‘When things go wrong and people are afraid’: An evaluation of group polarisation in the UK post Brexit

Ian R. Murray[a], Anke C. Plagnol[a] and Philip J. Corr[a]

[a]Department of Psychology, City, University of London, UK

September 2017

Abstract

How divided is the UK in the aftermath of the Brexit result? The present study addresses this question by administering a multiple round mini-dictator game to a sample of 1,558 British adults to examine how party and EU referendum identity are associated with non-political social behaviour. Social preferences are benchmarked in an identity neutral round. Further rounds then examine how social preferences diverge from this benchmark across a range of induced in-group and out-group scenarios based on party identity (e.g., Conservative and Labour) and EU referendum voting identity (leave and remain). There is a significant weakening of pro-social behaviour in all out-group conditions, suggesting out-group negativity rather than in-group favouritism. Bias based on recently formed EU referendum identities is found to be as strong as bias based on traditional party identity showing that the ongoing debate about the UK’s membership of the EU has generated significant levels of affective polarisation. Furthermore, EU referendum identity moderates social preferences in out-group scenarios, such that EU Remain supporters exhibit significantly weaker levels of pro-social behaviour towards competing partisans. Thus, people who have found themselves on the losing side in the Brexit referendum exhibit significantly more animus than Leave voters. The results of this study make a novel contribution to the nascent literature on the social and behavioural impacts of the Brexit result, and add to the wider literature on group-contingent social preferences.

Keywords: Brexit, political identity, voting, dictator games, social preferences, pro-social behaviour

JEL classification codes: A13, C72, C91, D72

Corresponding author:

Anke C. Plagnol, Department of Psychology, City, University of London, Northampton Square, London, EC1V 0HB, UK.
Anke.plagnol.1@city.ac.uk

> "….the reasons for exit are clearly emotional…they look short-term and based on irritation and anger. They won't regret it because regret is rare. They'll find a way to explain what happened and blame somebody. That is the general pattern when things go wrong and people are afraid."
>
> (Daniel Kahneman, quoted in The Telegraph, June 6th, 2016)

1 Introduction

On the 23rd of June 2016, the UK electorate voted to leave the European Union (so-called Brexit), with 51.9% voting Leave vs. 48.1% voting Remain in a referendum that saw a record turnout of 72.2% (The Electoral Commission, 2017). The majority was considerably smaller than the 67.2% of voters who elected in 1975 to remain in the European Community (Saunders, 2016), but this first EU referendum was followed by decades of volatile attitudes towards EU membership (Clarke et al., 2017).

The outcome of the 2016 referendum delivered one of the most profound shocks to the political status quo in living memory. Since then, the reasons for pro-Brexit votes have been thoroughly investigated by economists, political scientists, and other social scientists and it seems clear that there is no single social, political or economic cause but rather a combination of circumstances. The leave vote was particularly strong among lower-skilled, older, poorer and less-educated voters (Birch, 2016; Bogdanor, 2016; Curtice, 2016; Goodwin and Heath, 2016; Matti and Zhou, 2016; NatCen Social Research, 2016; O'Reilly et al., 2016), and those living in areas of high unemployment and with high shares of manufacturing employment (Becker et al., 2017) - in short, groups that usually benefit less from globalisation (Hobolt, 2016). Others have identified additional contributing factors to the Leave vote: the austerity policies that followed the 2007 financial crisis (Dorling, 2016), problems with the NHS that

were perceived to be immigration-related (Welfens, 2016), perceived lack of immigration control (Goodwin and Milazzo, 2017; Hobolt, 2016), lack of trust in the Cameron government (Hobolt, 2016), hostility towards migration (James, 2016), an information blunder by the UK government (Welfens, 2016), and identity politics (NatCen Social Research, 2016). The Brexit vote can further be seen as a protest vote (Kostadinova, 2017) as referenda present an opportunity to voice dissatisfaction with the sitting government (Ryan, 2016), in this case, the pro-EU Cameron government. Indeed, previous research has shown that people's votes are not always motivated by their preferences over the outcome, but sometimes by non-consequentialists motivations (Shayo and Harel, 2012). Thus, votes are often expressive, especially when identity politics prevail (Arenas, 2016).

Most of the early analyses of the EU referendum outcome by economists and political scientists focused on who voted for Brexit and why. However, the economic and social consequences of the Brexit result remain highly uncertain and fiercely debated. An immediate economic recession failed to materialise (Johnson and Mitchell, 2017), despite numerous predictions about the short- and long-term economic consequences of a Leave vote majority to the contrary prior to the referendum (e.g., Dhingra et al., 2016). The social consequences are even less clear, but two new labels have entered the popular lexicon – 'Remainers' are those who favoured remaining in the EU while 'Leavers' voted for exiting the EU.

The present study investigates the social and behavioural impacts of the Brexit result by looking at social preferences in relation to these newly-formed political identities, i.e. Leavers vs Remainers. In particular, we ask to what extent social preferences, as revealed in a mini-dictator game, are group-contingent (see also Akerlof and Kranton, 2000; Chen and Li, 2009); in this case, whether participants show favouritism or negativity towards people who share or do not share their preferences for EU membership and political party (e.g. Conservative, Labour).

Commentators in politics, the media and academia argue that the referendum campaign and result catalysed a populist realignment of UK politics focused on competition between a large group of people who feel 'left behind' (Goodwin and Heath, 2016) by neo-liberal economic policy – they also felt alienated by cultural transformation and a 'metropolitan elite', who have benefited from globalisation and who warmly endorse the shift towards more progressive social values (Birch, 2016; Inglehart and Norris, 2016; Kibasi, 2016). Furthermore, the referendum has created an 'intractable problem' (Runciman, 2016) by circumventing the traditional cycle of representative democracy and allowing the losers little obvious recourse to overturn the result. With the formal process for the UK's departure from the EU expected to take several years, there is clearly much scope for the protracted negotiations to further increase the salience of established and new political identities and to intensify competition between opposing groups.

The post-referendum landscape in the UK is consistent with previous research which has shown that political identities and associated in-group biases are highly mutable (Cikara and Van Bavel, 2014; Foddy et al., 2009); they vary as the salience of particular issues and characteristics of group interaction change over time. Recent research in the US has also documented a strengthening of such an 'affective polarisation' (bias directed towards political out-groups) and it is increasing a tendency to 'spill over' into everyday non-political behaviour (Iyengar and Westwood, 2015). However, there is a lacuna in these areas of research relating to European and UK contexts. The new voting identities (i.e. leave and remain), as well as the political divisions that have been catalysed by the EU referendum, offer a unique opportunity to extend this literature and examine the behavioural consequences of this recent and highly salient re-categorisation of political identities in the UK.

The aim of the present analysis is to provide an evaluation of the extent of post-referendum polarisation and its potential to spill over into everyday life in the UK. Adapting a social preferences framework, previously used to measure 'spiteful' behaviour (Bühren and Kundt, 2015) and inequity aversion (Fehr et al., 2008), we administered a mini-dictator game (Guala and Filippin, 2016) to a nationally representative sample of the UK population shortly after the referendum. The mini-dictator game was played over seven rounds in which the description of player 2 varied in each round, including various in-group and out-group scenarios (Ockenfels and Werner, 2014) – the in-group is the one with which one identifies in terms of attitudes, opinions, and affective states, whereas the out-group is the opposing group (these can be based on resource competition or entirely arbitrary, for example, based on random colour badge designation). This allowed us to assess whether respondents' social preferences differed depending on the information they had about a hypothetical player 2, including their age, gender, traditional party identity (i.e. Conservative v Labour), and voting preference in the EU referendum (i.e. leave v remain).

Previous research has shown that cooperation is greater in economic games when group affiliations are known, e.g. participants contribute more to a public good when the other player belongs to their in-group (Guala et al., 2013). Group identity similarly affects behaviour in prisoner dilemma games (e.g., Goette et al., 2006) as well as the psychological benefit players receive from economic games (Hargreaves Heap and Zizzo, 2009). In a recent study, Grosskopf and Pearce (2017) found that players who were indirectly told in a dictator game about the receiver's ethnicity (implied by an English or Muslim sounding last name) allocated, on average, significantly less money to Muslim receivers than to English receivers or in an anonymous treatment condition. The experiment was conducted in England, 18 months before the Brexit referendum was announced, and indicates out-group negativity (but not in-group favouritism) based on ethnicity. Ben-Ner et al. (2009) show that those who belong to the in-

group are affected favourably by social identity; in addition, powerful differentiators include family and kinship, followed by political views, religious belief, sports teams, and even music preferences. These in-group/out-group effects are even seen in modern collectives, as among Israeli kibbutz members who favour anonymous in-group members as compared to anonymous city residents (Ruffle and Sosis, 2006).

