rate of party nexus ties with positive evaluations (with scores over the middle value 4 of the feeling scale).

In order to produce a one-dimensional scale, a principal component solution was employed for all case samples. The composite index exhibits a good fit of the components.[12]

The similarity of the individual factor loadings (see Table 2), just as that of explained variance, is also remarkable with regard to the German and Hungarian cases. We will further elaborate on aspects of the validity of our political homophily indicator in a later section.

[11] We also calculated the correlations between the feeling scores attached to the party principally preferred by ego and those attached to the Alters' party affiliations (see the appendix, Fig. A1). The results were similar with the mean analysis.

[12] The Cronbach's alpha reliability based on the standardized components proved ,728 for the German online ,759 for the Hungarian adult population and ,764 for the Hungarian Internet user sample.

**Table 2**
The factorial setup of the composite index political homophily in German and Hungarian samples - Principal Component Analysis.

| | German online sample | Hungarian sample of adult population | Hungarian sub-sample of active Internet users |
|---|---|---|---|
| Attraction differential | ,836 | ,874 | ,874 |
| Communication proximity | ,615 | ,528 | ,563 |
| Sympathy ratio | ,665 | ,772 | ,755 |
| % of Variance | 50,6 | 54,08 | 55,07 |
| N | 803 | 893 | 504 |

*Political nexus diversity*

The index of **political nexus diversity** measures the extensity of party-related ties in one's acquaintanceship circle. Having no tie at all, and being linked to all of the parties, are two poles of the scale. The more extensive such a tie, the more diverse they are expected concerning the political spectrum. Nexus diversity is defined as the number of political parties with ties available, divided by the total number of parties in the roster. Somewhat differently from the building blocks of the index of political homophily, a broader set of political parties was considered, taking into account the ties with some parties outside of the national parliaments.

The average value of the political nexus diversity value was 0.39 in the German online sample, 0.17 in the Hungarian adult sample, and 0.21 in the Hungarian internet users' sub-sample (see Fig. 3). This difference among our country-cases was already indicated by the basic party-tie distributions presented earlier. The Hungarian internet user sub-sample was closer to the Hungarian adult sample than to the German internet sample.

It should be emphasized again that political homophily and nexus diversity is not conceived as two poles of the same dimension. The two variables are not proxies for each other. Scoring high on political homophily may, for example, go together with relatively high scores on nexus diversity. This distinction is indicated by their practically zero correlation (-,04) in the German and the moderate negative correlations in the Hungarian case (-,23 in the national population and -,26 in the active Internet user sub-sample).

