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Dotti Sani, Giulia M.; Quaranta, Mario

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Mapping Changes in Attitudes towards Gays and Lesbians in Europe: An Application of Diffusion Theory

Giulia M. Dotti Sani ^{1,†} and Mario Quaranta ^{2,*†}

¹Department of Social and Political Sciences, University of Milano, 20122 Milano, Italy and ²Department of Sociology and Social Research, University of Trento, 38122 Trento, Italy

*Corresponding author. Email: mario.quaranta@unitn.it

†The authors contributed equally to this research

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Abstract

Despite the introduction of laws granting family rights for lesbians and gays (LG) in many countries, negative attitudes towards homosexuality persist among various segments of the population, even in countries that have fully legitimized same-sex relationships. This mismatch raises questions about the processes through which societies achieve positive attitudes towards gays and lesbians. This article applies diffusion theory to nearly 20 years of European Social Survey data for 27 countries to provide an in-depth examination of the evolution of attitudes towards gays and lesbians. Using data on same-sex legislation and cluster analysis, we construct a classification of countries distinguishing among those that are more versus less ahead in the process of granting family rights for LG couples, which is then applied to societal growth curve models to account for historical changes in attitudes among different social groups. Our results show a stronger increase in positive attitudes towards homosexuality among higher educated, secular, and non-conservative individuals in countries with greater same-sex rights. These findings suggest that laws granting family rights to LG people represent a necessary but not sufficient condition for the diffusion of positive attitudes towards homosexuality, pointing to a considerable lag between the macro and the micro-level.

Introduction

This article applies diffusion theory (Rogers, 1962) to study the evolution of attitudes towards lesbians and gays (LG) over nearly two decades across 27 European countries. Between the 1990s and the late 2010s, unprecedented reforms of family law across countries gradually extended to LG individuals three fundamental rights previously reserved for heterosexuals: the rights to form a civil union, marry and become a parent. By the beginning of 2020, 43 states worldwide have introduced laws

on marriage or civil union for same-sex couples, and 27 allow adoption by same-sex couples. Achieving full family rights is an important victory for the LG community as it symbolizes an overarching institutional endorsement of principles of equality and non-discrimination among citizens regardless of their sexual orientation.

At the micro-level, however, individual acceptance of LG people varies considerably both within and between countries. While much research shows that attitudes

towards homosexuality have grown increasingly positive over the decades (Andersen and Fetner, 2008a; Treas, Lui and Gubernskaya, 2014; Halman and van Ingen, 2015; Fetner, 2016), homosexuals are likely to experience various types of discrimination (Riggle, Rostosky and Horne, 2010) and acceptance of LG people has not been achieved among various segments of the population. In particular, studies find that older people (Treas, 2002; Takács, Szalma and Bartus, 2016), the less educated (Ohlander, Batalova and Treas, 2005; Halman and van Ingen, 2015) and highly religious individuals (Gerhards, 2010; Jäckle and Wenzelburger, 2015) are still likely to reject homosexuality. Therefore, the process through which homosexuality becomes acceptable in the eyes of public opinion is still underway.

The mismatch between the rights of LG people at the macro/institutional level and the persistence of negative attitudes towards homosexuality at the micro/individual level raises questions about the diffusion of positive attitudes towards gays and lesbians. When, how, and under which institutional circumstances do people become more accepting of same-sex relationships? Do the characteristics that make certain individuals more likely to accept homosexuality have the same explanatory power across different contexts and over time?

This article addresses these questions by mapping the evolution of positive attitudes towards homosexuality over time, across space, and different subpopulations. It does so by applying Rogers' (1962) diffusion theory on the adoption of innovations to nearly 20 years of data from the European Social Survey (ESS) on 27 countries. Diffusion theory is perfectly suited for this research because it provides an analytical framework to account for all sources of variation and levels of analysis that are involved that is, individuals, time, and space. Using data on same-sex legislation and cluster analysis, we construct a classification of countries distinguishing among those that are more versus less ahead in the process of granting family rights for LG couples, which is then applied to societal growth curve models to account for changes in attitudes. The cross-national variation in the data allows us to test whether and to what extent the diffusion of positive ideas about homosexuality (micro-level) took place across social systems differing in the extent to which they have equalized family rights (macro-level). Furthermore, we test whether individual characteristics known to affect the adoption of innovative behaviour—namely education, religiosity, and personality values—are associated with positive attitudes towards homosexuality across social systems and whether their salience changes over time.

Our results indicate that individual-level variables operate differently depending on the extent to which countries have equalized family rights across the LG and the straight populations. In countries that are far back in the process of providing equal rights to all citizens regardless of their sexual orientation, only a minority of subjects display strong approval of homosexuality, and individual characteristics matter very little, if it all, in predicting positive attitudes. In contrast, the study reveals greater individual-level variation in countries that are advanced in terms of LG rights. In these contexts, we observe considerably greater support for homosexuality among individuals that are endowed with certain characteristics that predict innovative behaviour, such as education, compared with those who lack them.

Diffusion Theory and Attitudes towards Homosexuality

Diffusion theory can be successfully applied to the historical development of attitudes towards homosexuality. Diffusion is defined as 'the process in which an *innovation* is communicated through certain channels *over time* among the *members* of a *social system*' (Rogers, 1962: p. 5, own emphasis). The basic idea of the theory, depicted Figure 1a, is that the number of people adopting an innovative behaviour (y-axis) increases over time (x-axis) following an s-shaped pattern. For the scope of our research, the innovation consists in full acceptance of homosexuality at the individual level. Thus, the core elements of our analyses are *individuals* (*i*) and their feelings about LG people (*y*). To examine the diffusion of positive attitudes towards homosexuality, two further elements are needed: *historical time* (*t*) and geographical *space*, defined as the wider *social systems* (*Z*) individuals are embedded in. Both *t* and *Z* contribute to shaping individual attitudes towards LG people. Another large portion of the variation in attitudes is accounted for by certain *individual characteristics* (*X*). Diffusion theory holds that subjects differ in the extent to which they are prone to adopt innovations, and that different 'adopter categories' can be defined according to individuals' (i) socio-economic status, (ii) personality values, and (iii) communication behaviour. Specifically, individuals who adopt innovations early generally have higher levels of education and belong to the upper social strata compared with later adopters; they are better at coping with uncertainty, less dogmatic and have greater rationality; and they are more socially engaged and have greater interpersonal communication channels than later adopters. Therefore, in our application of diffusion theory to