2 Dimensions of political identity and polarisation

Political identity is widely understood in the literature as a specific form of social identity. Social identity is defined as "a person's sense of self derived from perceived membership in social groups" (Chen and Li, 2009, p.431). Social identities are thought to be formed via a three-stage process of mental categorisation (Tajfel and Turner, 1979). The first stage involves assigning oneself and others to a category (e.g. women, Manchester United fans, Brexiters or Remainers). Following this categorisation, in the second stage, a process of identification involves people adopting the identity and behavioural norms of the social categories to which they perceive they belong. In the third stage, a process of comparison results in evaluations of others based on their categorisation as members of in-groups and out-groups. People attach significant emotional weight to group membership and, therefore, self-esteem is dependent on positive evaluations of the in-group relative to out-groups. Political identity, seen as a specific form of social identity, contributes towards an individual's self-esteem and is driven by a continual process of upward and downward social comparison (Green et al., 2004; Greene, 1999; Huddy et al., 2010; Iyengar et al., 2012; Iyengar and Westwood, 2015). Of relevance, social groups can be arbitrary and without objectively-defined significance; yet people readily and rapidly align with them and these group effects can influence economics-related behaviour (Corr et al., 2015). In addition, in-group effects are observed with silent identification, so it is not based on an expectation of reciprocity alone (Bohnet and Frey, 1999).

In terms of political identity, the literature demonstrates how people draw on numerous social categories and comparisons. For example, Hoewe and Hatemi (2016) make a clear distinction between identity based on political ideology (e.g. 'Conservative' and 'Liberal' or 'Left' and 'Right') and identity based on political party (e.g. Democrat or Republican in the US or Labour and Conservative in the UK). Identities based on political ideology can be understood as a 'psychological mind-set or value system' (Hoewe and Hatemi, 2016) while the process by which party-based identities are formed more closely resembles that which supports the formation of other social identities such as those based on religion, ethnicity, gender etc. (Bawn, 1999; Devine, 2014; Hoewe and Hatemi, 2016; Malka and Lelkes, 2010).

Further distinctions have been made between political identities that have their locus in 'issue based ideology', 'symbolic ideology' (Ellis and Stimson, 2012) and 'single issue positions' (Mason, 2015). Issue based ideology is determined by party (Republican v Democrat) whereas symbolic ideology (e.g. Liberal, Conservative), in this formulation, *is* a social identity rather than a psychological mindset or value system (as described by Hoewe and Hatemi, 2016). But, in this interpretation, it is not necessarily connected to a specific set of issues or policy positions (Devine, 2014; Ellis and Stimson, 2012; Malka and Lelkes, 2010). Single-issue-based identities may be related to a particular symbolic ideological identity (e.g. Liberal, Conservative, Left, Right etc.), but it is not necessary for such an identity to be fully congruent with a symbolic ideology or indeed consistent with a set of policies or issues embodied by a party based ideology (Mason, 2015).

These separate interpretations of political identity support competing interpretations of polarisation within the literature. One strand understands polarisation as arising from substantive differences on issues and ideology (Mason, 2015) while other researchers (e.g., Iyengar et al., 2012) focus on 'affective polarisation' which understands increases in bias and

discrimination as being driven by a process of social identification with party or ideological *labels* rather than specific issue or policy positions.

It follows that the Brexit leave and remain identities that have been created by the EU referendum are multi-faceted. They may be understood as single-issue positions that cut across more symbolic ideological (i.e. Left and Right) and party based identities (i.e. Conservative and Labour). However, they can also be understood as symbolic social identities. Therefore, cognitive heuristic theory (Brewer and Kramer, 1985; Tversky and Kahneman, 1974) provides a useful generic framework for integrating these different interpretations allowing all forms of political identity to be understood as a form of mental shortcut, heuristic or frame which people use to make decisions under conditions of constraint and uncertainty (Brewer and Kramer, 1985; Chandra, 2012). By understanding EU referendum identity and traditional party identity in this way, the present study will examine how the activation of different political identities cues bias towards in-groups and out-groups.

2.1 Spill-over of political identity and polarisation into other domains of behaviour

A number of studies have demonstrated the capacity of political identity and competition to 'spill over' into a wide range of non-political domains, including people's social, education and employment choices (Alford et al., 2011; Baldassarri and Gelman, 2008; Brooks and Manza, 1997; Cavior et al., 1975; Inglehart, 1990; Kalmijn, 1998; McAuley and Nutty, 1982; Rubinson, 1986; Stoker and Jennings, 2005; Watson et al., 2004; Zuckerman, 2005). For example, the extent of this spill-over is demonstrated by a recent study focusing on online dating. Huber and Malhotra (2015) found that a shared political identity results in more favourable evaluations of potential dating partners. Furthermore, the size of the effect is similar to that observed when participants share other forms of social identity such as race and education.

There is also considerable evidence that elections increase the salience of social identity and activate heightened levels of social comparison and competition between groups (Dunning, 2011; Iyengar and Simon, 2000; Michelitch, 2015; Schattschneider, 1960; Wilkinson, 2004). Furthermore, these heightened levels of competition may endure for a considerable time after an election, particularly in cases where the result is perceived to create further uncertainty, debate or controversy (Fisher, 1999; Tucker, 2007). For example, in a field study of market price bargaining in taxi drivers conducted around the 2008 election in Ghana, Michelitch (2015) found that heightened political competition around election time is associated with a significant increase in economic discrimination towards non-partisans and an increase in favourable treatment of co-partisans.

The relevance of this literature to the post-referendum landscape in the UK is clear. The referendum has created new political identities (Leavers and Remainers) and there is scope for sustained competition between these groups during a prolonged period of uncertainty as negotiations around the UK's exit from the EU unfold. Therefore, the present study will use economic games to examine how political identities cue discrimination in non-political behaviour.

2.2 Using economic games to measure social preferences and in-group bias

We use a dictator game to develop a behavioural measure of partisan bias; such games are widely used in the social preferences field, where such factors as social distance and naming players have been studied (Charness and Gneezy, 2008). The dictator game, originally developed by Kahneman et al. (1986), is an economic game played between two players. Player 1 (the 'dictator') is asked to split an endowment with Player 2 (the receiver). Player 2 is passive (he cannot accept or reject Player 1's offer) and, therefore, is unable to influence the outcome

of the game in any way. This negates the need for the dictator to act strategically and consider the other player's payoff or behaviour as there is no opportunity for revenge from player 2.

Dictator game experiments tend to produce results which challenge standard economic theory which holds that a rationally self-interested dictator should retain the entire endowment. Generally, players in dictator games give around 20% of their endowment to the other player (Forsythe et al., 1994). Thus, behaviour in dictator games is consistent with similar patterns of 'other-regarding preferences' recorded in different economic games such as the ultimatum game, trust game and public goods games. Such results supported the development of inequity aversion theory (Fehr et al., 2008), which holds that people have a strong resistance to unfair outcomes. Fehr et al. (2008) further demonstrate that inequity aversion increases in interactions among in-group members suggesting that individual group members set aside their own self-interest in favour of maximising group utility and well-being. Furthermore, Fehr et al. (2008) and other researchers (e.g., Choi and Bowles, 2007) argue that this tendency towards 'parochial altruism' (i.e. favouring in-group members over members of out-groups) is a key determinant of the evolutionary success of particular groups.

Iyengar and Westwood (2015) deploy the dictator game in a survey to test their hypothesis that political partisanship and identity cues people to discriminate against each other in non-political decisions. They report results that are consistent with the theory of parochial altruism. In their study, survey respondents played four rounds of the dictator game in order to determine the impact of in-group bias associated with party identity. In each round, they were presented with a 'capsule description' of the second player which was designed to induce in-group/out-group identity alignment in the dictator. The capsule description provided Player 1 with information on Player 2's age, gender, income, race and party affiliation. The presentation of the characteristics in the capsule description was controlled to enable measurement of the effects of partisan similarity and difference on the distribution of the endowment.