A schematic overview of how we measured *political acquaintanceship*

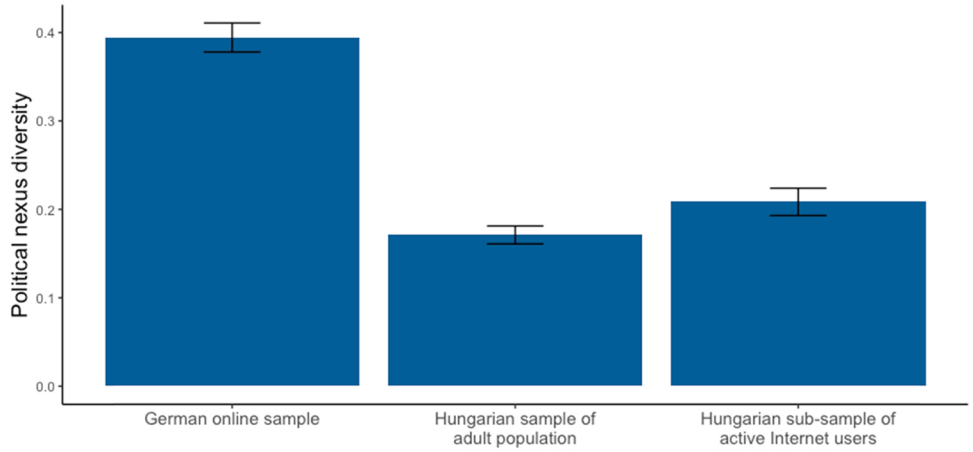


**Fig. 3.** The mean values of the index of political nexus diversity in various samples.

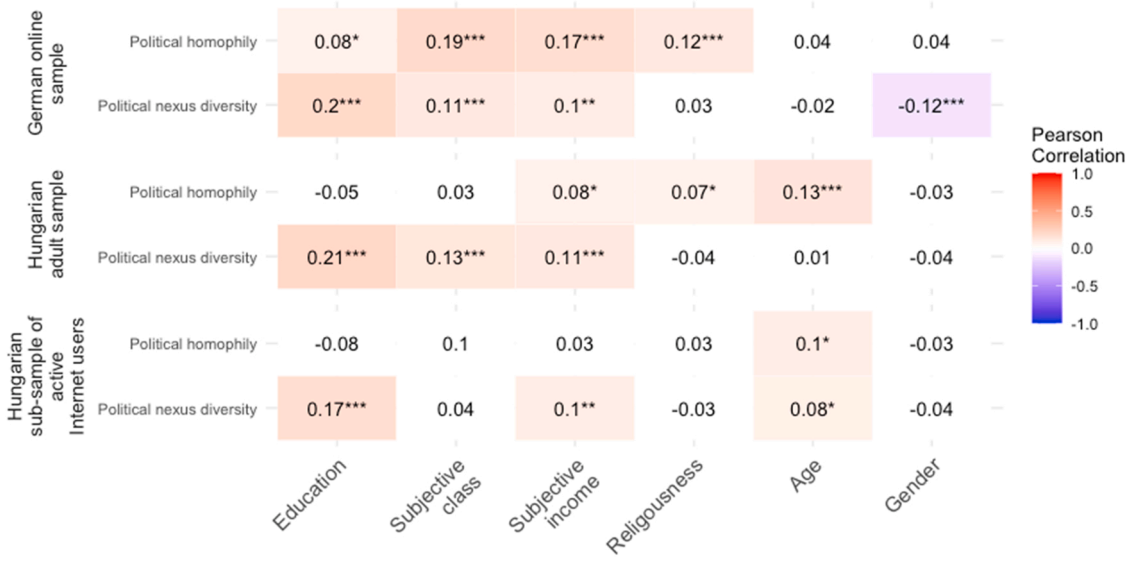


**Fig. 4.** Pearson correlation of political nexus diversity, political homophily and socio-demographic characteristics (*sig<0.05, **sig<0.01, ***sig<0.001).

**Table 3**
Correlations of political nexus diversity and political homophily with criterion variables of political activity and political segregation (Pearson r).

| | | Political activity | | Political division | |
|---|---|---|---|---|---|
| | | Political Interest | Election turnout | Political Distinction | Political nexus avoidance |
| German online sample | Political nexus diversity | ,201** | ,092** | ,053 | ,137** |
| | Political homophily | ,182** | ,201** | ,489** | ,148** |
| Hungarian sample of adult population | Political nexus diversity | ,059 | -,01 | -,060 | -,146** |
| | Political homophily | ,324** | ,425** | ,623** | ,180** |
| Hungarian sub-sample of active Internet users | Political nexus diversity | ,021 | -,015 | -,060 | -,209** |
| | Political homophily | ,287** | ,350** | ,623** | ,232** |

*sig<0.05, **sig<0.01, ***sig<0.001

*network indicators* is available in the appendix (Table A1).

*Assessing internal and external validity*

The previous sections presented the basic measures extracted from the PNPG module and introduced the two leading indicators, *political homophily*, and *political nexus diversity*. In the last part of the analysis, we present some simple analyses test regarding the internal and external validity of the main variables of interest.[13] The first set relates to content validity by correlating political homophily and political nexus diversity with demographic variables. Then we analyse the relationship between our main political acquaintance network indicators and some measures related to political activity and political division.

As detailed above, several previous studies have confirmed the social embeddedness of political networks. The first step of our checks of validity political network indicators examines the association with socio-demographic variables. We start from the basic assumption that political nexus diversity is primarily associated with higher levels of socio-cultural resources, so we expect higher subjective class positions and higher educational attainment will positively correlate with nexus diversity. As the correlogram shows (see Fig. 4), this expected correlation is present across our variables, primarily for educational attainment and somewhat weaker for the subjective class position (only in the subsample of Hungarian active internet users was the correlation not significant).