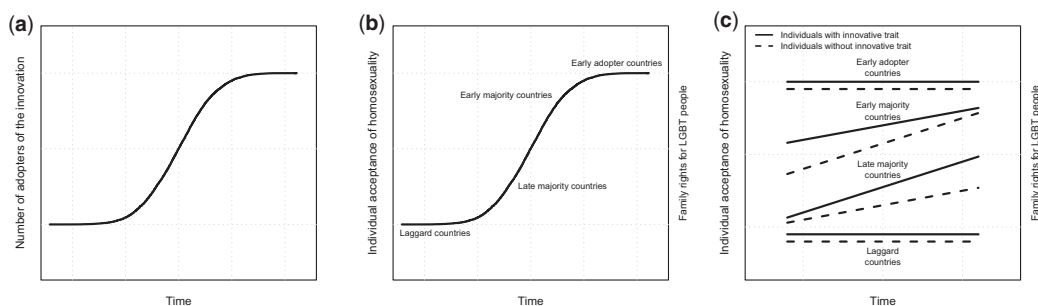


Figure 1. Diffusion of innovations S-curve (Rogers, 1962) (a); macro-level diffusion of positive attitudes towards homosexuality (b); micro-macro diffusion of positive attitudes towards homosexuality (c). Time: Modernization and attitudes towards homosexuality

changes in attitudes towards homosexuality, we test (i) which individuals are faster at adopting innovative behaviour; and (ii) whether the strength of the individual characteristics is the same at different stages in the diffusion process, defined both in terms of time t and space Z . In the following sections we discuss the relevance for our research of these various elements: time, space, and individual characteristics.

Modernization and cultural change theory argues that modern societies have witnessed a shift in individual attitudes to increasingly favour freedom of choice and self-expression. Socio-economic modernization was in large part responsible for this development, which has led to demands for broader liberties ‘in turn led to growing public demands for civil and political liberties’ (Inglehart and Welzel, 2005: p. 2).

Attitudes towards homosexuality are among the areas that have benefitted most from social change in this respect. Empirical evidence on the topic suggests that Western societies have become much more tolerant than in the past (Fetner, 2016). For example, Halman and van Ingen (2015) indicate a positive evolution of attitudes towards homosexuality in Western European countries, while no change is found for Eastern Europe. As for North America, Andersen and Fetner (2008a) show that both Americans and Canadians have become increasingly liberal in their attitudes towards homosexuality. Similar results for the US were also obtained by Treas (2002) using data from 1972 to 1998.

In line with modernization theory and previous research, we anticipate a diffusion of positive attitudes towards homosexuality in the timeframe considered. However, given the large differences between the countries analyzed, we expect the rate of diffusion to differ cross-nationally, as detailed below.

Space: Equalizing Family Rights across Social Systems

Among the straight population, the ideal-typical family formation process traditionally occurred through the marriage and cohabitation of two opposite-sex individuals who eventually had and raised their biological offspring (Heuveline and Timberlake, 2004). In recent decades, this process has become less linear and displays much more variation, with couples living their union without any form of legal recognition by the state and registering alternative forms of legal partnerships when these are available (Sánchez Gassen and Perelli-Harris, 2015), and having children before or without getting married altogether (Lesthaeghe, 2010).

Until very recently, same-sex couples in many countries were not granted these possible choices, as the right to family formation through marriage and adoption was typically restricted to opposite-sex couples. Slowly but steadily this has changed, as LG movements have fought for legal and family rights and countries have progressed in developing legal regulations for people in same-sex partnerships (Gallo, Paladini and Pustorino, 2014). Historically, the first step in the road towards equality in family rights is the institution of registered partnerships granting same-sex couples rights and benefits similar or equal to those granted by marriage. In 1989, Denmark was the first country worldwide to allow same-sex partnerships. As of 2020, 29 countries in Europe guarantee some form of civil union to same-sex partners, as do some of the United States, Canada, several countries in South America and Australia.

Even when laws on registered partnerships guarantee the same rights as marriage, ‘marriage may be deemed to have a higher symbolic value’ (Gallo, Paladini and Pustorino, 2014: p. 173) and its absence indicates the

existence of a legal cleavage between the LG and straight populations. Therefore, the second step to formally equalize the family rights of LG people is to extend to same-sex couples the right to marry. As of 2020, same-sex marriage is allowed in 16 European countries, indicating that marriage is still a privilege of different-sex couples across the continent. Same-sex marriage is also present in English-speaking countries such as the United States, Canada, and Australia, but also Mexico, South Africa, and some countries in South America such as Brazil, Argentina, and Uruguay.

The final goal to achieve equality of family rights among gays, lesbians and straights regards reproductive rights. These include access to assisted reproduction technologies such as IVF (in vitro fertilisation) treatment for lesbian couples (Carpinello *et al.*, 2016), recognition and protection of surrogacy practices (Söderström-Anttila *et al.*, 2016), step-child adoption, and full child adoption (Brodzinsky and Pertman, 2012). Whether gays and lesbians should have full adoption rights is a particularly sensitive issue because it brings into the equation a third subject, the adoptee. Opinions about what is best for the child vary considerably based on individual moral beliefs, leading to heated debates on the topic in many countries (Takács, Szalma and Bartus 2016; Dotti Saní and Quaranta, 2020). Despite these controversies, full joint adoption by same-sex partners is currently legal in 17 countries including the United States, Australia, New Zealand, and several South American and European countries.

Previous research has found that attitudes towards same-sex relationships tend to be more positive in countries that have implemented policies in favour of LG people (van den Akker, van der Ploeg and Scheepers, 2013; Kuntz *et al.*, 2015; Abou-Chadi and Finnigan, 2019). Early research (Allport, 1954) indicated that laws against discrimination fostered intergroup contact and provides citizens with opportunities to learn new norms. Therefore, we expect attitudes towards homosexuality to be more positive in countries that were forerunners in the process of institutionalizing family rights for same-sex couples. To place individuals in the geographical context (Z) of the diffusion process, we use cluster analysis to construct a classification of countries based on whether and when they adopted family laws inclusive of same-sex couples.¹ The analysis—reported in the ‘Research design’ section—reveals the existence of four groups, which we distinguish following Rogers’ (1962) classification, labelling them ‘early adopter’, ‘early majority’, ‘late majority’, and ‘laggard’ countries. As of May 2020, the early adopters and early majority countries grant full family rights to same-sex couples in terms of registered partnerships,

marriage, and adoption. The early adopters are characterized by an early start in the process of equalization of family rights, whereas the early majority had a slower start. A third group of countries, the late majority, is formed by those that have started to equalize family rights but have not completed the process. Finally, there is a group of countries that are laggards, as they have not introduced any right at all. Our preliminary expectation is that the number of people accepting homosexuality shall be higher in countries that are more advanced in terms of LG rights.