As the distribution of the endowment in the dictator game is entirely at the discretion of the dictator, any observed differences in the allocation that is offered across the in-group and out-group conditions can be directly linked to the dictator's affective response to the various capsule descriptions and their categorisation of Player 2, as either co-partisan (i.e. member of the dictator's political in-group) or opposing partisan (i.e. member of a political out-group). Iyengar and Westwood's (2015) results show that behaviour in the dictator game is significantly biased towards co-partisans, who receive a premium of 24%. The authors reported two further results that are relevant to the present study. Generally, they found no significant differences in levels of partisan bias across party identities (i.e. Republicans and Democrats). Differences only emerged when they focused the analysis on respondents who were strongly partisan, with the result that bias is significantly higher among Republicans than Democrats. This brings Iyengar and Westwood's (2015) results more in line with previous research which has also demonstrated that Republicans and Conservatives exhibit higher levels of bias than Democrats and Liberals (Jost, Hennes, & Lavine, 2013; Jost, Glaser, Kruglanski, & Sulloway, 2003; Stern, West, Jost, & Rule, 2013). In a further study combining dictator and trust games, Iyengar and Westwood (2015) further found that political bias tends to be driven by discrimination towards out-group members (i.e. 'out-group hate') rather than substantially increased positivity towards in-group members (i.e. 'in-group love'; Corr et al., 2015).

In the present study, we adapt the social preferences framework, outlined by Bühren and Kundt (2015), to measure how in-group favouritism and out-group negativity are cued by EU referendum and traditional party identities. These authors used a mini-dictator game design adapted from Fehr et al.'s work on inequity aversion (Fehr et al., 2008). Bühren and Kundt's (2015) design includes three separate games, each requiring a choice between an egalitarian payoff option (5, 5) and some other unequal distribution of payoffs. In the 'pro-social' and 'envy' games the dictator receives the same payoff (5) irrespective of which option he chooses.

However, his choices make a considerable difference to the payoff received by player 2. In the pro-social game, the egalitarian option (5,5) represents a gain for the second player while in the envy game the egalitarian option (5,5) represents a loss v option 2 (5,10). In the sharing game choosing the egalitarian option requires the dictator to forgo a higher payoff in option 2 that would correspondingly leave player 2 with nothing. The payoffs for each game are summarised in Table 1.

Table 1: Payoffs in pro-social, envy and sharing games

	Pro-social Game	**Envy Game**	**Sharing Game**
Option 1	(5,5)	(5,5)	(5,5)
Option 2	(5,0)	(5,10)	(10,0)

Notes: the payoff for the dictator (Player 1) is represented by the first number, and the payoff for the receiver (Player 2) by the second number in each parenthesis. Adapted from Bühren & Kundt (2015).

The choices that players make in these games are classified by Bühren and Kundt (2015) using a social preferences framework that ranges from 'spiteful' (the dictator always chooses options that make the other player worse off) to 'strongly generous' (the dictator always chooses the most advantageous option for the other player even if it reduces the dictator's payoff in the process). The full classification of choices is summarised in Table 2.

Table 2: Subcategories of social preference

	Pro-social Game	**Envy Game**	**Sharing Game**
Spiteful	(5,0)	(5,5)	(10,0)
Weakly Egalitarian	(5,5)	(5,5)	(10,0)
Strongly Egalitarian	(5,5)	(5,5)	(5,5)
Weakly Generous	(5,5)	(5,10)	(10,0)
Strongly Generous	(5,5)	(5,10)	(5,5)

Notes: the payoff for the dictator is represented by the first number, and the payoff for the receiver by the second number in each parenthesis. Adapted from Bühren & Kundt (2015).

Corr et al. (2015) outline a useful framework for comparing 'contributing behaviour' across different game conditions. 'General pro-sociality' refers to game behaviour in

experimental conditions where no groups have been defined, 'in-group pro-sociality' refers to behaviour in game conditions where players from the same group interact and 'out-group pro-sociality' refers to game conditions involving interactions between players from different groups.

We use the mini-dictator games and social preferences framework outlined above to provide a benchmark of people's general social preferences and levels of pro-social behaviour by letting the respondent (the dictator) choose payoffs without providing any description of the receiver. We further adapt the capsule description method outlined by Iyengar and Westwood (2015) to create a series of in-group and out-group game scenarios with respect to EU referendum vote and party identity.

Bühren and Kundt (2015) use the social preferences framework to examine the impact of using real and hypothetical stakes in the mini-dictator game. They find that egalitarian and generous preferences are significantly higher in the condition that uses hypothetical stakes while spiteful choices are significantly higher in the condition which uses real stakes. This understanding of the bias associated with different incentive treatments is pertinent to the present study where we use hypothetical stakes to structure the payoffs in the games. We expect that respondents will exhibit in-group bias in social preferences based on 'traditional' party identities (e.g. Conservative, Labour) and EU referendum vote. As losers in the referendum, we hypothesise that remain voters will exhibit lower levels of pro-sociality towards non-partisans than leave voters.

3 Methods

3.1 Sample and procedure

A sample of 2,065 adults was recruited from the Populus Data Solutions (PDS) on-line research panel. Populus Data Solutions are a commercial market research company that

specialises in political opinion polling and social research. The PDS panel consists of more than 115,000 UK adults who have pre-registered and consented to participate in online opinion polls. Demographic quotas were set using a profile of the UK population obtained from the Office of National Statistics (ONS) 2011 census data. Quota targets were set to match the demographic profile of the UK adult population with respect to age, gender, region and social grade (SEG). Of the 2,065 individuals who started the survey 1,558 completed the main questions of interest for this study. Respondents completed a 25-minute online survey that was administered using PDS proprietary survey software. Responses were collected in August 2016, about 6-8 weeks after the referendum. All respondents who completed the survey were paid £5 for participating.

The mini-dictator game was one of several economic games that were administered to respondents during the survey. In a laboratory setting participants in economic games typically play for small, but real, stakes. However, the size of the sample meant it was not feasible to offer additional real stakes for the mini-dictator game. Therefore, we developed a hypothetical mini-dictator game adapted from the frameworks of Bühren and Kundt (2015) and Iyengar and Westwood (2015). Mini-dictator games, which require players to choose between two or more sets of pre-determined alternative payoff allocations, provide the researcher with greater scope to manipulate payoffs and prompt players with scenarios that would not typically arise from typical behaviour in standard dictator games (Guala and Filippin, 2016).

The present study set up a game scenario which asked respondents to 'imagine' playing a game with other participants in the survey. The respondent was assigned the role of the dictator and instructed to select options that determined the payment of money to themselves and another participant in the survey.

Each respondent played seven rounds of the game. Each round was comprised of three mini-games as outlined in Table 1 above. In the first round of the game, no additional

information was provided on the characteristics of Player 2 (this provided an identity neutral benchmark condition).

Adapting the method deployed by Iyengar and Westwood (2015), in each of the following six rounds capsule descriptions were provided for the hypothetical second player. Information on age and gender were randomly generated by the survey programme and included in all capsule descriptions. Information on voting behaviour in the referendum and party affiliation was varied depending on the respondent's answers to previous questions. Tailoring the capsule descriptions in this way enabled the testing of respondents' payoff choices and social preferences with a range of in-groups and out-groups based on party affiliation and position on the EU referendum. A summary of the in-group and out-group conditions presented in the mini-dictator game is provided in Table 3. As Table 3 indicates, round 1 was presented first to all participants to provide an identity neutral benchmark. To control for order effects, the order of rounds 2-7 was randomised as was the order of individual games (i.e. pro-social, envy, sharing) within each round.

Table 3: Summary of rounds and capsule descriptions for mini-dictator game

Round	Round Description	Capsule Information on Player 2
1	Benchmark round (order fixed, asked 1st)	no additional information
2	Party Identification in-group (order randomised)	**Age:** randomised **Gender**: randomised **Party Identification**: matched with respondent
3	Party Identification out-group (order randomised)	**Age:** randomised **Gender**: randomised **Party Identification**: does not match respondent (e.g. Player 1 Labour v Player 2 Conservative)
4	EU Referendum in-group (order randomised)	**Age:** randomised **Gender:** randomised **Referendum vote**: matched with respondent
5	EU Referendum out-group (order randomised)	**Age:** randomised **Gender**: randomised **Referendum vote**: does not match respondent (e.g. Player 1 'remain' v Player 2 'leave')
6	Party Identification and EU referendum in-group (order randomised)	**Age:** randomised **Gender:** randomised **Party Identification**: matched with respondent **Referendum vote:** matched with respondent
7	Party Identification and EU referendum out-group (order randomised)	**Age:** randomised **Gender:** randomised **Party Identification**: does not match respondent (e.g. Player 1 Labour v Player 2 Conservative) **Referendum vote:** does not match respondent (e.g. Player 1 'remain' v Player 2 'leave')

3.2 Measures

3.2.1 Social preferences scale

We created a social preference scale using Bühren and Kundt's (2015) social preference framework as outlined in Table 2. Each subcategory of the social preferences framework was

coded as follows: 'spiteful'= 1, 'weakly egalitarian' = 2, 'strongly egalitarian' = 3, 'weakly generous' = 4, 'strongly generous' = 5. The social preferences scale was used as the dependent variable in the regression analyses outlined in the results section below. The scale was coded as an ordered categorical variable for use in ordered probit regressions, with higher values denoting more generous social preferences.

