The Issue of Loneliness for Democracies
– Alienation, Demobilisation, Polarisation?

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Alexander Langenkamp

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1. Gutachter/-in: Prof. Alexander Schmidt-Catran
2. Gutachter/-in: Prof. Sigrid Roßteutscher

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Contents

1. The role of perceived loneliness for political attitudes and participation

1.1. Research question and contribution

"If we were not social creatures, loneliness would not exist. It is precisely because we are social creatures that we find inhabiting a social space where we lack ties to anyone so lonely"

(Svendsen, 2017 p.10)

A great deal has been written about the importance of social relationships for human life, and the realisation that social relationships form the bedrock of humanity is not new. Aristotle observed that "man is by nature a social animal" and theorised about the natural interdependence between individuals, community, and the society at large (Morrison and Smith, 2017, p.21). Likewise, prominent social theorists such as Herbert Mead and Robert Merton theorised early on about the relationship between the individual and society (Mead, 1934; Merton, 1996).

Considering the importance of social relationships and that societal structures such as tribes, cities, nations, and religious communities date back thousands of years, it is of little surprise that social scientists spend decades investigating the effect of social structure and relationships on behaviour and attitudes. In line with that, scholars acknowledged that the 'need to belong' plays an incremental role in group formation, societal cohesion, social cognition, and (ultimately) society as a whole (Baumeister & Leary, 1995; Greifeneder et al., 2017).

The majority of sociological studies, however, emphasise social structure, observable network characteristics, and the availability of resources (Coombs et al., 2013; Matthew. O. Jackson, 2019). Especially the literature in the social capital tradition focuses on generalised trust and objective network characteristics as the key aspects of social embeddedness and social cohesion (Jackson, 2020).

In contrast, although it has been the subject of countless philosophical writings and pop-cultural works throughout the centuries (Svendsen, 2017; Wegener & Jacobs, 2021), the phenomenon of *perceived* loneliness and its societal consequences is a much less discussed subject in contemporary social sciences.[1]

Loneliness, defined as the subjective perception that personal social relationships and belonging are qualitatively or quantitatively insufficient (Perlman & Peplau, 1981), is a fundamental human experience that forms our personalities as well as our perceived social realities (Svendsen, 2017). Even so, there is a substantial lack of empirical studies investigating the societal consequences of loneliness beyond questions of public health (as will be discussed in Chapter 1.2.2. in more detail).

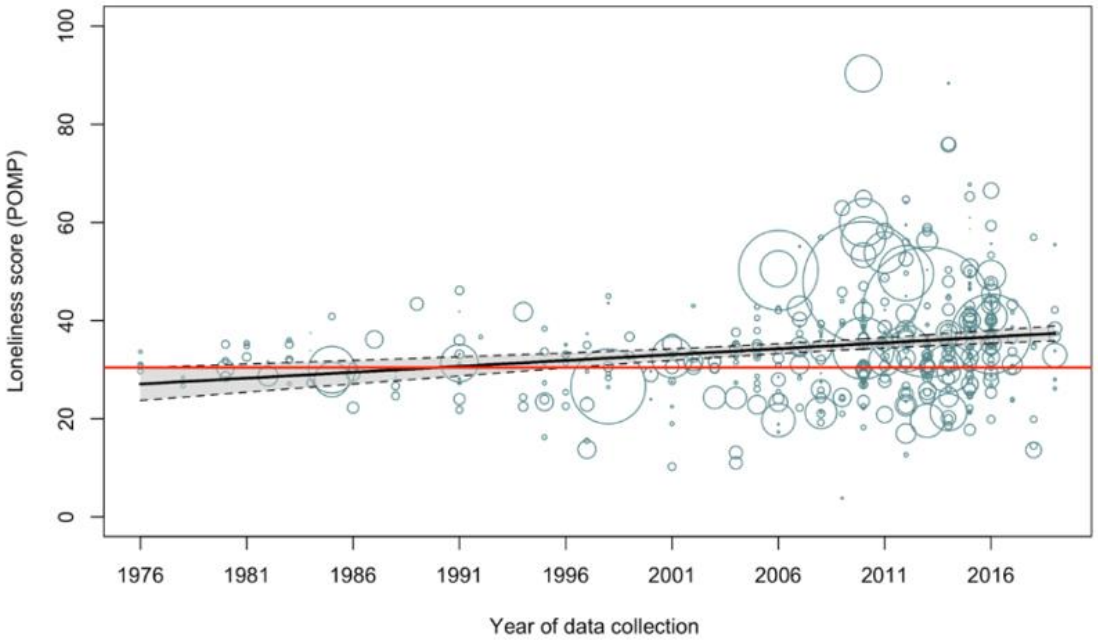
However, the lack of empirical insights into the social and political consequences of loneliness might be a crucial shortcoming. In recent years scientists have warned of a twofold development in democracies around the world. First, they attest to the advancing erosion of social belonging and the spread of loneliness, discussed particularly in the context of Western democracies (Bauman, 2013; Cacioppo & Cacioppo, 2018b; Hertz, 2021). While people around the world have experienced growth levels in wellbeing, regional mobility, and spare time for several decades (Pinker, 2018 p.232-261), international surveys have simultaneously observed concerningly high rates of individuals who feel lonely, alienated, and disconnected all over Europe and the USA (Cigna, 2018; Eyerund & Orth, 2019; Jo Cox Commission on Loneliness, 2017; Yang & Victor, 2011). Media reports pick up these warnings and coined a term for the: "epidemic of loneliness" (compare for instance Easton 2018; Ortiz-Ospina 2019).[2]

While such concerns were brought forward by post-modernist scholars such as Zygmunt Bauman and Georg Simmel decades ago (Bauman, 2013; Levine & Simmel, 2013; Simmel,

[1] Overall, the fields of political and sociological studies are characterised by a general scarcity of research, investigating the consequences of discrete emotions (Weber, 2013).
[2] Compare chapter 1.4 for an extensive description of the epidemiology of loneliness in Europe.

1971), scientists have only recently been able to back up these suspicions with long-term empirical data. Most importantly, a recent meta-analysis using survey data from over four decades indicates a slow, but steady increase in loneliness all around the globe (Buecker et al. 2021). Figure 1.1. displays the trend over time as reported by the authors of the meta-analysis. The authors conclude that, although the phrase "loneliness epidemic" is exaggerated, loneliness is indeed a growing issue for nations around the world.