Beyond differences in *levels* of acceptance, we hypothesize about cross-national differences in *diffusion rates* over the observed timespan. Specifically, among the early adopters and laggards, we expect to see little or no variation in attitudes over the timespan considered. In the former case, this is because the diffusion process should be nearly completed, leaving little room for ‘upward movements’. In the latter case, it is because the diffusion process has yet to begin. In contrast, we expect to find significant increases in positive attitudes towards homosexuality among the early and late majority countries, where the diffusion process is in full development. Therefore, our first hypothesis is that:

H1: the increase in positive attitudes toward homosexuality over the observed period will be stronger in countries that belong to the early and late majority groups compared to the early adopters and laggard group

This expectation is depicted by the S-curve in Figure 1b.

Individual-Level Characteristics

In the same way that countries can be more advanced in terms of family rights for same-sex couples than others, certain types of individuals are also more likely to have favourable attitudes towards homosexuality. One of the main pillars of diffusion theory, in fact, is that certain individuals in the social system are faster at adopting innovative behaviour than others because they possess certain characteristics. Rogers (1962) indicates three groups of characteristics that are critical in the diffusion process: (i) variables related to socio-economic status, (ii) personality values, and (iii) communication behaviours. Specifically, (i) early adopters are more likely to belong to higher social strata, to be better educated and wealthier; (ii) they have greater empathy, are less dogmatic and more rational, and have more favourable attitudes to change; and (iii) early adopters are more exposed to the media, have more interpersonal communication and are more socially engaged than later

adopters. In fact, some of these characteristics have also been found to drive attitudes towards homosexuality (Ohlander, Batalova and Treas, 2005; Halman and van Ingen, 2015; Takács, Szalma and Bartus, 2016).

In terms of *socio-economic status*, studies find that more highly educated subjects are considerably more likely to be accepting of homosexuality compared with less educated ones, both in the United States (Ohlander, Batalova and Treas, 2005) and in several European countries (van den Akker, van der Ploeg and Scheepers, 2013; Kuntz *et al.*, 2015; Takács, Szalma and Bartus, 2016). By expanding individuals' 'frames of reference', higher education makes it easier for subjects to develop greater cognitive sophistication and acceptance of non-traditionality (van den Akker, van der Ploeg and Scheepers, 2013: p. 68). Wealth and economic standing are also pivotal for diffusion. Innovations involve uncertainties and risks: if an innovation fails, wealthier subjects have better chances of absorbing a loss. When it comes to adopting an innovative attitude, as in the case of attitudes towards homosexuality, the argument is somewhat different. According to the postmaterialist thesis, 'Socioeconomic modernization reduces the external constraints on human choice by increasing people's material, cognitive and social resources' (Inglehart and Welzel, 2005: p. 14), ultimately making people more tolerant and accepting of diversity. In contrast, subjects from the lower social strata face external constraints in terms of material concerns that make them less tolerant of outgroups (Andersen and Fetner, 2008b). For example, studies have shown that economic distress and lower social class are associated with negative attitudes towards homosexuality (e.g. Hadler, 2012).

In terms of *personality values* (Schwartz, 1994), accepting homosexuality means abandoning traditional views on family formation and sexual morality, and moving away from values of conformity, tradition, and security. It signals openness to change, universalism and self-transcendence. Studies find an association between personality values and attitudes towards homosexuality. For example, Kuntz *et al.* (2015) apply the Human Values Scale developed by Schwartz to ESS data. They find a positive association between openness to change and universalism and acceptance of homosexuality, while values of conservatism and power lead to the opposite outcome. van den Akker, van der Ploeg and Scheepers. (2013) also apply Schwartz's Scale and find that conventional subjects and ones who value traditions disapprove of homosexuality to a much larger extent than less conventional and traditional ones. With a slightly different take, Adamczyk and Pitt (2009) using

data for 33 countries find that individuals who value self-expression versus survival values are more likely to approve of homosexuality.

Another variable that well captures personality traits such as attachment to tradition, typical of late adopters of innovations, is religiosity. A multitude of studies confirm a negative association between religiosity and acceptance of LG people, be it in terms of self-reported religiosity (van den Akker, van der Ploeg and Scheepers, 2013), church attendance (Halman and van Ingen, 2015; Dotti Sani and Quaranta, 2020), religious affiliation (Jäckle and Wenzelburger, 2015), or religious characteristics (Miller and Chamberlain, 2013). Studies even find a negative association between macro-level religiosity and individual-level attitudes: on average subjects are more disapproving of homosexuality in countries with higher levels of religiosity (Adamczyk and Pitt, 2009; van den Akker, van der Ploeg and Scheepers, 2013).

Last, in terms of *communication behaviour*, diffusion theory states that individuals are more likely to be innovators if they are more connected to other individuals (Rogers, 1962: p. 290 and ff.). The idea that exposure to a minority or an outgroup can lead to more favourable attitudes towards it is not new in the literature. Its theoretical roots can be traced back to Allport's (1954) contact theory, according to which under certain conditions contact and exposure can correct negative stereotypes and prejudice (Riggle, Ellis and Crawford, 1996). Various empirical studies support these intuitions (Schiappa, Gregg and Hewes, 2006; Skipworth, Garner and Dettrey, 2010; Lewis, 2011).

These findings guide our basic expectation: on average, higher education (i), low conservatism (ii), lower levels of religiosity (iii), and greater social connectedness (iv) will all be associated with more positive attitudes towards homosexuality. However, we anticipate several interaction effects among individual-level variables (X), time (t), and context (Z). These are graphically displayed in Figure 1c, where the expected individual-level differences in the four social systems are plotted against the actual time of the survey. For simplicity, the figure presents the case of two fictitious types of individuals who are opposites in terms of the characteristics discussed above: innovators and non-innovators.