3.2.2 Rounds

We included a number of indicator variables that denote the type of in-group or out-group conditions that were set for each round of the game. The first round was the reference category (Round 1= benchmark round; no information about the receiver), and each respondent saw this specification first. The remaining six rounds appeared in random order and were coded as follows: Round 2 = party identification in-group, Round 3 = party identification out-group, Round 4 = EU referendum in-group, Round 5 = EU referendum out-group, Round 6 = party identification and EU referendum in-group, and Round 7= party identification and EU referendum out-group. The coefficient for each round indicator variable will show whether respondents show different social preferences in each round compared to the first round in which they did not receive any information about the receiver.

3.2.3 Other information about the receiver – gender and age

The indicator variables for the different rounds of the dictator game reflect what information the dictator was provided about the receiver with respect to the receiver's voting behaviour in the referendum and political party identification. In addition, the dictator was also told about the receiver's gender and age. These pieces of information were randomly assigned. We created an indicator variable denoting whether the receiver is of the opposite gender (coded 1) or the same gender (coded 0) as the respondent as gender can also contribute to group

identity. Similarly, we created indicator variables assessing whether the receiver is younger, older or roughly the same as age as the dictator, which we define to be within three years of the dictator's age.

3.2.4 Party identification

Party Identification was measured using a modified version of the party identification and party identification squeeze questions from the British Election Study (2015). The party identification question asks "Generally speaking, do you think of yourself as Labour, Conservative, Liberal Democrat or what?" and presents respondents with a prompt list for the main political parties in the UK. The survey programme automatically edits the question wording and list of parties to ensure that it is matched to the respondent's geographical location (e.g. the Scottish National Party is included only for respondents living in Scotland). The list also includes options for 'none', 'don't know' and 'prefer not to say'. Respondents were also able to 'write in' any other party not included in the prompted list of parties.

Respondents who answered 'none' or 'don't know' at the party identification question were asked an additional 'party identification squeeze' question which was worded as follows: "Do you generally think of yourself as a little closer to one of the parties than the others? If yes which party?" Respondents were then re-presented with the party list used at the previous party id question.

Responses from these two questions were used to create a new party identification variable based on which the party identification in-group and out-group conditions in the mini-dictator game were defined (see Table 3). The party identification variable was then coded into five indicator variables for inclusion in the regression models (Conservative, Labour, Liberal Democrat, UKIP and Other).

3.2.5 Strength of party identification

Respondents were further asked about the strength of their party identification (1 = very strong, 2 = fairly strong, 3 = not very strong). The original scale was reverse coded such that a higher value denotes stronger identification with a particular party (M= 1.92, SD = 0.66).

3.2.6 EU referendum voting behaviour

Respondents were asked to confirm that they voted in the EU referendum. Those that answered 'yes' were then asked to indicate how they voted: 1) voted for Britain to remain a member of the European Union, or 2) voted for Britain to leave the European Union.

As with the party identification measure, responses to the referendum voting behaviour questions were used to create the referendum in-group and out-group conditions used in the mini-dictator game question.

3.2.7 Control variables

As referenced above, previous studies of voting patterns in the EU referendum suggest regional, economic and demographic differences between those who voted leave and those who voted remain. The current sample accurately reflects these differences. For example, leave supporters in our sample are significantly more likely to identify as Conservative, be older and have lower incomes (the socio-demographic profile of leave and remain voters is provided in Table A1 in the appendix). We, therefore, include socio-economic controls for a range of variables including age, gender, region, social class, education and income. Income is assessed by two measures. One describes the income band of the participant's household income before tax, ranging from "less than £10,000" (coded 1), "10,000 to under £20,000" (coded 2), £90,000-£100,000 (coded 10) to "more than £100,000" (coded 11). The second income measure is the

participant's subjective evaluation of the household's income, which we denote "Comfort on present income". The four answer categories for this measure range from "very difficult on present income" (1), "difficult on present income" (2), "coping on present income" (3) to "living comfortably on present income" (4). Descriptive statistics for all our variables are presented in table 4.

Table 4: Descriptive statistics

Variable	N	Mean	St. Dev.	Min	Max
Voted Remain	1,558	0.47	0.50	0	1
Voted Leave	1,558	0.53	0.50	0	1
Party identification:					
Conservative	1,532	0.35	0.48	0	1
Labour	1,532	0.35	0.48	0	1
UKIP	1,532	0.11	0.31	0	1
Liberal Democrat	1,532	0.08	0.27	0	1
Other	1,532	0.11	0.31	0	1
Party Strength	1,536	1.92	0.66	1	3
Age	1,558	49.5	17.1	18	90
Gender: male	1,556	0.53	0.50	0	1
Income band	1,479	3.39	1.83	1	11
Comfort on present income	1,553	2.99	0.84	1	4
Region:					
Scotland	1,558	0.10	0.30	0	1
North East	1,558	0.04	0.20	0	1
North West	1,558	0.12	0.32	0	1
Yorkshire and the Humber	1,558	0.07	0.26	0	1
West Midlands	1,558	0.07	0.26	0	1
East Midlands	1,558	0.08	0.26	0	1
Wales	1,558	0.06	0.23	0	1
East of England	1,558	0.11	0.31	0	1
London	1,558	0.10	0.31	0	1
South East	1,558	0.14	0.34	0	1
South West	1,558	0.09	0.28	0	1
Northern Ireland	1,558	0.03	0.16	0	1
Education:					

No formal qualifications	1,518	0.05	0.22	0	1
High school or equivalent: left aged 16 years	1,518	0.28	0.45	0	1
High school or equivalent: left aged 17/18/19	1,518	0.29	0.45	0	1
Undergraduate/university degree or equivalent	1,518	0.21	0.41	0	1
Postgraduate/university degree or equivalent	1,518	0.09	0.28	0	1
Professional qualification	1,518	0.08	0.28	0	1
Social Grade (SEG):					
AB	1,558	0.29	0.45	0	1
C1	1,558	0.30	0.46	0	1
C2	1,558	0.16	0.37	0	1
DE	1,558	0.25	0.43	0	1

Note: Social grade (SEG) is a social classification based on occupation used in UK market research and opinion polling. It is maintained by the UK Market Research Society. Definitions as follows: A= upper middle class: Higher managerial, administrative or professional, B= middle class: Intermediate managerial, administrative or professional, C1=lower middle class: Supervisory or clerical and junior managerial, administrative or professional, C2= skilled working class: Skilled manual workers, D= working class: Semi-skilled and unskilled manual workers, E= non-working: Casual or lowest grade workers, pensioners, and others who depend on the welfare state for their income.

3.3 Analytical methods

We first conducted a series of ordered probit regressions to assess associations between social preferences and in-group and out-group scenarios in the mini-dictator games, as our dependent variable was ordered categorical (columns 1-3 in Tables 5 and 6). However, the ordered probit model does not account for the fact that the same individuals play the dictator game over seven rounds. The error terms are therefore not independent as participants' choices in these games may depend on individual, unobserved characteristics, such as personality, trust, altruism or extroversion, which may bias individual social preferences. We therefore also employ multilevel linear models - also known as mixed effects or random coefficients models - with rounds nested within individuals (columns 4-6 in Tables 5 and 6). More specifically, we employ a random intercept, fixed slopes model. We further ran ordered probit regressions with individual random effects (results not shown), which also accounted for the clusters in our data.

The substantive results are the same across all methods and our findings are therefore robust to methodology.

The models in Table 5 do not include the information the respondent received about Player 2's gender and age. We include this information in a second set of regressions, which are presented in Table 6. These regressions exclude data from round 1 (benchmark round) because the variables denoting the receiver's age and gender are missing for this round. The reference round in Table 6 is therefore round 2.