The findings related to income position are of particular interest as they also refer to the possible instrumental utility of nexus diversity. They prove solidly significant in all the samples, indicating both the plausibility of the related assumption and the measurement's functioning in this respect.[14]

For political homophily, we expect a correlation at higher levels of normative social embeddedness. We operationalize normative embeddedness with religiosity. This expected correlation also emerges in our samples, except for the active internet-using Hungarian subsample (in the latter case, there is a much narrower religious group in the sample, so the correlation measured in the total population may disappear).

We examine the association of political network variables with political activity and political division variables regarding criterion validity. We start from the basic assumption that both political homophily and nexus diversity play a role in keeping political activity alive. For this hypothesis, we use two political activity variables, political interest, and electoral participation (see Table 3).[15] For both variables, we expect a positive correlation with the political network indicators. We got the expected correlation of the political homophily indicators with the activity variables. More homophilous political networks are associated with more active political participation. The correlations are more robust for the Hungarian samples than the German ones.

The correlations between political activity and nexus diversity are, quite strong in the German case but much weaker or even non-existing in the Hungarian samples. This difference indicates a more balanced setup of political homophily and nexus diversity in the former country case. Though some difference was expected based on different political settings, the pronounced gap is striking and implies further investigations.

Two variables represent political division: political distinction related to the dispersion of party sympathies and political nexus avoidance associated with the lack of party ties. We expect a positive correlation with political homophily for both variables, but we do not expect a significant correlation with political nexus diversity. In all three samples, political homophily confirming our expectations is positively correlated with both political distinction and political nexus avoidance. A politically more self-similar network of contacts is associated with more pronounced gaps of sympathy/antipathy towards various parties and a higher probability that the respondent deliberately excludes party sympathizers from his/her network of contacts. The correlations are explicitly strong for the former aspect. Political nexus diversity in the Hungarian samples showed a significant correlation with political nexus avoidance. The negative correlation here indicates that with a more extensive contact network, it was more likely that even if a party was not present among the contacts, this was by chance rather than intentional.[16]

Different political situations are related to various stages of an electoral cycle, so the closeness of an electoral campaign yield further chances of assessing PNPG validity. As described in the methodology section, two Hungarian data sets were included in the analysis. The two datasets are treated together for most of the study but are split in this

[13] Accepting the comments by Hammersley (2008) on the debatable distinctions by various typologies of validity in social research, it still seems plausible to employ these comprehensive terms for an analytical presentation of our test findings.

[14] We present data by the subjective income indicator for substantial missing data in the objective income measure, but the correlations produced by the latter are close to the results in Fig. 4.

[15] Our next analyses include respondents with at last one party tie.

[16] We tested the relationship between political network variables and electoral turnout in a more complex model for robustness check and prepared for further causal analyses. Electoral participation is chosen as a criterion variable, as the literature focuses on the relationship between participation and political network variables. In addition to the two political network indicators, we included in the model the control variables presented earlier, gender, age, educational attainment, subjective class, subjective income, and religiosity. Based on the previous two-dimensional results, we expect both network variables to have independent explanatory power in the model of electoral participation. Since the dependent variable can take three values, we chose an ordinal logistic regression model (see Table A2 in the appendix). The regression models confirm our previous results. Even when the control variables were included, the political homophily variable was significantly associated with electoral participation in all three samples. More politically homogeneous networks were associated with a higher probability of participating.

**Table 4**
Correlations between political network characteristics and criterion variables under pre-campaign and campaign contexts (Pearson r).

| | | **pre-campaign context** Hungarian pre-election (2013 Fall) sub-sample of adult population | | **campaign context** Hungarian post-election (2014 May) sub-sample of adult population | |
|---|---|---|---|---|---|
| | | Political nexus diversity | Political homophily | Political nexus diversity | Political homophily |
| Political activity | Election turnout | ,01 | ,318** | ,065 | **,491**** |
| | Political Interest | ,070 | ,269** | **,120**** | **,365**** |
| Political division | Political distinction | -,199** | ,707** | -,040 | ,565** |
| | Political nexus avoidance | -,127* | *,209*** | -,168** | ,155** |

*sig<0.05, **sig<0.01, ***sig<0.001

sub-analysis. One data set was collected in autumn 2013, and the second data set was in May 2014. Hungary had parliamentary elections in April 2014 and EP elections in May 2014. The second survey was conducted between the two elections. We expect network indicators to discriminate sharper in a campaign period and be more strongly correlated with participation and political division indicators.