We anticipate that in early adopter and laggard countries, there will be little or no effect of the individual variables at any given point in time. Among the early adopter countries, in fact, the diffusion process is nearly completed, and therefore all social groups should display high levels of approval of homosexuality. Among the laggard group, instead, the diffusion process has yet

to begin, and the potential innovators have yet to detach themselves from the mass. Therefore, all social groups will display low levels of approval of homosexuality. The parallel lines for the early adopter and laggard countries at the top and bottom of the figure summarize this expectation. In the late majority, instead,

H2a: we expect to find a positive interaction between time and individual characteristics, as innovators are the first to develop positive attitudes toward homosexuality.

This can be seen in the fanning out of the slopes for the late majority in [Figure 1c](#). On the contrary:

H2b: we expect a negative interaction between time and innovative traits in the early majority group.

As the diffusion process has been underway for a significant amount of time, the differences among subjects are expected to progressively decline (a fanning in of the slopes).

Research Design

Data

The analysis relies on the ESS, rounds 1 (2002) to 9 (2018). We use 27 countries that have participated in at least four rounds of the survey and which include all the necessary variables for the analysis: Austria, Belgium, Bulgaria, Switzerland, the Czech Republic, Cyprus, Germany, Denmark, Estonia, Spain, Finland, France, the United Kingdom, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Russia, Sweden, Slovenia, Slovakia, and Ukraine. In total, we rely on 201 surveys (i.e. country-years). Applying list-wise deletion of missing values and selecting respondents between 18 and 85 years old, our sample consists of 287,536 respondents. [Supplementary Appendix Tables SA1 and SA2](#) report the surveys used by country and sample sizes by country-year.

While the ESS provides high-quality data on a large number of countries at many points in time and comprises a wealth of variables capturing individual characteristics relevant to the adoption of innovations, the data cover a relatively recent time span and are limited to European countries. This leaves us with unanswered questions about the unfolding of the diffusion process in earlier years and outside Europe. Therefore, we cross-validate our results combining data from the World Value Survey and European Value Study, which cover a longer time span (from 1981 to 2018) and a more diverse pool of countries including Europe, the Americas, and Asia. We

report the data, variables, and results, along with the comment, in [Supplementary Appendix SB](#).

Country Classification

European countries differ in the extent to which their legislation² ensures equal family rights for LG and straight couples. As can be seen from [Table 1](#), in 1989 Denmark was the first country in Europe (and worldwide) to allow same-sex partnerships, followed by Norway in 1993 and Sweden in 1995. Other countries had followed by the end of the 1990s and early 2000s, including the Netherlands (1998), France (1999), Belgium (2000), and Germany (2001). Other countries took considerably longer to adopt laws regulating same-sex partnerships, such as Cyprus and Greece (2015) and Italy (2016), while as of 2020 some countries still lack the first basic form of recognition of same-sex unions (e.g. Poland). Concerning marriage, same-sex couples are currently allowed to marry in 16 European countries, indicating that marriage is still a privilege of different-sex couples across the continent. The Netherlands (2001), Belgium (2003), and Spain (2005) were among the first to allow same-sex couples to marry. Since then, several others have followed, the most recent being Austria (2019) and Germany and Finland (2017). Several countries have yet to reach this outcome, such as Italy, Greece and most Eastern European countries. Finally, The Netherlands was pioneers in terms of adoption by same-sex couples, passing a law already in 2001. Sweden followed in 2003, Spain in 2005 and the United Kingdom in 2008. Later came Belgium, (2006), Norway (2009), and France (2013), while the most recent countries to recognize full joint adoption are Finland and Germany (2017).

We use hierarchical cluster analysis ([Everitt et al., 2011](#)) to group the countries into four categories following [Rogers' \(1962\)](#) classification: 'early adopter', 'early majority', 'late majority', and 'laggard' countries. We use the number of years (from 2020) since the adoption of laws regulating partnership, marriage and adoption for homosexuals in each country and apply the Ward method and Euclidean distance to carry out the analysis.³ The results indicate that the 'early adopter' group comprises Belgium, Denmark, the Netherlands, Norway, Spain, and Sweden. The 'early majority' group includes countries that have fully equalized gay, lesbians' and straight couples by 2020 but had a slower start: Austria, Finland, France, Germany, Ireland, Portugal, and the United Kingdom. The 'late majority' group includes countries that have started to equalize family rights by 2020 but have not completed the process: Cyprus, the Czech Republic, Estonia, Greece, Hungary, Italy, Slovenia' and Switzerland. Finally, the

Table 1. Results of hierarchical cluster analysis based on timing of recognition of family rights for same-sex couples in the countries included in the ESS sample

Country	Registered partnerships	Marriage	Adoption	Type
Belgium	2000	2003	2006	
Denmark	1989	2012	2010	
Netherlands	1998	2001	2001	
Norway	1993	2009	2009	Early adopters
Spain	2003 ^a	2005	2005	
Sweden	1995	2009	2003	
Austria	2010	2019	2016	
Finland	2002	2017	2017	
France	1999	2013	2013	
Germany	2001	2017	2017	Early majority
Ireland	2011	2015	2015	
Portugal	2001	2010	2016	
United Kingdom	2005	2015 ^a	2008 ^a	
Cyprus	2015	—	—	
Czech Republic	2006	—	—	
Estonia	2016	—	—	
Greece	2015	—	—	
Hungary	2009	—	—	Late majority
Italy	2016	—	—	
Slovenia	2006	—	—	
Switzerland	2007	—	—	
Bulgaria	—	—	—	
Lithuania	—	—	—	
Poland	—	—	—	Laggards
Russia	—	—	—	
Slovakia	—	—	—	
Ukraine	—	—	—	

^aWhenever a nation-wide law does not exist, but regional or state-level laws do, we constructed a country level value by averaging over the sub-national values. For a detailed list of the sources of the dates and the calculation of average values see [Supplementary Appendix SC](#).

group of ‘laggards’ has introduced none of the measures discussed above, and includes Bulgaria, Lithuania, Poland, Russia, Slovakia’ and Ukraine.