4 Results

The results of the ordered probit regressions and multilevel models with random intercepts are presented in Table 5. Model 1 shows that compared to the reference category (benchmark round with no information about player 2), participants display significantly less generous social preferences in the rounds in which they were told that player 2 has a different party inclination and preference for remaining or staying in the EU – i.e. the out-group conditions in rounds 3, 5 and 7. Even after controlling for socio-demographic characteristics (Model 2, Table 5), pro-sociality appears to be weaker in interactions between opposing party partisans. There is also evidence of in-group preferences, which are reflected in the significant positive associations between social preferences in Round 1 and the in-group conditions (Rounds 2, 4 and 6). These associations remain significant even after the inclusion of control variables in Models 2 and 3.

The results further show a significant negative relationship between social preferences and party identification strength. Those who usually vote for the Conservatives, Liberal Democrats or other parties show, on average, more generous behaviour in our mini-dictator games than those who vote for the Labour party. However, these relationships are only

significant in our ordered probit regressions (columns 1-3, Table 5). They do not hold in the multilevel models (columns 4-6, Table 5).

Model 3 includes interaction terms between rounds and EU voting behaviour to further explore the moderating effect of the single-issue identity created by the referendum on social preferences. People who voted leave exhibited significantly higher levels of pro-sociality in Round 5 (EU referendum out-group) and Round 7 (party and referendum out-group) than those who voted remain. These findings hold in both the ordered probit model and the multilevel model with random intercepts (Table 5, columns 3 and 6).

Table 5: Ordered probit regressions and multilevel models with random intercepts

	Ordered probit			*Multilevel models with random intercepts*		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Round 2: Party In-group	0.123***	0.124***	0.138**	0.114***	0.113***	0.125***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Round 3: Party Out-group	-0.316***	-0.321***	-0.343***	-0.298***	-0.302***	-0.325***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Round 4: Referendum In-group	0.138***	0.142***	0.189***	0.128***	0.128***	0.171***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Round 5: Referendum Out-group	-0.366***	-0.366***	-0.456***	-0.344***	-0.343***	-0.429***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Round 6: Party & Referendum In-group	0.178***	0.181***	0.196***	0.166***	0.166***	0.177***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Round 7: Party & Referendum Out-group	-0.489***	-0.485***	-0.591***	-0.457***	-0.451***	-0.552***
	(0.039)	(0.041)	(0.059)	(0.023)	(0.024)	(0.035)
Referendum: Voted Leave		-0.066***	-0.104*		-0.060	-0.099*
		(0.025)	(0.059)		(0.049)	(0.058)
Party Identity: Conservative		0.061**	0.061**		0.060	0.060
		(0.028)	(0.028)		(0.056)	(0.056)
Party Identity: Liberal Democrat		0.162***	0.163***		0.142	0.142
		(0.045)	(0.045)		(0.087)	(0.087)

Party Identity: UKIP	-0.057	-0.057	-0.051	-0.051
	(0.041)	(0.041)	(0.081)	(0.081)
Party Identity: Other	0.325***	0.325***	0.312***	0.312***
	(0.044)	(0.044)	(0.087)	(0.087)
Strength of Party Identification	-0.100***	-0.100***	-0.095***	-0.095***
	(0.017)	(0.017)	(0.033)	(0.033)
Age	-0.002***	-0.002***	-0.002	-0.002
	(0.001)	(0.001)	(0.001)	(0.001)
Gender: Male	0.060***	0.061***	0.051	0.051
	(0.022)	(0.022)	(0.044)	(0.044)
Education: High school or equivalent: left aged 16 years	0.139**	0.139**	0.123	0.123
	(0.054)	(0.054)	(0.106)	(0.106)
Education: High school qualifications or equivalent: left aged 17/18/19	0.315***	0.315***	0.281***	0.281***
	(0.056)	(0.056)	(0.109)	(0.109)
Education: Postgraduate/university degree or equivalent	0.192***	0.193***	0.166	0.166
	(0.066)	(0.066)	(0.130)	(0.130)
Education: Professional qualification	0.170***	0.170***	0.149	0.149
	(0.065)	(0.065)	(0.126)	(0.126)
Education: Undergraduate/ university degree or equivalent	0.253***	0.254***	0.229**	0.229**
	(0.059)	(0.059)	(0.116)	(0.116)
Income band	0.007	0.007	0.006	0.006
	(0.007)	(0.007)	(0.015)	(0.015)
Comfort on present income	0.036**	0.036**	0.034	0.034
	(0.015)	(0.015)	(0.029)	(0.029)
Social Grade: C1	0.009	0.009	0.010	0.010
	(0.030)	(0.030)	(0.060)	(0.060)
Social Grade: C2	0.054	0.054	0.054	0.054
	(0.037)	(0.037)	(0.072)	(0.072)
Social Grade: DE	0.050	0.050	0.043	0.043
	(0.035)	(0.035)	(0.069)	(0.069)
Round 2: Party In-group * Referendum: Voted Leave		-0.028		-0.024
		(0.082)		(0.049)
Round 3: Party Out-group * Referendum: Voted Leave		0.041		0.046
		(0.082)		(0.049)
Round 4: Referendum In-group * Referendum: Voted Leave		-0.090		-0.082*
		(0.082)		(0.049)

Round 5: Referendum Out-group * Referendum: Voted Leave			0.171**			0.163***
			(0.082)			(0.049)
Round 6: Party & Referendum In-group * Referendum: Voted Leave			-0.028			-0.021
			(0.082)			(0.049)
Round 7: Party & Referendum Out-group * Referendum: Voted Leave			0.203**			0.193***
			(0.082)			(0.049)
Region fixed effects		included	included		included	included
Constant				2.987***	2.899***	2.919***
				(0.026)	(0.195)	(0.196)
Observations	10,906	9,954	9,954	10,906	9,954	9,954
n groups				1,558	1,422	1,422
Log Likelihood				-12,685.170	-11,602.000	-11,589.270
Akaike Inf. Crit.				25,388.350	23,280.000	23,266.530
Bayesian Inf. Crit.				25,454.020	23,553.680	23,583.400

Note: *p<0.1; **p<0.05; ***p<0.01

Group identity may also be based on socio-demographic characteristics, such as age, gender, race or social status. In the next step of our analysis, we added information about the receiver's age and gender to the previous models. The models presented in Table 6 take Round 2 (Party in-group) as the reference group for the description of player 2 because Round 1 is no longer included in the model (information about player 2's age and gender was not provided in Round 1). Similar to the previous results, respondents show, on average, more generous behaviour towards members of their in-groups than towards receivers who belong to out-groups; this is true for political identity as well as referendum voting behaviour (Table 6). Interestingly, respondents display a gender bias with respect to social preferences in that they tend to show more generous behaviour towards receivers of the opposite gender. This is the only example of out-group love that we see in our models. Respondents do not, however, treat

receivers who belong to a different age group in any way differently. At least in our sample, age does not seem to matter much for social identity and pro-social behaviour.

Table 6: Ordered probit regressions and multilevel models with random intercepts

	Ordered probit			*Multilevel models with random intercepts*		
	Model 1 (1)	Model 2 (2)	Model 3 (3)	Model 1 (4)	Model 2 (5)	Model 3 (6)
Round 3: Party Out-group	-0.433***	-0.439***	-0.475***	-0.412***	-0.415***	-0.452***
	(0.039)	(0.041)	(0.059)	(0.024)	(0.025)	(0.036)
Round 4: Referendum In-group	0.013	0.017	0.048	0.013	0.015	0.044
	(0.039)	(0.041)	(0.059)	(0.024)	(0.025)	(0.036)
Round 5: Referendum Out-group	-0.480***	-0.482***	-0.587***	-0.456***	-0.455***	-0.555***
	(0.039)	(0.041)	(0.060)	(0.024)	(0.025)	(0.036)
Round 6: Party & Referendum In-group	0.050	0.054	0.054	0.049**	0.052**	0.049
	(0.039)	(0.041)	(0.059)	(0.024)	(0.025)	(0.036)
Round 7: Party & Referendum Out-group	-0.607***	-0.602***	-0.722***	-0.573***	-0.566***	-0.680***
	(0.039)	(0.041)	(0.060)	(0.024)	(0.025)	(0.036)
Player 2: opposite gender	0.078***	0.076***	0.076***	0.045***	0.045***	0.044***
	(0.023)	(0.024)	(0.024)	(0.015)	(0.016)	(0.016)
Player 2: younger	0.004	-0.030	-0.027	0.013	0.009	0.013
	(0.038)	(0.041)	(0.041)	(0.026)	(0.027)	(0.027)
Player 2: older	-0.111***	-0.077*	-0.077*	-0.046*	-0.035	-0.034
	(0.037)	(0.040)	(0.040)	(0.025)	(0.026)	(0.026)
Referendum: Voted Leave		-0.062**	-0.135**		-0.056	-0.127**
		(0.027)	(0.059)		(0.050)	(0.059)
Round 3: Party Out-group * Referendum: Voted Leave			0.068			0.070
			(0.082)			(0.050)
Round 4: Referendum In-group * Referendum: Voted Leave			-0.059			-0.057
			(0.082)			(0.050)
Round 5: Referendum Out-group * Referendum: Voted Leave			0.200**			0.190***
			(0.082)			(0.050)
Round 6: Party & Referendum In-group * Referendum: Voted Leave			0.0005			0.004
			(0.082)			(0.050)