Fig. 1.1. Changes in loneliness in emerging adults from 1976 to 2019



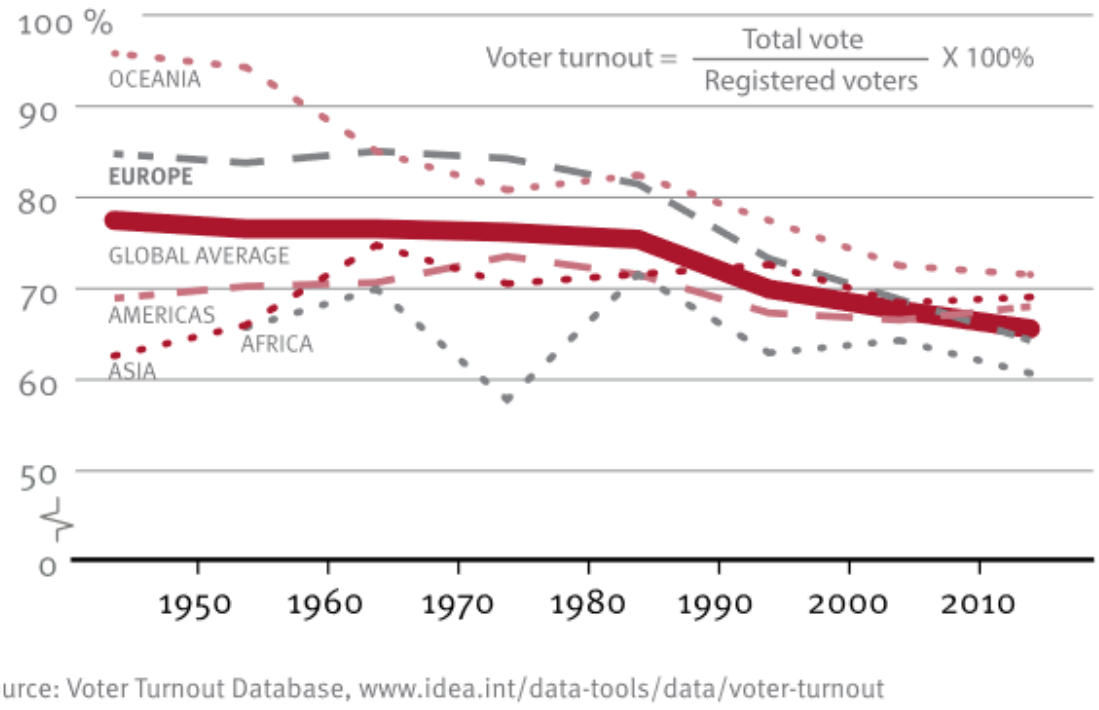
Note: Image derived from (Buecker et al., 2021 p.798); Image depicts UCLA loneliness scale scores (converted into POMP scores) against the year of data collection, the solid line indicates the predicted loneliness values from a random-effects meta-regression model. Grey area between dashed lines = 95% confidence intervals.

The second development concerns shrinking electoral participation and the growing successes of populist parties. In 1831, Alexis de Tocqueville travelled through the young democracy of the United States and wrote one of the first systematic investigations of democratic societies (Tocqueville 2012 [1835]). Among many ground breaking insights, Tocqueville remarked that citizen involvement (in form of civil and political associations and

common action) are essential means of democratic systems. Since then, decades of research have established that, in order to function, civil societies and political institutions rely on citizens' active and constructive participation and on the mutual understanding of those citizens that institutions are legitimate and other members of society are trustworthy (Brehm & Rahn, 1997; Marien & Hooghe, 2011).

Concerningly, political scientists report a continuous decline in voter turnout since World War II (compare Figure 1.2.) as well as an increasing success of populist parties, especially since the new millennium (Gray & Caul, 2000; Rooduijn et al., 2019).

Fig. 1.2. Development of voter turnout by geographical region



Source: Voter Turnout Database, www.idea.int/data-tools/data/voter-turnout

Note: Image and footnote derived from Solijonov (2016 p.25)

While the public and academic debate concerned with loneliness has focused mostly on the consequences of loneliness for health and wellbeing (Holt-Lunstad, 2017; Holt-Lunstad et al., 2017), some authors have only recently connected both described developments and theorised

about possible societal consequences of widespread loneliness, including its threat to democracies (Hertz, 2021).

One must of course connect such macro-developments with caution. However, as will be shown throughout this dissertation, loneliness does indeed have an eroding potential for these vital democratic resources on the individual level, which makes this macro-interpretation more reasonable. Debates about the social relevance of loneliness have widened of late and media, politicians, and the public alike discuss vividly, and often controversially, the potential socio-political consequences of these developments. Some countries have even taken concrete political action and put the topic of loneliness prevention on their official agendas (BMFSFJ, 2022; Yeginsu, 2018).

However, as will be discussed in Chapter 1.2.2. in more detail, the societal consequences of loneliness are empirically vastly underexplored, and social scientists have taken little interest in the phenomena so far. A very small number of studies have pioneered the field of whether loneliness affects political attitudes and suggest that loneliness might relate to phenomena such as xenophobia and political distrust (Floyd, 2017; Schobin, 2018; Yang, 2019). Still, their number is small and the insights that have thus far been gained are consequentially limited. This lack of empirical research means that political and sociological insights on the erosive consequences of loneliness are scarce, and very little is known about how perceived loneliness relates to other societal and political outcomes of interest beyond questions of public health.

In these reviewed developments lies the root of this dissertation: considering long term trends of increasing loneliness (Buecker et al., 2021), globally declining electoral turnout rates (Gray & Caul, 2000; Weßels et al., 2014), and the recent successes of parties on the extreme ends of the political spectrum around the world (Bernhard & Kriesi, 2019; Rooduijn, 2019), the question is whether these developments are connected and to what extent loneliness is an influence on electoral decision making, all of which is growing ever more pressing. In light of this, ***this dissertation aims to investigate whether and how loneliness influences political***

participation in Western Europe. As this x-centred research question is necessarily broad, the question will be investigated with a focus on electoral decision-making in particular.

Bringing together literature from sociology, psychology, and political science, this thesis aims to develop an interdisciplinary take on how loneliness and social belonging relate to electoral behaviour. The main argument of the thesis is that ***perceived loneliness triggers a sense of alienation and generalised distrust which results in either political apathy (i.e. an inhibited sense of duty to participate and a reduced probability of participating in political action) or an increased affinity to political movements that satisfy the desire of lonely individuals to 'belong' (i.e. increased sympathy for populist parties and increased probability of participating in public protests).***

I will elaborate on this argument in more detail throughout this Chapter before turning to the separate studies that build the empirical basis of this dissertation. In particular, I will review the concept of loneliness and provide a working definition of the concept (Chapter 1.2.1). Then, I will contrast loneliness with other prominent, related theoretical concepts such as social capital, social anomie, and social embeddedness to contextualise loneliness within the larger theoretical field (Chapter 1.2.2). After this, I will elaborate on the theoretical model that underlies the empirical studies of this cumulative dissertation and discuss the socio-psychological consequences of loneliness, which links loneliness to political and electoral behaviour (Chapter 1.3.1). The subsequent section will provide a descriptive account of the rate and distribution of loneliness in Europe to contextualise and assess the scope and sociological relevance of the phenomenon (Chapter 1.4.1). Finally, I will briefly summarise the four empirical studies which are presented in Chapters 2 to 5 and highlight how they build on each other as well as how they account for their respected limitations (Chapter 1.5.1).