Variables

The dependent variable measures respondents’ agreement with the statement ‘gay men and lesbians should be free to live their own life as they wish’, which is ordinal with five response categories ranging from 1 (strongly agree) to 5 (strongly disagree). It is a standard indicator to gauge general attitudes towards gay men and lesbians and has been used extensively in previous research ([van den Akker, van der Ploeg and Scheepers, 2013](#); [Abou-Chadi and Finnigan, 2019](#); [Dotti Sani and Quaranta, 2020](#)). Given that the focus of the article is on the innovative component of the attitude—full acceptance of gays and lesbians—we recode the variable to separate those who

strongly agree that is, the innovators, from the rest. Hence, our dependent variable takes two values: 1 (strongly agree) versus 0 (other responses).⁴

At the individual-level, we include education in years to assess the role of socio-economic background.⁵ Personality variables and communication behaviour are captured by the extent to which the respondent meets socially with friends, relatives or work colleagues; the extent to which the respondent says he/she is religious; a summary index of ‘conservatism’ from Schwartz’s Human Values Scale ([Schwartz, 1994, 2012](#)).

Following previous literature, we include a set of controls at the individual level. Because studies show that women and younger people tend to be more favourable towards homosexuality ([Halman and van Ingen, 2015](#); [Kuntz et al., 2015](#)) we control for gender and age in years. We then include the left-right scale capturing the respondent’s self-assessment of ideological position, and

employment status. We also add indices of ‘universalism’, ‘openness’, and ‘power’ (see Schwartz, 1994). Summary statistics are reported in [Supplementary Appendix SA](#), along with details on the variables.

At the country-year level we include time measured in years⁶ and the classification of countries according to the recognition of homosexuals’ rights illustrated in [Table 1](#).

Model

The structure of the ESS entails that observations can be organized in a hierarchy: respondents i are the level 1 (individual-level), country-years j are the level 2 and countries k are the level 3. We apply a logistic three-level hierarchical model (Gelman and Hill, 2006) in the form of a societal growth curve model (Fairbrother, 2014), which predicts the variation of the effect of time on attitudes across countries by means of country-level variables. To test H1 (the increase in positive attitudes towards homosexuality over the observed period will be stronger in countries that belong to the early and late majority groups compared with the early adopters and laggard group), we specify the following model:

$$P(y_{ijk} = 1) = F(\alpha_{jk} + \beta_1 x_{1ijk} + \dots + \beta_n x_{nijk}) \quad (1)$$

$$\alpha_{jk} = \delta_k + \gamma_k \text{time}_{jk} + u^{(x)} \quad (2)$$

$$\delta_k = \mu_\delta + \nu w_k + u^{(\delta)} \quad (3)$$

$$\gamma_k = \mu_\gamma + \nu w_k + u^{(\gamma)} \quad (4)$$

[Equation \(1\)](#) represents the individual level. The term y_{ijk} is the dependent variable, F represents the inverse of the logit function, α_{jk} indicates the random intercepts that is the variation in attitudes, which vary across country-years. The terms x and β respectively represent the individual-level variables and the fixed coefficients capturing their effects on attitudes towards homosexuals.

[Equation \(2\)](#) models the variation in attitudes across country-years and it represents level 2. The term time_{jk} represents time in years, while γ_k represents the random coefficients of time which vary across the k countries. The random effects δ_k represent the variation in attitudes across countries. The term $u^{(x)}$ indicates the level 2 residuals, which are assumed to be normally distributed with mean 0 and standard deviation $\sigma^{(x)}$. Therefore, the variation in attitudes across country-years is a function of time, its random coefficients, and the country-level random effect. These two quantities are also modelled because they vary across-countries.

[Equations \(3\) and \(4\)](#) model the cross-country variation in attitudes and the random coefficients of time and

represent level 3. The cross-country variation in attitudes is modelled by the country-level variable w_k , which represents the classification of countries. The coefficients ν indicate the association between the outcome and the groups of countries and allows us to test whether the levels of attitudes towards homosexuality are significantly different among the four groups of countries, while μ_δ indicates the overall level of attitudes. The cross-country variation in the association between time and the outcome is modelled by μ_γ , which represents the mean of the random coefficients γ_k , the country-level variable w_k , indicating the country classification, and its coefficients ν .

To test hypotheses H2a (positive interaction between time and individual characteristics in late majority group) and H2b (negative interaction between time and innovative traits in the early majority group), we modify the model as follows:

$$P(y_{ijk} = 1) = F(\alpha_{jk} + \beta_{1jk} x_{1ijk} + \dots + \beta_n x_{nijk}) \quad (5)$$

$$\beta_{1jk} = \varphi_k + \omega_k \text{time}_{jk} + u^{(\beta)} \quad (6)$$

$$\varphi_k = \mu_{\beta_{1jk}} + \nu w_k + u^{(\varphi)} \quad (7)$$

$$\omega_k = \mu_\omega + \zeta w_k + u^{(\omega)} \quad (8)$$

[Equation \(5\)](#) includes the term β_{1jk} , which is a random coefficient of the effect of an individual-level variable of interest (included one at a time) varying across the country-years j and countries k . Therefore, in addition to equations (2–4) (which are not reported for simplicity), this model includes equations predicting the variation in the random coefficient(s). The variation in random coefficients β_{1jk} is modelled by time and its random coefficient ω_k , which varies across countries, and the country-level random coefficient φ_k ([equation \(6\)](#)). This, in turn, is modelled, as is shown in [equation \(7\)](#), by its overall mean, $\mu_{\beta_{1jk}}$, the country classification w_k and its coefficients ν . The country-level random coefficients of time reported in [equation \(6\)](#) are modelled as in [equation \(8\)](#), where the country-level random coefficients ω_k , which capture how the effect of individual-level variables on attitudes varies over time, are modelled using their overall mean μ_ω , the country classification w_k and their coefficients ζ . The terms u represent the residuals of each level, and are all assumed to be normally distributed with mean 0 and standard deviation σ . By combining the equations, we obtain a model with three-way cross-level interactions between the individual-level variable of interest, time, and the country classification, allowing us to test whether trends in the association between the individual-level variables and attitudes vary according to countries’

recognition of family rights for same-sex couples. We summarize information about the effects using graphs, while tables with estimates are reported in [Supplementary Appendix SA](#).