Round 7: Party & Referendum Out-group * Referendum: Voted Leave			0.228***			0.219***
			(0.082)			(0.050)
Other controls: region, education, party ID, age, gender, etc (same as in Table 6)			included	included	included	included
Constant				3.095***	2.964***	2.997***
				(0.034)	(0.201)	(0.202)
Observations	9,336	8,532	8,532	9,336	8,532	8,532
n groups				1,556	1,422	1,422
Log Likelihood				-11,165.790	-10,242.740	-10,228.910
Akaike Inf. Crit.				22,353.570	20,565.470	20,547.810
Bayesian Inf. Crit.				22,432.120	20,847.360	20,864.910

Note: *p<0.1; **p<0.05; ***p<0.01

5 Discussion

As discussed in the Introduction, previous research has shown that political identities are multi-faceted and highly mutable. This literature also demonstrates that political identity has a significant effect on non-political behaviour. The current study set out to evaluate the behavioural impacts associated with the new political identities (leave and remain) that have been catalysed by the EU referendum and provide a benchmark for the extent of political polarisation in the UK following the Brexit result, and the potential for this polarisation to spill over into non-political behaviour.

Using a mini-dictator game design adapted from separate studies by Bühren and Kundt (2015) and Iyengar and Westwood (2015), we examined how social preferences and pro-sociality vary across a range of induced in-group and out-group scenarios and measured the propensity of people to exhibit bias on the basis of 'traditional' party identity (e.g. Conservative, Labour) or recently catalysed EU referendum identity (leave or remain). We further examined the moderating effect of EU referendum identity on social preferences.

Our results showed that people exhibit significantly weaker levels of pro-sociality in scenarios involving interactions with political party out-groups. This general finding is consistent with the recent literature on affective political polarisation being developed in the US (Iyengar and Westwood, 2015). But, to our knowledge, this is the first time that economic games have been used to report a similar result in a representative sample of the UK population. The present study makes an important and novel contribution to the nascent literature on the social and behavioural impacts of the Brexit result. We find significantly weaker levels of pro-sociality in scenarios involving the interaction of EU referendum out-groups and political party out-groups. The results suggest that in a relatively short period of time, the EU referendum campaign has created new single issue identities to rival party identities that have been established for decades. Our findings are generally consistent with previous literature (e.g., Iyengar and Westwood, 2015) that indicates that political polarisation is motivated more by negative bias towards the out-group than positive bias towards the in-group. EU voting behaviour has a significant moderating effect on pro-social behaviour towards competing partisans. Those who voted remain exhibit significantly weaker levels of pro-social behaviour towards leave supporters than vice versa. Thus, people that have been on the losing side of the 2016 EU referendum exhibit weaker pro-sociality than the victors. These findings provide support for the analyses of commentators such as Kibasi (2016) and Runciman (2016) who have expressed concern about the divisions caused by the referendum and particularly the response of the more prosperous and politically connected elites that voted for the status quo and have been left disappointed and disillusioned by the result.

5.1 *Limitations and future research*

The method of inducing party identity and EU referendum identity was adapted from the capsule description design employed by Iyengar and Westwood (2015). As such, the present study is subject to the same limitations that they highlight in their paper. Party identity and EU

voting behaviour identity need not be directly cued in 'real-life' interactions and people who share these identities do not share the overt physical characteristics that can be used to cue other social identities such as race, age or gender. Therefore, the method may inflate the salience of characteristics that are not readily discernible in everyday interactions. A further limitation highlighted by Iyengar and Westwood (2015) is also relevant to the present study. Fieldwork was conducted in August 2016, a matter of weeks after the EU referendum, when shock caused by the result was at its height. Iyengar and Westwood (2015) note that the prevailing political context at the time when their study was conducted may have increased the salience of political identities for research participants. This is certainly a consideration for the present study, and the cross-sectional design does not allow us to make causal inferences from the data. Future research could address this limitation by repeating the research design and tracking the levels of social preferences and polarisation exhibited by people as the UK's negotiations for leaving the UK progress.

As noted above, the use of a hypothetical dictator game design may have produced an over-estimate of pro-social behaviour. Bühren and Kundt's (2015) comparison of the effect of hypothetical and real stakes using the same social preferences framework used in the current study found that egalitarian and generous behaviour was significantly more common in their hypothetical stakes condition. This raises the possibility that polarisation and bias associated with party identity and EU referendum identity could be more extreme than the current results indicate. Future research could address this limitation by conducting complimentary research using real stakes.

In order to provide a reference point for the magnitude of political polarisation and discrimination in the US, Iyengar and Westwood's (2015) design compared bias based on party identity to that based on race. Conducting a similar comparison of political and other socio-demographic characteristics in the context of post-Brexit UK would be very instructive. We

included the description of player 2's age and gender in the second part of our analysis and found more generous social behaviour towards receivers from the opposite gender. However, other social identities such as race or ethnicity may be more informative in this context.

6 Conclusions

In the aftermath of the referendum result politicians on all sides of the EU question have sought to take the 'heat' out of the debate and emphasise the need for unity. However, our results show that there is significant political polarisation in the post-Brexit population and that this polarisation affects non-political judgements. The findings in the present analysis are consistent with a growing body of literature in political science which shows that 'affective polarisation' and hostility based on political partisanship has increased significantly in recent years partly because the behavioural norms that constrain other forms of identity based discrimination (e.g. based on age, gender, race) appear to be absent in political debate or interactions between competing partisans. Placed in this context, UK politicians' calls for unity may seem, at best, optimistic and, at worst, dangerously naïve. The extent of the polarisation associated with leave and remain identities has important implications for political discourse and the conduct of policy during the protracted negotiations for the UK's departure from the EU.

Iyengar and Westwood (2015) note that in the US the behaviour of elected officials has mirrored the rise of affective polarisation in the electorate. This is associated with an increasing tendency to question the integrity and honesty of political opponents and the legitimacy of electoral results and policy outcomes. The 2016 US presidential campaign provides ample evidence of this effect with Donald Trump's suggestion that the electoral process was 'rigged' (Henderson, 2016) and that his opponent, Hilary Clinton, was a 'crook' who should be sent to prison (Revesz, 2016) being two of the most salient examples.

Similar patterns can be detected in the discourse that has developed in the UK in the aftermath of the EU referendum. The legitimacy of the result has been questioned by remain supporters, who have, in turn, been branded as 'remoaners' by sections of the media and opposing partisans who support Brexit (Stromme, 2016). The result has also initiated a constitutional debate about the sovereignty of the UK parliament and the legitimate role of the UK government in initiating the formal process for the UK's departure from the EU (Bowcott, 2016). The partisan identities and polarisation that have been brought to the surface by the EU referendum currently dominate the political agenda in the UK. The process for executing Brexit offers much scope for reinforcing the polarisation that is already evident in the general population. Furthermore, the increasing populism and focus on the 'demand side of public opinion' (Inglehart & Norris, 2016) among politicians occupying all points on the political spectrum risks precipitating a more general dislocation of the political process.

References

Akerlof, G.A., Kranton, R.E., 2000. Economics and identity. Q. J. Econ. 115, 715–753. doi:10.1162/003355300554881

Alford, J.R., Hatemi, P.K., Hibbing, J.R., Martin, N.G., Eaves, L.J., 2011. The politics of mate choice. J. Polit. 73, 362–379. doi:10.1017/S0022381611000016

Arenas, A., 2016. Sticky votes. J. Econ. Behav. Organ. 132, 12–25. doi:10.1016/j.jebo.2016.09.006

Baldassarri, D., Gelman, A., 2008. Partisans without constraint: Political polarization and trends in American public opinion. Am. J. Sociol. 114, 408–446. doi:10.1086/590649

Bawn, K., 1999. Constructing "Us": Ideology, coalition politics, and false consciousness. Am. J. Pol. Sci. 43, 303–334. doi:10.2307/2991797

Becker, S.O., Fetzer, T., Novy, D., 2017. Who voted for Brexit? A comprehensive district-level analysis, CEP Discussion Paper No 1480.