The results partly support our expectations (see Table 4). The strong correlations of political homophily with participation and political interest got even stronger in the election period. The lack of correlation between nexus diversity and political interest turned into significant in the campaign situation. However, the correlation of the indicators of the political division remained unchanged and, in some aspects, even weakened. Overall, we can say that the role of these network attributes, especially political homophily, tends to appear more pronouncedly regarding political activity in the campaign context.

## Conclusion

This paper presents a novel tool, PNPG, which measures two critical aspects of political acquaintanceship networks, political nexus diversity and political homophily. Political nexus diversity was conceptualized concerning network resources that entail cognitive and instrumental benefits and enhance participation in various forms of political activity. According to classical approaches of the position generator technique, it was operationalized as the extensity of the contacts accessible among one's political milieu. Political homophily was conceptualized concerning network cohesion. Besides the structural trait of the similarity of party ties, the cultural aspect of expressive motives obtained particular emphasis. With this, we relied on a more subjective feature of political proximity, the element of party sympathy too, in the operationalization of this concept. Our combined index of political homophily is based on three sub-components: attraction differential, communicational proximity, and sympathy ratio. We approach the political tightness of one's milieu from the angles of the closeness of ties, the degree of political attraction, and the presence of consensual communication.

The internal validity of political nexus diversity and political homophily was examined through criterion variables related to political activity and political division. The analyses rely on survey findings from two country-cases and various sub-samples. The results overlap in several respects and confirm general lessons of prior research. Corresponding to our assumptions, political homophily and political nexus diversity were correlated with political activity elements. Regarding social division, it coincided with our expectations that both political distinction and exclusion significantly correlated with political homophily while such a relationship was not observed concerning nexus diversity. Among the tests of internal validity, we also investigated how much our network variables could be related to a set of socio-demographic characteristics. The results confirmed our assumptions concerning the conditioning role of cultural resources as measured by the degree of education related to political nexus diversity. Normative embedment as represented by religiousness proved to be related to political homophily.

Table 5 does not add new findings of former analyses but provides a schematic overview of the central relationships found through the analyses. Besides the common features summed up above, some differences are also relevant and primarily according to expectations. The salient role of political homophily in comparison with political nexus diversity is a general feature of the Hungarian case when contrasted with the German one, which presents a more balanced setup concerning the network characteristics at issue.

**Table 5**
A schematic overview of key results.

| | | | German sample | | Hungarian samples | |
|---|---|---|---|---|---|---|
| | | | political nexus diversity | political homophily | political nexus diversity | political homophily |
| domain relevance | political activity | political interest | + | + | | ++ |
| | | electoral turnout | + | + | (+) | ++ |
| | political division | political distinction | | ++ | | ++ |
| | | Political nexus avoidance | | + | | ++ |
| socio-cultural background | cognitive,social embeddedness | education | + | | + | |
| | | subjective class | | + | + | + |
| | | religiousness | | + | | (+) |
| | | age | | | | + |
| | | income | + | + | + | + |
| | | gender (female +) | – | | | |

Contextual differences of correlations have an important validity aspect. The number of party ties among those with such ties was significantly higher in the German sample, and the difference was even more substantial regarding those not having any party nexus. All this resulted in a big difference in the scores of nexus diversity between the two country-cases. A subsidiary module for the latter part of the survey populations may help interpret the lack of party contacts (see Fig. A2 in the appendix). While referring to the lack of political interest or some precaution regarding political topics („better not speak things like that") was practically not present among German online respondents' motives, they were on a par with some more trivial reasons in the Hungarian case. One could observe an attitudinal barrier to the extension of political ties.

In further research, these observations can also explain the difference in the role of age regarding political homophily in the two country-cases. Segmenting the populations by age/cohort characteristics, the analyses may clarify how much these specificities imply life-cycle and generational effects. It may also be of interest how much the contextual differences can be attached to the degree of pluralism of the political settings and the gaps of socialization experiences in a country undergoing fundamental changes in the political institutions.

Regarding more complex future analyses, causal modelling of the effects of the political network attributes at issue may be the next step concerning political interest and participation. The clarification of the causal direction and the disentangling of pre-selection and peer influence effects is a serious issue. The interplay of political homophily and political nexus diversity presents a further research target. Our preliminary analyses pointed to a positive interaction of these attributes regarding electoral participation in the German sample which adds to the findings on the more balanced character of these network traits in this country-case.