The Diffusion of Positive Attitudes towards Gays and Lesbians

[Figure 2](#) reports the probabilities of strongly agreeing with the statement ‘Gays and lesbians should be free to live the life they wish’ in the 27 countries over time. The probabilities are computed with an unconditional model (see [Supplementary Appendix Table A5](#), model 1) and are net of the country-level random effects in order to clearly show the within-country variation. Most countries belonging to the early adopter group display a positive trend, with an increasing proportion of subjects who strongly agree with the statement. In some of these countries, the increase in positive attitudes is decidedly positive (e.g. Spain, Sweden, and Norway). The increase is somewhat more modest, but nonetheless notable, in some of the countries belonging to the early majority group (e.g. France). The trend for the late majority group is positive in most of the countries, yet shallower (e.g. Switzerland and Estonia). Moreover, certain countries in this group display no increase at all in positive attitudes or even a decrease (e.g. Hungary). Finally, among the laggard group, the trends are mixed (negative in Bulgaria and Russia, positive in Lithuania and Poland). These results seem to move counter to our first

hypothesis according to which the growth in support for homosexuality would be larger in the early and late majority compared with the early adopters and laggard groups. On the contrary, the empirical evidence suggests that attitudes towards same-sex relationships have become more positive in contexts that are the most advanced in terms of LG rights. We now move to the results of the hierarchical model to formally test H1.

[Figure 3](#) reports the probability of strongly agreeing with the statement by year of the survey in the four groups of countries. The probabilities, computed at the means of the covariates, are predicted from model 4 in [Supplementary Appendix Table SA5](#). The figure shows that the association between time and attitudes varies considerably across the country classification: the slope is flat for the laggard group and becomes progressively steeper for the late and early majority groups. Therefore, the strongest rate of change can be found in the group of early adopters, where the proportion of those who strongly support homosexuality increased considerably over the period of observation. Among the laggards, we find a small and non-significant decrease in the proportion of those who strongly agree with the statement (from 0.116 to 0.101). In contrast, the late majority group experienced a limited increase in positive attitudes (from 0.174 to 0.205 between 2002 and 2019). Much larger increases are found for the early majority and early adopter groups. Specifically, the proportion of those who strongly agree in the former group nearly doubled, going from 0.25 to 0.47 between 2002 and

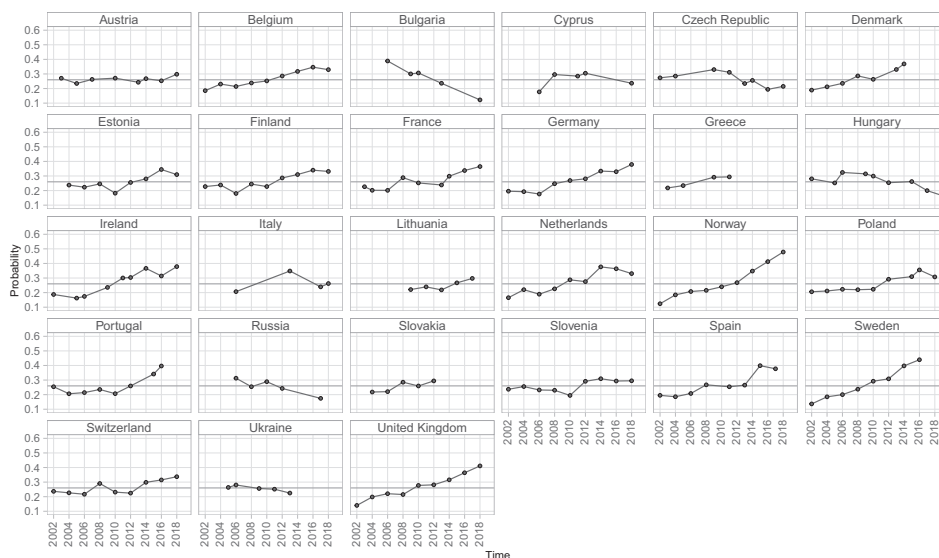


Figure 2. Predicted probabilities of agreeing strongly with the statement ‘Gays and lesbians should be free to live the life they wish’ in the 27 European countries over time (net of country-level random effects).

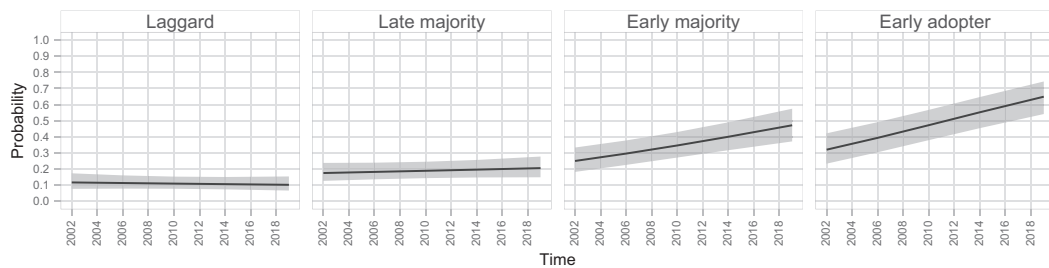


Figure 3. Predicted probabilities of agreeing strongly with the statement ‘Gays and lesbians should be free to live the life they wish’ over time in the four groups of countries, with 95 per cent confidence intervals.

2019. The increase in the latter group was even stronger, with the proportion growing from around 0.32 in 2002 to about 0.65 in 2019.

Therefore, contrary to H1, our results show that most of the change in attitudes towards gays and lesbians occurred in the two groups of countries that are more advanced in terms of LG rights. The pattern that emerges for the laggard group, instead, is in line with our expectations. Overall, these results suggest that the spread of positive attitudes towards homosexuality lags considerably behind the macro-level recognition of family rights for gays and lesbians.

Do these trends differ among subjects with different socio-economic status, personality values, and communication behaviour within the four groups? To answer this question, we resort to estimates of the following model specification. We estimate one model for each individual-level variable of interest which includes the three-way interaction between time, country classification and the individual-level variables. The estimates of these models are reported in [Supplementary Appendix Table SA6](#), models 5a–d. [Figure 4](#) shows how the interaction between the individual level characteristics and time varies among the four groups of countries.

Starting with the laggard group, our expectation is largely confirmed: as can be seen from the slopes in [Figure 4](#), there is no relevant association between time and the individual-level variables. In other words, regardless of individual characteristics, no evolution in attitudes towards homosexuality can be found in this group of countries. For instance, concerning education, we find a mild and non-significant increase in the predicted probability of strongly agreeing with the statement among highly educated subjects (from 0.11 in 2002 to 0.18 in 2019), while the prediction for the less educated group declines. The probabilities for social meetings and religiosity slightly decline or remain unchanged throughout the observed period, whereas we observe a considerable decline in support for the

statement among the least conservative subjects (from 0.27 in 2002 to 0.13 in 2019) and substantially no change for the more conservative ones, whose support remains low across the entire period.