The last Chapter of the dissertation following the empirical Chapters provides a review of the dissertation as a whole, summarises the central insights gained, reflects on the limitations of the thesis, and offers a selection of questions that emerged during the dissertation that have

not yet been answered (Chapter 6.1). By doing so, I aim to contextualise the findings of the dissertation, help the readers to interpret the findings in the correct light, and point to fruitful avenues of investigation for upcoming studies. Taken as a whole, the dissertation will provide theoretical and empirical evidence that loneliness indeed influences political participation and decision-making within democracies.

1.2.1. Loneliness, a conceptual clarification

"To be involuntarily lonely and not belonging to anyone or anything is to lack participation in the world […]. One can feel lonely even if there are many people around, or one can be completely alone without feeling lonely. Loneliness can disappear with a sense of belonging."

(Dahlberg 2007, p.195)

As the philosopher Svendsen did point out (2017): loneliness is a universal human experienced and experienced by all human beings at some point in their life. This, however, does not mean that lonely individuals necessarily become isolated. As elaborated by Dahlberg in great detail, loneliness is distinct from aloneness and interrelated with a sense of social belonging (K. Dahlberg, 2007).

As the term "loneliness" is used by many people intuitively and without much thought in their everyday language, it is often used interchangeably with other related, but vastly different terms such as "aloneness", "exclusion", or "solitude" (Riva & Eck, 2016). As pointed out by Riva and Eck, this issue extends to scientific publications as well. Therefore, it is important to review and define loneliness as a distinct phenomenon and how it differs from related concepts.

1.2.2. Defining loneliness

"It is not desirable to get locked into one understanding that is not able to connect the different aspects of the loneliness experience. It is therefore found important to recognise the different features of loneliness research and try to connect the different approaches to loneliness."

(Sønderby & Wagoner, 2013 p.22)

Throughout the 20th century, a multitude of theoretical approaches developed that tried to conceptualise loneliness (Bohn, 2006; Motta, 2021; Perlman & Peplau, 1981). While some approaches fell out of favour in empirical sciences as they did not allow for a clear operationalisation of loneliness (psychodynamic and existential approaches in particular), most contemporary authors build on a synthesis of three central models of loneliness, which are summarised in Table 1.[3] The other existing concepts which are less frequently used in empirical studies will not be discussed in greater detail here (for a more detailed discussion of alternative approaches to loneliness, compare Motta (2021) and Wegener and Jacobs (2021).

[3] For instance, existential loneliness understands loneliness as a "natural" human condition that is inherently part of life. Famous representatives of this tradition are philosophers such as Martin Heidegger, Jean-Paul Satre, or Karl Japsers. From their point of view, while experiencing loneliness, individuals experience themselves in their purest form. Also, loneliness is independent form external factors and is fluent in its valence (hence, it can be both positive solitude or negative loneliness). While the existential approach to loneliness is still used in philosophical writings, it lacks a clear-cut operationalisation as well as conceptual problems as it intermingles solitude and loneliness, which explains why this approach is uncommon in empirical investigations (Linares, 1974).

Table 1.1. Theoretical perspectives on loneliness

Model	Summary	Source
1) Social need model	Loneliness as dissatisfied social needs. Absence of relationships that serve a role such as the fulfilment of attachment, social integration, or nurturance.	(Heinrich & Gullone, 2006; Weiss, 1973)
2) Cognitive discrepancy approach	Loneliness as a perceived (hence cognitively driven) mismatch between social needs and social situation.	(Marangoni & Ickes, 1989; Perlman & Peplau, 1981)
3) Evolutionary "need to belong" approach	Loneliness is an evolutionary developed, physically painful warning signal for insufficient social belonging.	(Baumeister & Leary, 1995; Cacioppo & Cacioppo, 2018a)

The oldest of the three models is the 'social need' approach to loneliness which was introduced in the 1950s (Frieda Fromm-Reichmann, 1959; Weiss, 1973). Substantially, this model postulates that humans have various social needs that need to be fulfilled. As different social relationships offer different kinds of resources (such as intimacy, security, resources, or fun) a person requires a diverse set of social relationships that satisfy these various social needs. From this theoretical perspective, loneliness is an affective reaction to social deprivation and a lack in one type of social need cannot simply be compensated for with other types of social relationships. For instance, a person desiring strong family ties will likely be lonely if this type of relationship is lacking, even if he or she has a great network of friends and colleagues.

In line with that reasoning, this theoretical perspective postulates that there are different sub-types of loneliness. The loneliness a person feels if he or she lacks a social security network is likely to be different from a person who is lonely because he or she desires more intimate relationships (DiTommaso & Spinner, 1997). While this general logic was included in the succeeding models summarised below as well, one central shortcoming of this perspective is that it treats loneliness as an outcome of social surroundings without consideration of the individuals' cognitive processes. Furthermore, modern studies show that, while loneliness indeed varies depending on the type of undersupplied social need, loneliness always consists of

a set of core characteristics that individuals experience if they suffer from it (Heu, Hansen, van Zomeren, et al., 2021).

The most commonly used definition of loneliness at present is based on Perlman and Peplau's cognitive discrepancy model (CDM), which expands on the social need approach (Perlman & Peplau, 1981). This model states that loneliness is a **subjective perception** that indicates a painful, undesirable lack in qualitative or quantitative aspects of available social relationships. From this model's perspective, loneliness triggers a complex set of affective reactions and is caused by a multitude of factors. In particular, it is a product of the person's cognitive evaluation of their own social needs and the perceived ability of the personal social network to fulfil the individual's social desires. With this as its basis, the model adopts the social needs approach and extents the framework with a cognitive superstructure. With that, the model emphasises the important role of the actors' subjective evaluations. Furthermore, this model allowed social forces such as social norms and social comparisons to influence the cognitive evaluation process, which opens the model for explanatory sociological factors.

The third and most modern model that conceptualises loneliness is the evolutionary model of loneliness, which can be understood as an addition to the CDM model (Cacioppo & Cacioppo, 2018a). The evolutionary model emerged from the "social belonging hypothesis" which states that social belonging is a fundamental human need that developed due to the evolutionary advantage provided by a social group (Baumeister & Leary, 1995; Gere & Macdonald, 2010). This model adds to the former two by providing an extensive explanation of *why* humans feel lonely in the first place (i.e. its evolutionary function), which physiological and psychological reactions loneliness causes based on this function, and, consequentially, why it exerts an influence on cognition and behaviour (which will be outlined in section 1.3 in more detail). Briefly put, the model builds on neurological studies that indicate that loneliness activates similar areas in the brain as physical pain, suggesting that loneliness serves a similar

function as a physical warning signal (Eisenberger, 2012). This is explained by the evolutionary advantage provided by reciprocal social groups that were crucial for survival for most of human history. As such, loneliness is painful, stressful, and functions as a motivating force to overcome the aversive situation to re-establish a sense of security. Consequentially, unresolved long-term loneliness is associated with (among other things) increased threat perception, insecurity, anxiety, stress, distrust, and apathy (Spithoven et al., 2017).