Ben-Ner, A., McCall, B.P., Stephane, M., Wang, H., 2009. Identity and in-group/out-group differentiation in work and giving behaviors: Experimental evidence. J. Econ. Behav. Organ. 72, 153–170. doi:10.1016/j.jebo.2009.05.007

Birch, S., 2016. Our new voters: Brexit, political mobilisation and the emerging electoral cleavage. Juncture 23, 107–110. doi:10.1111/newe.12003

Bogdanor, V., 2016. A new way back for social democracy? The EU referendum and its lessons for the left. Juncture 23, 8–11. doi:10.1111/j.2050-5876.2016.00887.x

Bohnet, I., Frey, B.S., 1999. The sound of silence in prisoner's dilemma and dictator games. J. Econ. Behav. Organ. 38, 43–57. doi:10.1016/S0167-2681(98)00121-8

Bowcott, O., 2016. Lawyer urges supreme court to throw out Brexit case after article 50 vote. Guard.

Brewer, M.B., Kramer, R.M., 1985. The psychology of intergroup attitudes and behavior. Annu. Rev. Psychol. 36, 219–243. doi:10.1146/annurev.psych.36.1.219

British Election Study, 2015. British Election Study 2015: Questionnaire Wave 1 V1.0.

Brooks, C., Manza, J., 1997. Social cleavages and political alignments: U.S. presidential elections, 1960 to 1992. Am. Sociol. Rev. 62, 937. doi:10.2307/2657348

Bühren, C., Kundt, T.C., 2015. Imagine being a nice guy: A note on hypothetical vs. incentivized social preferences. Judgm. Decis. Mak. 10, 185–190.

Cavior, N., Miller, K., Cohen, S.H., 1975. Physical attractiveness, attitude similarity, and length of acquaintance as contributors to interpersonal attraction among adolescents. Soc. Behav. Personal. An Int. J. 3, 133–142. doi:10.2224/sbp.1975.3.2.133

Chandra, K. (Ed.), 2012. Constructivist Theories of Ethnic Politics. Oxford University Press, New York.

Charness, G., Gneezy, U., 2008. What's in a name? Anonymity and social distance in dictator and ultimatum games. J. Econ. Behav. Organ. 68, 29–35. doi:10.1016/j.jebo.2008.03.001

Chen, Y., Li, S.X., 2009. Group identity and social preferences. Am. Econ. Rev. 99, 431–457. doi:10.1257/aer.99.1.431

Choi, J.-K., Bowles, S., 2007. The coevolution of parochial altruism and war. Science (80-.). 318, 636–640. doi:10.1126/science.1144237

Cikara, M., Van Bavel, J.J., 2014. The neuroscience of intergroup relations. Perspect. Psychol. Sci. 9, 245–274. doi:10.1177/1745691614527464

Clarke, H.D., Goodwin, M., Whiteley, P., 2017. Brexit: Why Britain voted to leave the European Union. Cambridge University Press, Cambridge. doi:10.1017/9781316584408

Corr, P.J., Hargreaves Heap, S.P., Seger, C.R., Tsutsui, K., 2015. An experiment on

individual “parochial altruism” revealing no connection between individual “altruism” and individual “parochialism”. Front. Psychol. 6, 1261. doi:10.3389/fpsyg.2015.01261
Curtice, J., 2016. Not the end, my friend: Labour, the referendum result and the challenges that remain. Juncture 23, 18–21. doi:10.1111/j.2050-5876.2016.00889.x
Devine, C.J., 2014. Ideological social identity: Psychological attachment to ideological in-groups as a political phenomenon and a behavioral influence. Polit. Behav. 37, 509–535. doi:10.1007/s11109-014-9280-6
Dhingra, S., Ottaviano, G., Sampson, T., Van Reenen, J., 2016. The consequences of Brexit for UK trade and living standards. London.
Dorling, D., 2016. Brexit: the decision of a divided country. BMJ 354, i3697. doi:10.1136/bmj.i3697
Dunning, T., 2011. Fighting and voting: Violent conflict and electoral politics. J. Conflict Resolut. 55, 327–339. doi:10.1177/0022002711400861
Ellis, C., Stimson, J.A., 2012. Ideology in America. Cambridge University Press.
Fehr, E., Bernhard, H., Rockenbach, B., 2008. Egalitarianism in young children. Nature 454, 1079–1083. doi:10.1038/nature07155
Fisher, J., 1999. Party expenditure and electoral prospects: A national level analysis of Britain. Elect. Stud. 18, 519–532. doi:10.1016/S0261-3794(99)00021-9
Foddy, M., Platow, M.J., Yamagishi, T., 2009. Group-based trust in strangers. Psychol. Sci. 20, 419–422. doi:10.1111/j.1467-9280.2009.02312.x
Forsythe, R., Horowitz, J.L., Savin, N.E., Sefton, M., 1994. Fairness in simple bargaining experiments. Games Econ. Behav. doi:10.1006/game.1994.1021
Goette, L., Huffman, D., Meier, S., 2006. The impact of group membership on cooperation and norm enforcement: Evidence using random assignment to real social groups. Am. Econ. Rev. 96, 212–216. doi:10.1257/000282806777211658
Goodwin, M., Heath, O., 2016. The 2016 Referendum, Brexit and the left behind: An aggregate-level analysis of the result. Polit. Q. 87, 323–332. doi:10.1111/1467-923X.12285
Goodwin, M., Milazzo, C., 2017. Taking back control? Investigating the role of immigration in the 2016 vote for Brexit. Br. J. Polit. Int. Relations 19, 450–464. doi:10.1177/1369148117710799
Green, D.P., Palmquist, B., Schickler, E., 2004. Partisan hearts and minds: Political parties and the social identities of voters, Political Parties and the Social Identities of Voters. doi:10.1016/B978-0-7020-2797-0.00001-1
Greene, S., 1999. Understanding party identification: A social identity approach. Polit. Psychol. 20, 393–403. doi:10.1111/0162-895X.00150
Grosskopf, B., Pearce, G., 2017. Discrimination in a deprived neighbourhood: An artefactual field experiment. J. Econ. Behav. Organ. 141, 29–42. doi:10.1016/J.JEBO.2017.05.016
Guala, F., Filippin, A., 2016. The effect of group identity on distributive choice: Social preference or heuristic? Econ. J. doi:10.1111/ecoj.12311
Guala, F., Mittone, L., Ploner, M., 2013. Group membership, team preferences, and expectations. J. Econ. Behav. Organ. 86, 183–190. doi:https://0-doi-org.wam.city.ac.uk/10.1016/j.jebo.2012.12.003
Hargreaves Heap, S.P., Zizzo, D.J., 2009. The value of groups. Am. Econ. Rev. 99, 295–323.
Henderson, B., 2016. Donald Trump claims election “rigged”: The US election and polls on Monday morning. Telegr.
Hobolt, S.B., 2016. The Brexit vote: A divided nation, a divided continent. J. Eur. Public Policy 23, 1259–1277. doi:10.1080/13501763.2016.1225785
Hoewe, J., Hatemi, P.K., 2016. Brand loyalty is influenced by the activation of political orientations. Media Psychol. 0, 1–22. doi:10.1080/15213269.2016.1202839