Among the late majority group, we start to see some differences between the ‘innovator’ and the ‘non-innovator’ types. The least endowed individuals in terms of education and frequency of social meetings display only minor changes in attitudes over time. For example, the probability of strongly agreeing is 0.127 in 2002 and 0.086 in 2019 among the least educated subjects and goes from 0.164 to 0.134 for those with few social contacts. In contrast, the probability increases considerably among the more highly educated group of subjects, going from 0.233 in 2002 to 0.394 in 2019. The slopes also indicate a growth in support among the most socially engaged subjects, but it does not reach statistical significance in this case. In terms of religiosity and conservatism, [Figure 4](#) suggests a mild positive evolution in attitudes towards gays and lesbians among the least religious (from 0.217 to 0.275) and the least conservative subjects (from 0.30 to 0.40).

Counter to our expectations, the predictions for the early majority group indicate a generalized positive evolution of attitudes towards homosexuality. The slopes for education indicate that strong agreement with the statement increased among all levels of education. This increase was the greatest among the more highly educated, as can be noticed from the clear fanning out of the lines. The proportion grew by about 30 percentage points. The least educated also show considerable signs of change, going from 0.16 to 0.289 over the period observed. A somewhat similar pattern can be observed in terms of religiosity and conservatism: the least religious and the least conservative individuals had the largest increases in positive attitudes, and a notable positive slope can also be found among the more religious and conservative groups. In contrast, the evolution of positive attitudes

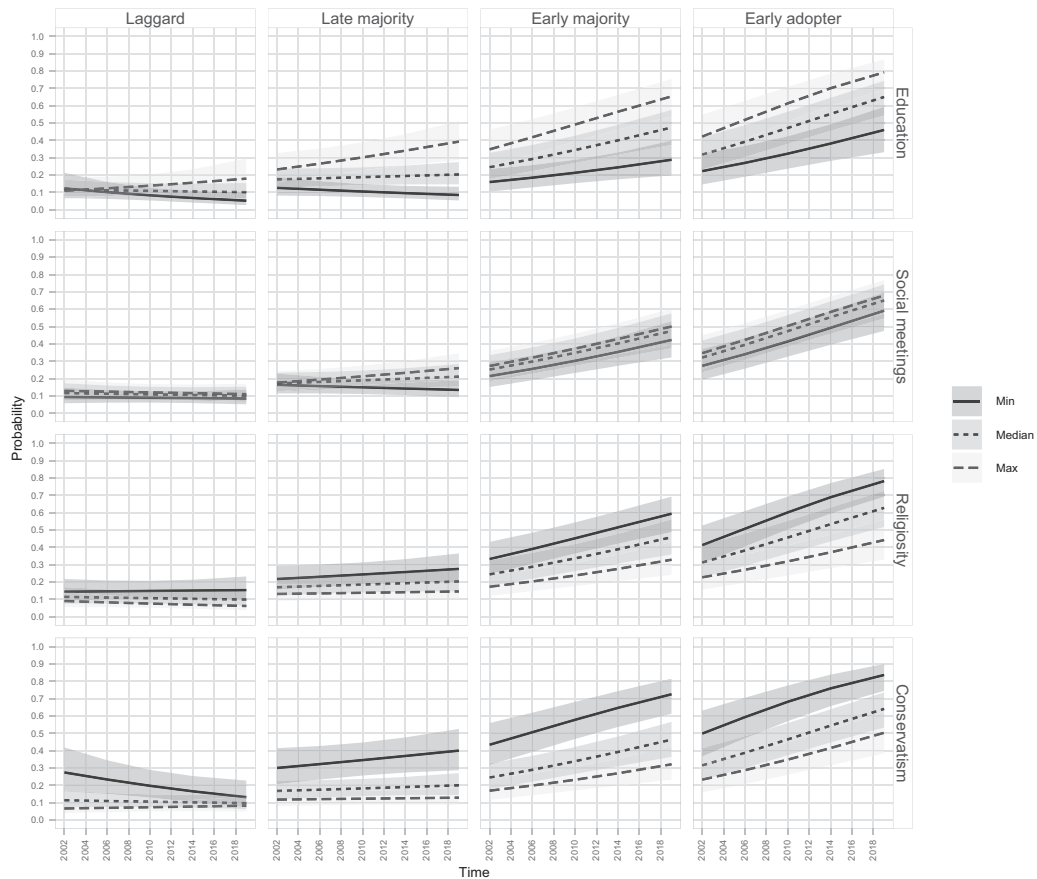


Figure 4. Predicted probabilities of agreeing strongly with the statement ‘Gays and lesbians should be free to live the life they wish’ over time in the four groups of countries, at the minimum, median, and maximum value of individual-level variable of interest, with 95 per cent confidence intervals.

occurred in a similar fashion regardless of the frequency of social meetings.

Finally, the picture that emerges for the early adopters is quite similar and once again our expectation is not fulfilled. Over time, subjects scoring both low and high on each predictor variable experienced an increase in support for homosexuality. The increase is somewhat larger for the more highly educated than for the less educated, for the least religious than for the most religious and for the least conservative compared with the most conservative. Virtually, no differences in the steepness of the slopes can be observed when it comes to the frequency of social meetings.

Based on these results, we reject H2a, in which we expected a negative interaction between time and individual characteristics in the early majority countries. We anticipated that individual gaps would close in this group of countries. Instead, differences between individuals did

not decline over the period observed but remained constant or even increased. However, we do find some support for H2b, as we find a positive interaction between time and years of education, conservatism and, to a lesser extent, the frequency of social meetings in the late majority group.

Importantly, our analyses reveal a positive interaction between time and individual characteristics in all groups except the laggards. In all other groups, what varies is the *steepness of the slopes or the pace of the change* for the innovators versus the non-innovators. Consider the case of education. In the late majority group, the slope for the poorly educated is flat while that for the more highly educated group is positive: the former have yet to pick up the innovation while the latter have started to do so. In the early majority group, the slopes for the poorly educated and the highly educated are positive. The diffusion process now involves both

‘innovators’ and some of the ‘non-innovators’. The process advances further among the early adopter group: the two slopes are now closer to one another, suggesting that convergence might not be far.