The present version of political homophily measurment was preceded by experimentation that also included some attempts related to the left-right scale. This approach was then changed, not the least for the questionable position of some parties on this dimension. And not quite apart from this point, the relatively low discriminatory potential of the respective variable also presented a problem.[17] However, it also deserves attention from the angle of substantive validity that the related ideological variables[18] exhibit solid correlations with our combined index of political homophily in both Hungarian samples and somewhat more moderate ones in the German study population. This difference may be related to the more pronounced presence of this traditional divide in the Hungarian than the German political landscape.

The discriminatory power of various versions is also regarded as a relevant aspect. Our final solution of the combined index of political homophily, concerning practically all relationships with criterion variables, significantly surpassed both the initial version of political homophily attached to the ideological dimension and an intermediate one, solely based on the index of sympathy ratio. Though the latter attempt was an essential step in finding a solution that eliminates the complications of the ideology-based former attempt, it relied too heavily on party feelings with contextually differing baseline levels. So this version was subsequently changed into a complex one as appearing throughout this paper.

The character of party systems poses a significant limitation of our approach regarding both political network variables. The PNPG module, as presented here, might not be too helpful in two-party setups (like in the American scene). However, a hybrid option could be deployed in such cases as well. Beyond the parties, different ideological leanings could be added to the module like left-right or liberal-conservative dimensions.[19]

Party systems with a high number of parties (possibly close to a dozen) may present other sorts of difficulties. Such cases require an increased input of questionnaire capacities, whether on the side of the PNPG-, or the feeling thermometer modules. Size constraints may emerge in other cases as well. While one part of our conceptual model, political homophily, is badly affected by such bottlenecks of index construction, the variable of political nexus diversity needs less to invest. Moreover, there is an option to limit the number of parties to those relevantly representing the political landscape in a given setting.

We have observed a significant difference between the two country-cases in the number of parties accessed. A substantial omission on that account poses a doubtless problem of sample attrition. Further analyses may help reveal how much these gaps are due to substantive differences of the various settings and how much to differences in survey (such as online/offline) survey administration. This presents an essential task for further methodological improvements of the PNPG tool.

Future research may be enriched by broadening the scope of comparison. Studying political nexus diversity and political homophily in a joint framework might present a research direction of interest with various comparative perspectives.

## Funding

This work was supported by the Crisis and Innovation program of the HAS-ELTE Peripato Research Group and the OTKA-project Role of cleavages, values and identity in the development of Hungarian party system, 2000-2014 (ID: 105445).

## Acknowledgment

We would like to thank hereby for the contributions to our study, the Long-time Online Tracking Survey of the German Longitudinal Election Studies and especially Simon Henckel who managed the data collection process from the side of GLES. We would also like to express our gratitude for their personal contributions in various phases of the implementation of the political position generator module and its later elaborations to Zoltán Fábián, István Micsinai and Gergely Rosta, and our former colleagues in the HAS-ELTE-Peripato Research Group.

## Appendix

See Appendix Fig. A1 and A2.
See Appendix Table A1 and A2.

[17] A recent study on affective polarization in the multiparty context of the Netherlands (Harteveld, 2021), also building on the tool of sympathy thermometer, presents more robust adverse effects along with party than left-right ideological lines. Ertan et al. (2022) found limited association related to left-right ideological distance under the Turkish political settings from the angle of perceived polarization.

[18] The respective variable was based on an ordinal scale of „heterogeneous", „dominantly left/right" and „homogeneous" types (whereby the parties' left-right classification was based on the modal self-placements of their supporters). The correlations in question were.52 and.54 in the Hungarian adult and active Internet user, and.19 in the German online samples. (The correlation scores of political homophily with a related index of self-placement adjacency to the poles on the left-right dimension were.43,.38, and.12, respectively)

[19] Though not in a position generator application, DiPrete et al. (2011) presents an example for including various types of political and ideological acquaintances.