Huber, G., Malhotra, N., 2015. Social Spillovers of Political Polarization. Unpublished manuscript, Graduate School of Business, Standford University.
Huddy, L., Mason, L., Aarøe, L., 2010. Measuring Partisanship as a Social Identity, Predicting Political Activism. Paper presented at the annual meeting of the International Society for Political Psychology, San Francisco.
Inglehart, R., 1990. Culture Shift in Advanced Industrial Societies. Princeton University Press, Princeton, NJ.
Inglehart, R.F., Norris, P., 2016. Trump, Brexit, and the rise of populism: economic have-nots and cultural backlash (No. RWP16-026), Faculty Research Working Paper Series.
Iyengar, S., Simon, A.F., 2000. New perspectives and evidence on political communication and campaign effects. Annu. Rev. Psychol. 51, 149–169. doi:10.1146/annurev.psych.51.1.149
Iyengar, S., Sood, G., Lelkes, Y., 2012. Affect, not ideology: A social identity perspective on polarization. Public Opin. Q. doi:10.1093/poq/nfs038
Iyengar, S., Westwood, S.J., 2015. Fear and loathing across party lines: New evidence on group polarization. Am. J. Pol. Sci. 59, 690–707. doi:10.1111/ajps.12152
James, H., 2016. Britain and Europe: What ways forward? Int. Econ. Econ. Policy 13, 523–530. doi:10.1007/s10368-016-0362-2
Johnson, P., Mitchell, I., 2017. The Brexit vote, economics, and economic policy. Oxford Rev. Econ. Policy 33, S12–S21. doi:10.1093/oxrep/grx017
Jost, J.T., Glaser, J., Kruglanski, A.W., Sulloway, F.J., 2003. Political conservatism as motivated social cognition. Psychol. Bull. 129, 339–375. doi:10.1037/0033-2909.129.3.339
Jost, J.T., Hennes, E.P., Lavine, H.P., 2013. Hot political cognition: Its self-group and system-serving purposes, in: Carlson, D.E. (Ed.), Oxford Handbook of Social Cognition. Oxford University Press, Oxford, UK. doi:10.1093/oxfordhb/9780199730018.013.0041
Kahneman, D., Knetsch, J.L., Thaler, R.H., 1986. Fairness as a constraint on profit seeking: Entitlements in the market. Am. Econ. Rev. 76, 728–741. doi:10.2307/1806070
Kalmijn, M., 1998. Intermarriage and homogamy: Causes, patterns, trends. Annu. Rev. Sociol. 24, 395–421. doi:10.1146/annurev.soc.24.1.395
Kibasi, T., 2016. Understanding Brexit: Why does it feel like this and where do we go from here? Juncture 23, 12–17. doi:10.1111/j.2050-5876.2016.00888.x
Kostadinova, V., 2017. Brexit is unlikely to provide answers to governance problems under globalisation. Econ. Aff. 37, 135–140. doi:10.1111/ecaf.12219
Malka, A., Lelkes, Y., 2010. More than ideology: Conservative-liberal identity and receptivity to political cues. Soc. Justice Res. 23, 156–188. doi:10.1007/s11211-010-0114-3
Mason, L., 2015. Distinguishing the polarizing effects of ideology as identity, issue positions, and issue-based identity. A paper presented at the Center for the Study of Democratic Politics Conference on Political Polarization: Media and Communication Influences. Princeton University.
Matti, J., Zhou, Y., 2016. The political economy of Brexit: Explaining the vote. Appl. Econ. Lett. 1–4. doi:10.1080/13504851.2016.1259738
McAuley, W.J., Nutty, C.L., 1982. Residential preferences and moving behavior: A family life-cycle analysis. J. Marriage Fam. 44, 301–309. doi:10.2307/351540
Michelitch, K., 2015. Does electoral competition exacerbate interethnic or interpartisan economic discrimination? Evidence from a field experiment in market price bargaining. Am. Polit. Sci. Rev. 109, 43–61. doi:10.1017/S0003055414000628
NatCen Social Research, 2016. Understanding the Leave vote.
O'Reilly, J., Froud, J., Warhurst, C., Morgan, G., Grey, C., Wood, G., Boyer, R., Frerichs, S.,

Rona-Tas, A., Le Galès, P., Froud, J., Johal, S., Williams, K., Warhurst, C., Morgan, G., Grey, C., Wood, G., Wright, M., Boyer, R., Frerichs, S., Sankari, S., Rona-Tas, A., Le Galès, P., Johal, S., Williams, K., Wright, M., Sankari, S., 2016. Brexit: Understanding the socio-economic origins and consequences. Socio-Economic Rev. 14, 807–854. doi:10.1093/ser/mww043

Ockenfels, A., Werner, P., 2014. Beliefs and ingroup favoritism. J. Econ. Behav. Organ. 108, 453–462. doi:10.1016/j.jebo.2013.12.003

Revesz, R., 2016. Donald Trump supporters still chanting "lock her up" during his "thank you" tour. Indep.

Rubinson, R., 1986. Class formation, politics, and institutions: Schooling in the United States. Am. J. Sociol. 92, 519–548. doi:10.1086/228540

Ruffle, B.J., Sosis, R., 2006. Cooperation and the in-group-out-group bias: A field test on Israeli kibbutz members and city residents. J. Econ. Behav. Organ. 60, 147–163. doi:10.1016/j.jebo.2004.07.007

Runciman, D., 2016. A win for "proper people"? Brexit as a rejection of the networked world. Juncture 23, 4–7. doi:10.1111/j.2050-5876.2016.00886.x

Ryan, C., 2016. Where does one start to make sense of Brexit? Int. Econ. Econ. Policy 13, 531–537. doi:10.1007/s10368-016-0363-1

Saunders, R., 2016. A tale of two referendums: 1975 and 2016. Polit. Q. 87, 318–322. doi:10.1111/1467-923X.12286

Schattschneider, E.E., 1960. The Semi-Sovereign People. Holt, Rinehart and Winston, New York.

Shayo, M., Harel, A., 2012. Non-consequentialist voting. J. Econ. Behav. Organ. 81, 299–313. doi:10.1016/j.jebo.2011.10.021

Stern, C., West, T. V., Jost, J.T., Rule, N.O., 2013. The politics of gaydar: Ideological differences in the use of gendered cues in categorizing sexual orientation. J. Pers. Soc. Psychol. 104, 520–41. doi:http://dx.doi.org/10.1037/a0031187

Stoker, L., Jennings, M.K., 2005. Political similarity and influence between husbands and wives, in: The Social Logic of Politics. Personal Networks as Contexts for Political Behavior. pp. 51–74.

Stromme, L., 2016. Leave MP scolds remoaners Brexit farce: "I would be pro-EU if that"s what people wanted!'. The Express.

Tajfel, H., Turner, J.C., 1979. An integrative theory of intergroup conflict, in: The Social Psychology of Intergroup Relations. pp. 33–47. doi:10.1016/S0065-2601(05)37005-5

The Electoral Commission, 2017. EU referendum results [WWW Document]. URL https://www.electoralcommission.org.uk/find-information-by-subject/elections-and-referendums/past-elections-and-referendums/eu-referendum/electorate-and-count-information (accessed 6.7.17).

Tucker, J.A., 2007. Enough! Electoral fraud, collective action problems, and post-communist colored revolutions. Perspect. Polit. 5, 535–551. doi:10.1017/S1537592707071538

Tversky, A., Kahneman, D., 1974. Judgment under uncertainty: Heuristics and biases. Science (80-.). 185, 1124–31. doi:10.1126/science.185.4157.1124

Watson, D., Klohnen, E.C., Casillas, A., Simms, E.N., Haig, J., Berry, D.S., 2004. Match makers and deal breakers: Analyses of assortative mating in newlywed couples. J. Pers. 72, 1029–1068. doi:10.1111/j.0022-3506.2004.00289.x

Welfens, P.J.J., 2016a. Editorial on the BREXIT Forum. Int. Econ. Econ. Policy 13, 519–522. doi:10.1007/s10368-016-0364-0

Welfens, P.J.J., 2016b. Cameron's information disaster in the referendum of 2016: An exit from Brexit? Int. Econ. Econ. Policy 13, 539–548. doi:10.1007/s10368-016-0361-3

Wilkinson, S., 2004. Votes and Violence. Cambridge University Press, Cambridge, England.

Zuckerman, A.S., 2005. The Social Logic of Politics: Personal Networks as Contexts for Political Behavior. Temple University Press, Philadelphia, PA.

Appendix
Table A1: Profile of remain and leave voters

		Remain	Leave
n		736	822
Mean age		45.6	52.9
Mean income comfortability (range 1-4)		3.04	2.95
Sex	Male	54.0%	52.2%
	Female	46.0%	47.8%
Social Grade (SEG)	AB	35.1%	23.4%
	C1	30.8%	28.3%
	C2	12.2%	20.0%
	DE	21.8 %	28.3%
Highest educational level	No formal qualifications	2.6%	7.8%
	High school qualifications or equivalent – left at 16	19.6%	35.3%
	High school qualifications or equivalent – left at 17/18/19	29.0%	29.1%
	Undergraduate/ university degree or equivalent	29.1%	13.0%
	Postgraduate/ university degree or equivalent	12.8%	5.2%
	Professional qualification	6.9%	9.6%
Party ID	Conservative	29.4%	40.7%
	Labour	42.1%	28.3%
	UKIP	0.6%	20.5%
	Liberal Democrat	12.4%	3.9%
	Other	15.5%	6.5%