This is the point at which we can turn back to the Dahlberg quote this section started with: at this point, there is an interdisciplinary consensus that loneliness is not to be confused with aloneness. Instead, loneliness is a subjective perception and should be understood as the affective warning signal that the vital resource of social belonging is under threat. Consequentially, loneliness is conceptualised as inherently stressful, painful, and threatening. This is also the key difference between loneliness and solitude, which is defined as a positive state of aloneness and which is frequently, but falsely, used as a synonym for loneliness (Long & Averill, 2003; Riva & Eck, 2016).

While these three summarised frameworks of loneliness all vary in their scope, they all share this mutual conceptual core which is used as the working definition of this dissertation. For this thesis, ***loneliness is defined as a painful subjective experience that one`s own desired level of social belonging or relationships is, qualitatively or quantitatively, perceived as deficient***. In line with the description above, I conceptualise loneliness as an aversive and painful perception.[4]

[4] In contrast, solitude refers to a desired state of aloneness that can be sought out on purpose and is helpful for gaining insights through calmness and self-reflection. For a review of loneliness, solitude and other related concepts, see Mann et al., 2017. Likewise, compare Chapter 1.2.2. for a brief discussion about loneliness and its distinction from other concepts. However, it is worth mentioning that a minority of scholars (especially in philosophy) conceptualise solitude and loneliness as different types of one phenomenon (Long et al., 2003). That being said, this viewpoint is the minority position and runs into problems in respect of the discriminatory power of the definition.

This definition has several implications. First, we can derive insights into the causes of loneliness and its distinction from objective isolation. As argued above, loneliness stems from a mismatch between the interplay between the social structure in which a person is embedded in, one`s own social expectations, and the individual's perception of the actual situation. As this can include qualitative as well as quantitative aspects of social relationships, the phenomenon of loneliness has strong psychological as well as sociological components and is a fundamentally interdisciplinary concept.

For instance, whether a person feels lonely is strongly influenced by the different types of relationships he or she has (among others: friends, family ties, romantic partners, or the more general social surrounding), the quality of these relationships (for instance trustworthiness, reciprocity, reliability, or intimacy), and how these qualities are perceived in a given situation (Gierveld et al., 2018; Perlman & Peplau, 1981; Weiss, 1973). From a functionalistic point of view, loneliness then motivates affected persons to overcome this perceived mismatch and re-affiliate with others to alleviate this painful feeling (Qualter et al., 2015).

This also means that how individuals perceive their social relationships is strongly influenced by social forces such as social comparison standards or social norms (Lykes & Kemmelmeier, 2014; Swader, 2019), their specific socialisation, the related expectations one person experiences (T. Jackson, 2007), and other cultural aspects of the region a person is living in (Heu, Hansen, van Zomeren, et al., 2021; van Staden & Coetzee, 2010).

This explains why studies repeatedly found loneliness to be only just weakly or moderately correlated with objective measures of social inclusion. This includes measures of network characteristics such as frequency of social contacts or network size (Beller & Wagner, 2018; Ko, 2018; Luhmann & Hawkley, 2016) as well as measures of social activities (Beller & Wagner, 2018; Mund et al., 2022; Queen et al., 2014; Russell et al., 2012). In light of the repeated empirical finding that loneliness cannot be adequately captured with objective

measures of social relationships, scholars came to the consensus that loneliness needs to be considered a phenomenon in its own right, separate from constructs such as social embeddedness or aloneness (de Jong Gierveld et al., 2006; Gierveld et al., 2018). Simply put, while aloneness is a state of being, loneliness is a state of mind.

The second important implication we can derive from the definition is based on the insight that loneliness serves the distinct function of motivating individuals re-affiliate in order to overcome the aversive feeling. Hence, we can conclude that loneliness - although it can be caused by a variety of social and psychological triggers and even though there are sub-types depending on the type of deprived relationship

This is supported by empirical studies as well. A large qualitative study based on interviews in five countries found that there are no fundamental qualitative differences in how people define loneliness, which causes are likely to foster loneliness, and how loneliness can be alleviated (Heu, Hansen, van Zomeren, et al., 2021).[5] While the study indicates that the emotion is very complex and associated with (among other things) motives of self-doubt, a sense of disconnectedness and separation, and relational deficiencies, the fundamental characteristics described above were found in all investigated countries.

Likewise, scales developed to measure the subjective experience of loneliness indicate a high internal validity of the measurements across cultures, suggesting that loneliness is a valid construct across time and regions (de Jong Gierveld & van Tilburg, 2010). This holds true for unidimensional as well as multi-dimensional scales, indicating that while loneliness stems largely from the subjective perception of personal circumstances, it is characterised by central characteristics across cultures. To be specific, the mentioned qualitative investigation found that loneliness is cross-culturally understood as an impairment between the self and the social

[5] The study interviewed people in Austria, Bulgaria, Israel, Egypt, and India. The interviews took place in the respective regional languages.

surrounding, seen as different from being alone, experienced as aversive, negative, and painful, and associated with a set of emotions including, anxiety, sadness, frustration or vulnerability (Heu, Hansen, van Zomeren, et al., 2021). Interestingly, this means that loneliness has a certain conceptual closeness to anomie and social alienation literature, a point that will be elaborated on in section 1.2.2.

Taken together, loneliness is a complex multidisciplinary phenomenon that is shaped by social and cognitive forces and must not be confused with objective aloneness. Before turning to the question of how loneliness exerts its influence on political participation and electoral decision-making, it is important to differentiate loneliness from other concepts that were previously used to predict political participation. As foreshadowed above, this is important to avoid confusion about the relationship between loneliness and theoretical perspectives such as anomie, social capital, or social embeddedness. By contrasting loneliness with alternative frameworks, I aim to highlight its unique characteristics, pre-empt concerns about its novelty, and illustrate its history in the social sciences.

1.2.3. Loneliness in social sciences: A review of a short history

„The truth is that the masses grew out of the fragments of a highly atomized society whose competitive structure and concomitant loneliness of the individual had been held in check only through membership in a class. The chief characteristic of the mass man is not brutality and backwardness, but his isolation and lack of normal social relationships."