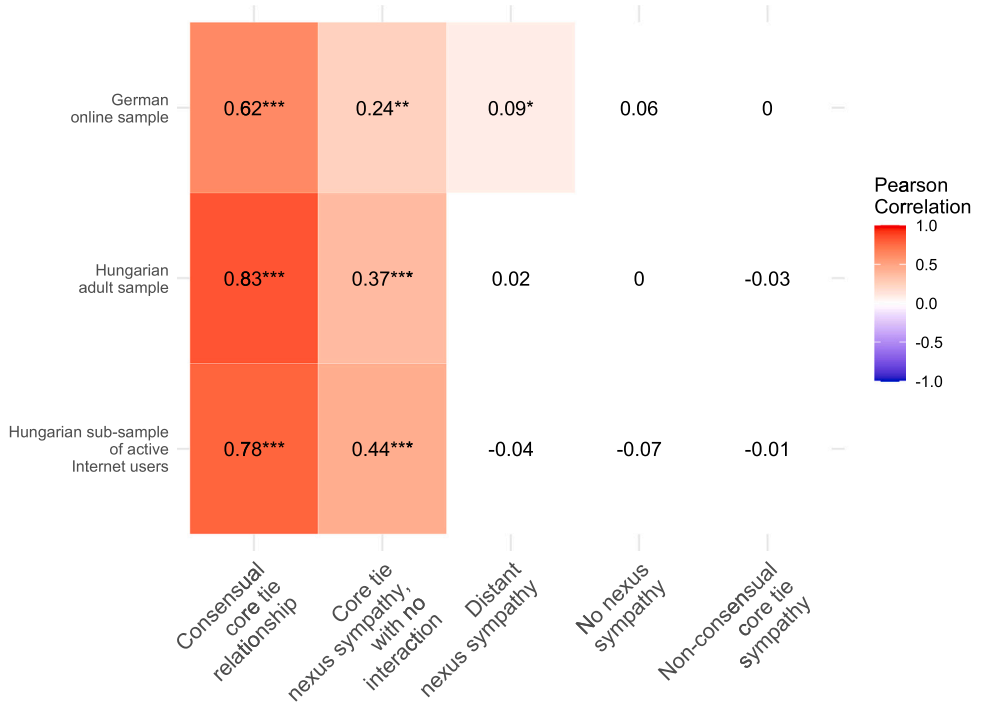


**Fig. A1.** Correlations between alter nexus party attraction and ego party attraction scores in various tie segments of the German and Hungarian samples (*sig<0.05, **sig<0.01, ***sig<0.001).