Conclusions

This article has applied diffusion theory (Rogers, 1962) to the study of attitudes towards gays and lesbians across countries and over time. Previous research has shown that despite the introduction of laws granting family rights for LG people (Gallo, Paladini, and Pustorino, 2014; Merin, 2010) and notwithstanding the spread of positive attitudes towards homosexuality, large within- and between-country differences persist in the extent to which public opinion accepts the LG population (Andersen and Fetner, 2008a; Halman and van Ingen, 2015; Fetner, 2016; Takács, Szalma and Bartus, 2016). The lack of acceptance of same-sex relationships is especially puzzling when found in countries that are advanced in terms of LG rights, because it suggests that the efforts to build a normative framework that gives equal rights to all citizens have not been sufficient to completely move public opinion.

The article makes three main contributions to the literature. First, by applying diffusion theory (Rogers, 1962) to nearly two decades of data from the ESS for 27 countries, the article provides a comprehensive and up-to-date picture of the spread of positive attitudes towards gays and lesbians in Europe. Diffusion theory is especially suited for this research design because it accounts for variation among individuals over time and across space and can be applied as interpretative framework for the classification of countries at the macro-level. Second, the article shows that individual characteristics that are known to be critical for the adoption of positive attitudes towards same-sex relationship do not have the same salience across different social systems and over time. Third, our results show that even in countries that have long since adopted laws equalizing family rights for gay couples, inequalities still exist, indicating that changes in public opinion occur at a slower pace compared with institutional changes.

Our results confirm previous studies showing that individual attitudes towards same-sex relationships are more positive in contexts that have advanced legal rights for the LG population (van den Akker, van der Ploeg and Scheepers, 2013; Kuntz *et al.* 2015; Abou-Chadi and Finnigan, 2019). However, individual-level differences within each group of countries suggest that the diffusion process is still not complete. In fact, even in countries that have fully equalized family rights for all

citizens regardless of their sexual orientation we still observe large differences in attitudes between subjects that are differently endowed with certain individual-level characteristics. Indeed, in all the country groups with the exception of the laggards, all subjects become more accepting of homosexuality over time but the growth in positive attitudes occurs at a faster pace among subjects endowed with a characteristic (e.g. education) that drives innovative behaviour. This finding is counter to our hypotheses because we expected to find this type of development only in the late majority countries that is, in countries where family rights for LG people are still not fully present. In contrast, we have observed these individual gaps even in early majority and early adopter countries, where equality in the family rights of the straight and the LG populations has reached an advanced stage or is even complete.

Overall, these findings suggest that changes in public opinion occur at a slower pace compared with institutional changes: while many countries worldwide have introduced laws equalizing the family rights of diverse families, homonegativity at the individual level persists not just in countries that are laggards in the process but even in the so-called early adopter countries. The fact that citizens in certain social groups take time to catch up and adjust their values to existing laws suggests that institutional change is a prerequisite for individual-level change. At the same time, state-level recognition of same-sex relationships does not have an immediate effect on attitudes, and so appears to be a necessary but not a sufficient condition for the acceptance of homosexuality.

Two limitations of this research could be fruitfully addressed in future studies. First, we acknowledge that our empirical approach was limited by data (un)availability. For instance, certain variables gauging ‘innovativeness’ would have considerably enriched the analysis but were not fielded altogether (e.g. wealth), while others are only available in some country-years (e.g. media consumption). Second, our analyses do not in any way account for causation. The article has primarily addressed whether the association between certain independent variables of interest and attitudes towards gays and lesbians varies across countries and over time. Without comparative longitudinal or experimental data, we cannot say whether increasing someone’s education or reducing their religiosity would result in increasing their acceptance of same-sex relationships in countries with different LG rights.

What can be said about the future of attitudes towards homosexuality? According to the ‘reading history sideways approach’ (Thorntorn, 2001: p. 451): ‘various societies in the cross-section [can be] identified as

proxies for the various stages in a developmental trajectory'. This would lead us to think that positive attitudes towards gays and lesbians will progressively spread and that the acceptance of homosexuality will diffuse across all social strata and all institutional contexts. However, we live in a world where backward ideas, non-scientific facts, and fake news (such as the Earth being flat) are well alive even in wealthy democratic countries. Therefore, it would be naïve to expect societies to ever become fully accepting of homosexuality.

Notes

- 1 Positive attitudes towards homosexuality and changes therein could also be a consequence of improved societal socioeconomic circumstances. However, the European countries considered in this article differ more in terms of family laws for same-sex couples than in terms of national wealth, therefore making the former more relevant to predict variation in individual-level attitudes.
- 2 For a detailed account of when countries introduced equality in family rights see [Supplementary Appendix SC](#).
- 3 When countries have not introduced these laws, we assign negative values (–5) to differentiate them substantially from the other countries. Dendrograms from the cluster analysis and box plots showing the distribution of the input variables by group are shown in [Supplementary Appendix SA](#).
- 4 As a robustness test, we also ran the models with a different dependent variable taking two values: 1 (strongly agree or agree) versus 0 (other responses). Results are coherent with those presented in the article. Models are reported in [Supplementary Appendix Tables SA8 and SA9](#).
- 5 Another candidate to capture socio-economic background is income. However, the income variable in the ESS is affected by a very high number of missing cases given the sensitive nature of the question, especially in some countries/income groups. Due to this limitation, it was excluded from the analyses. Similarly, we lack a good and stable measure of media consumption over the different rounds of the ESS. In fact, while in each round media consumption is assessed, its measurement has changed to capture new means of media consumption, making longitudinal comparisons unfeasible.
- 6 We ran additional models including time as quadratic and cubic to test for the presence of a non-linear effect. See [Supplementary Appendix Figure SA2 and Table SA7](#).

Supplementary Data

[Supplementary data](#) are available at *ESR* online.

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- Giulia M. Dotti Sani** is an assistant professor in the Department of Social and Political Sciences at the University of Milano. Her main research interests concern gender inequalities within households and inequalities in public opinion. Her works have appeared in international peer-reviewed journals, such as the *European Sociological Review*, the *Journal of Marriage and Family*, and *Work, Employment and Society*.
- Mario Quaranta** is an assistant professor in the Department of Sociology and Social Research at the University of Trento. His main research interests include comparative political behavior and public opinion. His last publications include articles appearing in the *International Journal of Public Opinion Research*, the *European Journal of Political Research*, and *Information, Communication & Society*.