(Arendt, 1973 p.317)

In sociological and political science, the idea that social relationships are a potent societal force has been incorporated into a multitude of theoretical frameworks and is mostly operationalised with social networks characteristics. For instance, decades of research established that network homophile, the clustering of individuals with similar characteristics, is a driving force in social and cultural segregation (McPherson et al., 2001). Likewise, individuals tend to orientate their actions toward the behaviour of their peers (Blais et al., 2019). As such, social contact and group membership influence political actions and voter turnout (Bhatti et al., 2020; Lazer et al., 2010; Weßels et al., 2014), increase generalised social trust (Putnam, 2000a), and alter the individual's perception of social reality (Greifeneder et al., 2017).

That being said, while social science has produced a large corpus of literature on the role of *objective* social embeddedness for collective action and political participation throughout the years, fairly little is known about the question of how *a perceived lack* of social belonging, i.e. loneliness, relates to these outcomes (Yang, 2019). To draw a better picture of the (lacking) state of the literature, I will briefly discuss 1) how far loneliness has been incorporated in sociological and political theory that is linked to political behaviour, and discuss 2) the extent to which loneliness has been empirically investigated in the social sciences so far. This is of particular importance as loneliness (as mentioned in the previous section) is frequently

intermingled with other related, but distinct concepts such as social exclusion, isolation, and solitude (Riva & Eck, 2016).

As Yang criticises extensively in a recently published book, loneliness was never the key subject of sociological theories (Yang, 2019 p.23-27). As he provocatively states, "What the founding fathers of sociology (Karl Marx, Max Weber, Emile Durkheim, George Simmel, etc.) were concerned about are grand socio-historical regularities and processes, such as social structure and mobility, social conflicts and struggles and the relations among different parts of society as a whole […]. Compared with these issues, loneliness […] is too individual and psychological to deserve the attention of a sociologist" (Yang, 2019 p.24). While this statement is meant to provoke and there are certainly exceptions (for instance, compare Arendt (1973) and Riesman et al. (2020)), loneliness was indeed rarely of prime concern in social sciences, especially in empirical contributions to the field.

The most noteworthy exception that did cover loneliness as a key sociological force was a group of scholars in the tradition of the mass society theory and the social anomie framework. As exemplified by the quote with which this Chapter begins, Arendt and other scholars in this theoretical tradition argued that modernity, new industrialised work environments, and life in metropolitan cities were leading to an increasingly individualised and atomised society. From this viewpoint, the steady (perceived as well as objective) erosion of social cohesion in modern, individualised societies led to two central outcomes.

First, on an objective level, citizens lose their social support networks. Crucially, social ties provide important resources such as information, money, or logistical support vital for political participation. Second, on a subjective level, they lose their sense of community, security, and belonging. This insecurity and aimlessness were theorised to lead to a perceived sense of alienation, disenchantment with democratic and civil values, and consequentially an increased openness to totalitarian ideologies. As these totalitarian ideologies provide a sense of security,

social orientation, and typically a very cohesive community of ideologically like-minded people, lonely individuals were expected to be particularly open to their narratives.

Durkheim's anomie theory, which provided the theoretical basis for the mass society theory, places emphasis on a rapid social change from a communal social environment to an increasingly anonymous life in a crowded city, which led to the atomised society and sense of alienation described above. In line with other critics of (post)modernism such as Georg Simmel or Zygmunt Bauman (Bauman, 2013; Simmel, 1971), Durkheim expected the social shift toward the anonymous crowdedness of cities to atomise the society into small, individualised fragments.

In that sense, it can be argued that the concept of loneliness entered the sociological theory as part of Durkheim's social anomie concept alongside other anomie dimensions such as 1) a sense of being overlooked by the greater society, 2) a sense of disorder, 3) social pessimism, 4) a sense of meaninglessness, and 5) an attitude of distrust and a lack of social support (Bell, 1957), though just as a minor and undertheorised aspect of a broader theoretical conception.[6] Still, the concept never focused on the individuals' perception of their social relationships but rather focused on the relationship between individuals and society at large. However, even in its indirect and undertheorised form, loneliness started to vanish from the theory shortly thereafter.

The US-American sociologist Robert Merton revised Durkheim's approach to anomie and shifted the Durkheimian focus on social change as a trigger for anomie to a cultural overemphasis on monetary success and social structures that disadvantaged some social groups in their ability to achieve said success (Bernburg, 2019; Merton, 2014). Merton's influential take on anomie was taken up by the majority of empirical scientists of the time.

[6] Recall that loneliness is defined as a painful subjective warning signal that one's own desired level of social belonging or relationships are, qualitatively or quantitatively, perceived as deficient.

In consequence, anomie research drifted away from large-scale social changes leading to the atomisation of society towards structures that facilitated economic social inequality. Authors in this tradition saw social anomie as a product of dysfunctional, latent social structures without much consideration of the individual agents. Consequentially, other social factors such as social interactions were theoretically underrepresented (Thio, 1975). Also, the focus on social structure and lack of conceptualising the micro-level, cognition and affective states, highlights that loneliness was not properly covered in this line of research.[7]

Furthermore, the anomie concept that originated from Durkheim`s and Merton's theoretical conceptions faced a variety of empirical and theoretical criticisms that led to its decline throughout the 1960s and 1970s. For instance, the approach intermingled indicators such as distrust, social pessimism, and loneliness with one another, which explains why anomie scales include all of these concepts at once. This led to substantial empirical contradictions, in particular in the respect of the internal consistency of anomie scales, issues with their factor structure, and redundancy with other scales in the sixties and seventies (Lutterman & Middleton, 1970; McDill, 1961).

In line with that, the authors described the original development and testing of these scales as "sketchy" and methodologically flawed (Rose, 1966 p.40). Unsurprisingly, the conceptual mixture within the anomie framework led to theoretical inconsistencies in the theories` predictions, and many empirical findings turned out to be statistical artefacts. For instance, empirical investigations failed to link the expected relationship between population size, density, and heterogeneity with a reduced sense of community or kinship (Thomson, 2005). Also, the theoretically expected rapid individualisation and isolation of the individual could not be empirically confirmed (Thomson, 2005).

[7] This is a qualitative assessment and arguably up for debate. However, I think it would be a stretch to argue that the social anomie research properly considered the individuals' perception of their social relationships and the potential discrepancy between desired and available social relationships as part of their theory.

All these aspects contributed to the decline of anomie research in the 1960s and 1970s. That being said, some concepts and ideas from the social anomie tradition were picked up by the social capital theory in the 1990s. Although social capital is a highly contested concept (Bhandari & Yasunobu, 2009), most commonly, social capital is considered a collective asset instead of an individual trait, and is typically understood as mutually shared norms, values and trust within a social group that can be used for cooperation and collective actions. If absent, societies lose their inherent cohesion and this leads to a distrusting and atomised society. Also, cooperation and collective actions are vital characteristics of democratic regimes, a fact that led authors to suspect that social capital serves a stabilising function for democracies and totalitarian regimes alike (Roßteutscher, 2010; van Deth et al., 2006).