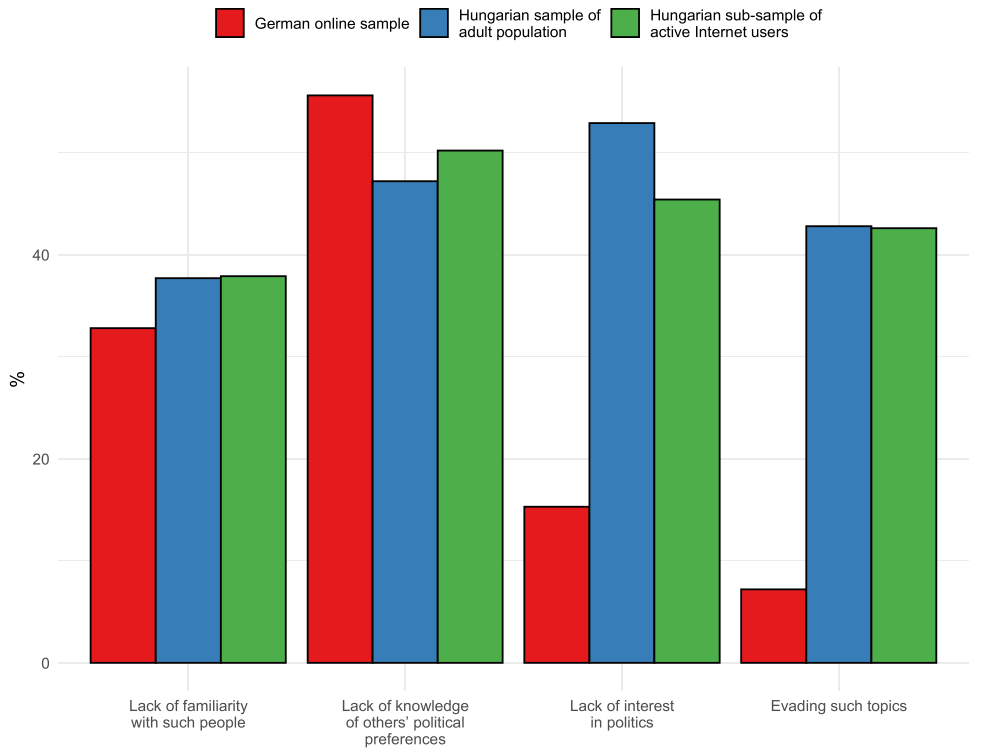


**Fig. A2.** Reasons of no ties among the respondents without any party nexus (percentage).

**Table A1**
A fictitious case for the calculation of the key indexes of political acquaintanceship networks.

| party | Party nexus attributes (PPNG) | | | | Party sympathy (feeling thermometer 1–7) | |
|---|---|---|---|---|---|---|
| | party tie (Y/N) | core tie (Y/N) | political communication (Y/N) | agreement/ disagreement | evaluation | positive (5_7) evaluation (Y 1, N 0) |
| P1 | YT1 | YCT1 | NPC1 | – | ps1 | ps1p (1) |
| P2 | YT2 | YCT2 | YPC2 | A2 | ps2 | ps2p (1) |
| P3 | YT3 | YCT3 | YPC3 | D3 | ps3 | ps3n (0) |
| P4 | YT4 | NCT4 | – | – | ps4 | ps4n (0) |
| P5 | NT5 | – | – | – | ps5 | – |
| **Components of the index of political homophily** | | | | | | |
| **attraction differential** (the difference between the mean scores of close and distant relationships) | mean (ps1, ps2)-mean (ps3, ps4, ps5) | | | | | |
| **communication proximity** (at least one consensual core party tie) | presence of A (one or more) | | | | | |
| **sympathy ratio** (positive party ties) | (ps1p+ps2p)/sum(YT1, YT2, YT3, YT4) (2/4 =0,5) | | | | | |
| **Index of political nexus diversity** | sum(YT1, YT2, YT3,YT4)/sum (YT1, YT2, YT3,YT4 +NT5) (4/5 =0,8) | | | | | |

The scheme is based on a fictitious case with various response patterns modelling a five-party setup. The upper panel of the table presents the measurement instruments employed and the variety of response patterns regarding the different parties of the fictitious case. The lower panel illustrates the calculation of the components underlying the indices of political homophily and political nexus diversity. (Omissions in the respective cells follow the screenings of the module.)

**Table A2**
Modelling the effects of political nexus diversity and political homophily on electoral participation (ordinal logistic regression).

| | German online sample | | | Hungarian sample of adult population | | | Hungarian sub-sample of Internet users | | |
|---|---|---|---|---|---|---|---|---|---|
| | Estimate | SE | p | Estimate | SE | p | Estimate | SE | p |
| Political nexus diversity | ,83 | ,48 | ,08 | ,29 | ,36 | ,43 | ,13 | ,50 | ,79 |
| Political homophily | ,35 | ,10 | ,00 | ,94 | ,08 | ,00 | ,74 | ,11 | ,00 |
| age | ,03 | ,01 | ,00 | ,02 | ,00 | ,00 | ,02 | ,01 | ,01 |
| gender (female +) | -,13 | ,20 | ,51 | -,17 | ,15 | ,25 | -,10 | ,21 | ,64 |
| education | ,34 | ,12 | ,00 | ,42 | ,09 | ,00 | ,28 | ,13 | ,02 |
| subjective income | ,49 | ,12 | ,00 | ,03 | ,09 | ,75 | ,01 | ,12 | ,93 |
| religiousness | ,34 | ,17 | ,05 | ,27 | ,12 | ,03 | ,36 | ,18 | ,04 |
| Intercept - 1\|2 | 1,65 | ,74 | ,03 | ,31 | ,45 | ,48 | ,01 | ,63 | ,99 |
| Intercept - 2\|3 | 2,80 | ,74 | ,00 | 1,56 | ,45 | ,00 | 1,30 | ,64 | ,04 |
| N | 778 | 892 | 499 | | | | | | |
| AIC (Null Model) | 845 | 1628 | 828 | | | | | | |
| AIC (FULL Model) | 805 | 1436 | 769 | | | | | | |
| LR Test p | ,00 | ,00 | ,00 | | | | | | |
| McFadden $R^2$ | 9,2% | 12,3% | 8,8% | | | | | | |

## Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.socnet.2021.11.011.

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