One of the most prominent approaches to social capital is based on Putnam's analysis of the United States (Putnam, 2000). He argues that social interactions and civic organisations serve as 'training facilities' for said resources and ultimately lead to a cohesive and reciprocal community characterised by shared norms and trust beliefs. In this sense, the social capital includes the concepts of social isolation and social embeddedness as well as core ideas from the social anomie tradition, but falls short of including the subjective dimension of loneliness as well.[8] Hence, after the decline of the social anomie tradition, loneliness was not incorporated into the social capital framework and disappeared from sociological and political investigations in general, even in its indirect form.[9]

[8] Putnam basically refines the idea of the social anomie tradition by saying that the disintegration of civil organisations leads to the erosion of social norms and, consequentially, to the rise of extremism. In his words: "People divorced from community, occupation, and association are first and foremost among the supporters of extremism." (Putnam, 2000 p.338)

[9]Beyond this oversight, the concept of social capital faces substantial backlash related to consensus regarding its definition and operationalisation. As summarised by Bhandari and Yasunobu (2009), this conceptualisation is broad in terms of multiple issues. As they summarise: "*Research on social capital remains in its initial stage and the concept is still elusive, prone to contextual definition, deficient in common measurement indicators, inability to explicitly quantify effects, and subject to various criticisms. Conceptual and measurement*

After that, the interest in loneliness grew in the field of psychology, and scholars developed various scales to measure loneliness. In contrast, these scales were not put into use by social scientists and the anomie related research vanished in the political and social sciences. This circumstance was pointed out by Swader, who summarised: "Despite that loneliness has strong links to well-researched topics such as subjective wellbeing […], few sociological advances in understanding loneliness have been made within the past 45 years" (Swader, 2019 p.2). A stunning conclusion, given that the sociologist Robert Weiss had already remarked in the early 1970 that there was a substantial lack of empirical investigations regarding loneliness in the social sciences (Weiss, 1973).

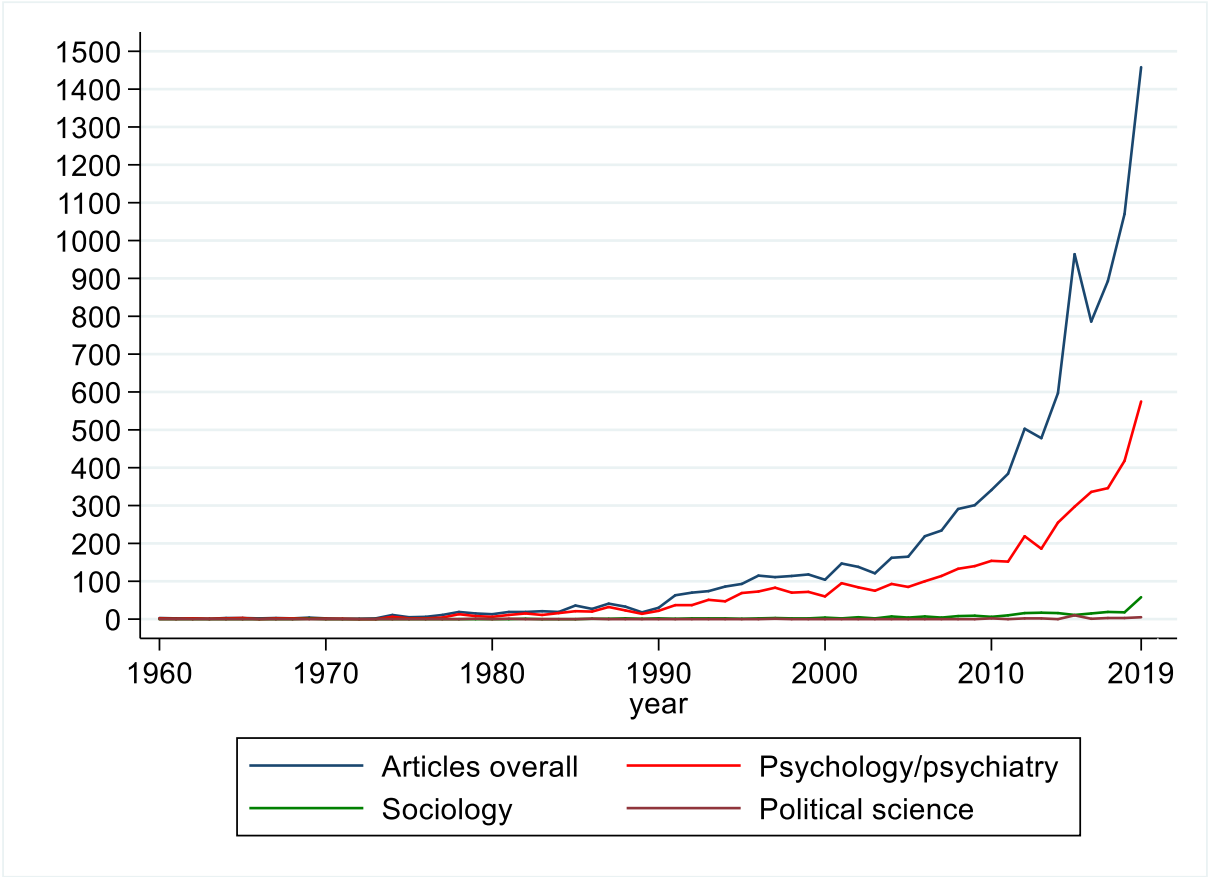
So far, I have argued that loneliness did not play a major part in social theory and was merely superficially or indirectly covered in the mass society tradition. This is reflected by the number of studies published related to loneliness in social science. The state of the literature can be nicely illustrated by the number of related research articles published throughout the years. Figure 1.3. displays the number of articles registered in the webofscience.org database published between 1960 and 2019 with the term 'loneliness' in the title, separated by scientific field.

The graph illustrates that loneliness played only a minor role in scientific publications in general throughout the 20th century, with particularly few publications in sociology and political science. As illustrated in Figure 1.3., the interest in loneliness as a distinct phenomenon that slowly developed over time and has started to expand rapidly within the last 20 years. While the rapid increase of online journals fostered a substantial increase in scientific publications overall, this did not result in a growth in publications in social sciences concerned with loneliness. Out of the whole corpus of 12402 articles published between 1960 and 2019, only

imprecision has led the concept prone to vague interpretation, less empirical application, and underestimation of its value." (Bhandari & Yasunobu, 2009 p.480).

264 and 32 research articles are categorised as studies from the field of sociology or political studies respectively. Even considering the incompleteness of literature databases, this indicates that loneliness is not a prominent subject in the social sciences. [10]

Fig. 1.3. Number of research articles with 'loneliness' in the title by year and field



Note: data derived from webofscience.org (17.03.2021); The Figure was first published as a pre-print version of Chapter 3 (compare Langenkamp, 2021c).

One obvious concern at this point is the issue of terminology. While Figure 1.3. indicates that the term loneliness is not used much in sociological and political literature, one might argue that the underlying idea of loneliness is covered in other theoretical traditions that use another

[10] A similar argument has been made by Yang in respect of the JSTOR database with only 198 articles published between 1980 and 2016 directly concerned with loneliness (Yang, 2019 p.24).

term for the same meaning. I argue, however, that this is not the case. Similar to the reviewed social anomie and social capital theories, loneliness was at best indirectly touched on by other frameworks and rarely a focal point of sociological and political theory.

Table 2 summarises and contrasts loneliness with several other theoretical perspectives common in the political and sociological literature used to explain political participation. While the list is certainly not exhaustive, it covers the predominant approaches in contemporary literature. [11]

If we recall the definition of loneliness from section 1.2.1, we can see that loneliness is not present in the listed theoretical perspectives. There, I defined loneliness as a subjective, painful warning signal that an individual`s social belonging or relationships are, qualitatively or quantitatively, perceived by them as deficient. In contrast, all other listed concepts refer either to the objective or structural aspect of social networks (aloneness and social embeddedness), the relation between the individual and more abstract aspects of society (anomie, alienation, social capital, social exclusion (2)), the act of being actively ignored or excluded (social exclusion (1) and ostracism), or are a desired and positive physical state of aloneness which is associated with a completely distinct set of affective, cognitive and behavioural outcomes (solitude).

Arguably, this brief Chapter cannot discuss all of the listed concepts at length and come to a definitive conclusion. Firstly, there are countless theories and interpretations of said theories one might discuss and contrast with loneliness. Secondly, some concepts, such as social capital, are strongly contested in their definitions, which makes it impossible to come to a final interpretation. However, Table 1 illustrates that most concepts have a different focus compared

[11] For instance, theories such as Heitmeyer's social disintegration theory (Imbusch & Heitmeyer, 2012), Zygmund Baumann's work on liquid modernity (Bauman, 2013), or Hartmut Rosa's resonance theory could be discussed here (Rosa, 2016). However, with the exception of social disintegration theory, these frameworks are not as commonly used in the political science literature and neither of them actually includes loneliness as a central concept.

to the research concerned with loneliness and that it is unlikely that loneliness has been included in these theoretical frameworks under another term.[12] This is supported by other social scientists drawing similar conclusions about the state of the field (Swader, 2019; Yang, 2019).

Thus, the lack of publications in sociology and political science depicted in Figure 1.3. indicates an actual absence of the subject in these fields. Correspondingly, we can attest to a lack of insights into the consequences of loneliness on citizens` political involvement.

Absence does not indicate relevance, of course, and it is an open question whether loneliness should be a subject of interest for scholars interested in political attitude formation and behaviour in the first place. However, as will be argued in Chapter 1.3 (and as Chapters 2-5 will empirically confirm), loneliness has a substantial influence on political behaviour, which something that been thus far mostly overlooked.

[12] Note that social exclusion is particularly difficult to define. In psychological research, social exclusion is understood on a micro/meso level. There, individuals or groups are accidentally or purposefully segregated and rejected by others (Riva & Eck, 2016). In contrast, the social policy literature considers social exclusion to be a multidimensional construct that encompasses everything that causes barriers to social participation or a disadvantage in life chances. In this line of literature, exclusion is often used as synonym for poverty, but it actually includes a wide range of living standards (Millar, 2008).

Table 1.2. Loneliness and related conceptualisations - An overview

Concept	Definition	Reference
Loneliness	Unpleasant, subjective experience that the own`s social relations are deficient, either qualitatively or quantitatively.	(Perlman and Peplau, 1981; Gierveld, Tilburg and Dykstra, 2018)
Solitude	A positive state of perceived aloneness, seclusion, or solitariness that may be sought rather than avoided.	(Long and Averill, 2003)
Aloneness/ Isolation	Objective state of being alone or isolated from other individuals.	(Zavaleta, Samuel and Mills, 2014)
Social embeddedness	Objective structural inclusion/position of an individual in a social network.	(Moody and White, 2003)
Ostracism	Ignoring or excluding individuals or groups by other individuals or groups.	(Riva & Eck, 2016; Williams & Nida, 2016)
Social exclusion	1. Being actively kept apart from others. 2. Being socially marginalised/disadvantaged.	(Millar, 2008; Riva & Eck, 2016)
Alienation	Perceived disconnectedness from the values, norms and practices of the community or society.	(Seeman, 1959)
Anomie	Perceived breakdown of the social fabric (social disintegration and alienation, lack of trust and erosion of moral standards).	(Teymoori *et al.*, 2016)
Social capital	Most commonly regarded as a collective asset that is potentially available for all group members. Resources can be forms of social relations, shared norms, and trust that facilitate cooperation and collective action for mutual benefit.	(Bhandari and Yasunobu, 2009; Jackson, 2020)
Bridging capital	Distant relationships through which an individual connects otherwise disconnected social clusters.	(Burt, 2005)
Bonding capital	Social connections between people are a shared group identity such as family, neighbourhoods or peer groups.	(Patulny and Lind Haase Svendsen, 2007)

Note: Some concepts listed here suffer from conceptual inconsistencies and are contested in their definitions to some degree. However, the listed definitions and references reflect the most broadly accepted definitions of each term.

1.3.1. Loneliness as a predictor for behaviour and electoral decision making

"Regardless of the etiology of these [causing] factors, the larger message should be that we need to be particularly mindful, as a society, to not create conditions that divide others because loneliness may be just the beginning of a series of noxious outcomes."

(Sagan and Miller, 2017 p.233)

So far, I have defined loneliness, contrasted it briefly with other theoretical traditions commonly used to explain political participation, and provided an empirical description of the frequency of research related to loneliness separated by scientific field. Taken together, the presented arguments indicate that potential consequences of loneliness for political behaviour are empirically underexplored. Building on this, I will now present the theoretical model of how loneliness exerts an influence on political behaviour. I will first present the three central mechanisms through which loneliness exerts its influence separately, in sections 1.3.1 to 1.3.3 and then summarise the full model in section 1.3.4.

The argument presented below largely builds on the social desires of lonely individuals and the affective reactions caused by loneliness. At first glance, this might seem like a very psychological argumentation for a sociological thesis. However, many sociological theories are based on affective reactions and perceptions caused by social settings, albeit often just implicitly. For instance, Blumer's group threat theory centres around the idea that ethnic prejudice stems not simply from personal predispositions, but is rather a product of the way members of group A perceive their social position relative to group B. Based on these power relations, individuals perceive their interests threatened which in turn causes anxiousness, anger and fear between the competing groups (Blumer, 1958). Thus, prejudice ultimately stems from

perceived differences between groups and exerts its influence through a strong affective reaction (i.e. discrimination based on anger and fear).

Similarly, loneliness stems from a mismatch between the social needs of an individual and the perceived quality of available social ties, and exerts its influence through a set of affective (and corresponding cognitive and behavioural) reactions, which lead to classic outcomes of sociological interest. Hence, to understand the link between loneliness and behaviour, we need to reflect on its affective consequences first.

1.3.2. Loneliness and the need to re-affiliate: reconnection and openness for ideologies

Virtually all emotions serve an important function (Frijda, 1986). The feelings-as-information theory states that subjective experiences such as moods, emotions or bodily sensations serve as a source of information that informs the individual's perception, judgement, and actions (Schwarz, 2012). While anger is a driving force that fosters aggression, reduces fear and mobilises energy, anxiety prompts self-preservation and risk-avoiding behaviour, and happiness motivates the preservation of the status quo. While loneliness stems from social as well as cognitive mechanisms (compare Chapter 1.2.1), its effect is exerted through the affective reactions and corresponding perceptional and behavioural biases. Following the argument above, it is reasonable to assume that loneliness, just like other affective information, informs the individual's perceived social reality and their political decision making.

As argued in Chapter 1.2.1, loneliness represents the perception that one`s own social needs are not fulfilled by the available social contacts. To obtain a deeper understanding of the causal chain linking loneliness to political participation, we need to first recall the fundamental function and characteristics of loneliness reviewed previously.

As discussed in Chapter 1.2.1, loneliness is considered a strictly aversive and painful state. While most theoretical approaches to loneliness assumed this long ago, modern empirical studies utilising electroencephalogram (EEG) scans were able to confirm that loneliness activates the same regions of the brain as physical pain (Eisenberger, 2012; Hawkley & Cacioppo, 2010). This led the authors to conceptualise loneliness as actual mental pain. Therefore, the first step in the causal chain linking loneliness to political behaviour is a constantly increased stress level and a sense of inadequate social inclusion.

With this hurtful experience, loneliness warns an individual that their social network is unable to meet their needs and motivates them to take action to overcome this situation. Given that reciprocal and reliable relationships in particular were an historical necessity for survival (Baumeister & Leary, 1995; Gere & Macdonald, 2010), strong and reliable social affiliation is considered to be one of the most important drivers of human action and decision-making (Kovač, 2016).

Consequentially, loneliness motivates people to seek out, maintain and value social relationships (Qualter et al., 2015). To overcome loneliness, humans re-affiliate with others and strengthen the cohesion of the social group to which they belong (Gere & Macdonald, 2010). Simply put, the fundamental function of loneliness is to hold personal social groups together. This already hints at the first mechanism through which loneliness can affect political behaviour, on which Chapter 2 is based. Lonely individuals desire to be part of a cohesive social group and seek out community. Hence, a social or political movement or ideology that provides a sense of belonging or offers an opportunity for social re-affiliation could be especially attractive for lonely individuals (Hertz, 2021). Likewise, lonely individuals may become more likely to participate in political activities which allow for social interaction, social belonging and identity.

In contrast to this mobilising effect, the stressful and painful nature of loneliness could lead to a demobilising outcome as well. Social information, which is potentially relevant to overcoming their aversive situation, is especially salient for lonely individuals (Cacioppo & Cacioppo, 2018a; Spithoven et al., 2017). On the flip side, one can expect that irrelevant non-information is less likely to be salient. Also, loneliness is associated with depressed affect and, in some cases, general apathy (Lozupone et al., 2018; Singh & Misra, 2009).

Taken together, this might indicate that loneliness reduces political activities which are not useful settings for social re-affiliation. In this sense, loneliness can have both, a mobilising as well as a demobilising effect on individuals, as it potentially drives them towards collective movements, political and social associations, or ideological groups which offer a sense of community.

1.3.3. Loneliness and its effect on political and social distrust

This, however, is just the immediate effect of loneliness. While immediate loneliness is useful in terms of its mediating effect on being socially active, prolonged loneliness has a variety of paradoxical and dysfunctional outcomes in the long run. As prolonged loneliness signals a continued lack of reliable social resources and social support, chronic loneliness is logically linked to an increased sense of insecurity, anxiety and risk avoidance (Cacioppo & Cacioppo, 2018a). As summarised by two of the leading authors in the field, "lonely individuals are more likely to attend to and construe their social world as threatening, hold more negative social expectations, and remember more negative social events than are non-lonely individuals" (Cacioppo & Hawkley, 2009 p.451).

Interestingly, this can be shown on a behavioural as well as cognitive level. For instance, lonely individuals are likely to identify socially threatening stimuli (Cacioppo & Hawkley,

2009), and eye-tracking indicates that lonely individuals are faster to recognise socially threatening situations in short movie clips (Bangee et al., 2014). This alleviated threat sensitivity, anxiety, and insecurity led the authors to conclude those lonely individuals are exposed to constant mental stress (Hawkley & Cacioppo, 2010).

This is the underlying mechanism linking loneliness to a variety of negative health outcomes, all of which are associated with elevated stress levels. Among others, loneliness reduces sleep quality and can cause pathological sleeping disorders, high blood pressure, various mental illnesses, cardiovascular diseases, and increased mortality (Coyle & Dugan, 2012; Hawkley & Cacioppo, 2010; Leigh-Hunt et al., 2017; Lim et al., 2020).

Likewise, and more importantly for this dissertation, the summarised affective responses to prolonged loneliness cause a wide range of perceptional responses and biases (Spithoven et al., 2017). For instance, as chronically lonely individuals repeatedly experience (perceived) social rejection, it is of little surprise that prolonged loneliness is associated with elevated levels of social distrust.

As reviewed by Spithoven and colleagues, because of the latent anxiety and the continued experience that their own social needs are not fulfilled, lonely individuals grow more sceptical in social encounters and tend to interpret ambivalent social interactions more critically (Spithoven et al., 2017). This logically links chronic loneliness to an increased probability of experiencing social encounters negatively or avoiding them if the encounters might turn out negatively. This was described by scholars as a negative feedback loop that has characteristics of a self-fulfilling prophecy (Qualter et al., 2015). While lonely individuals seek out social contacts, these encounters are more likely to be perceived as ambivalent or negative, which causes lonely individuals to change their behaviour and to socially withdraw to avoid negative social experiences. This, ultimately, reinforces the individual's loneliness.

Unsurprisingly, observational studies found repeatedly that loneliness is associated with generalised distrust on a cross-sectional level and a more negative evaluation of others, even close peers. (Nyqvist et al., 2016; Qualter et al., 2009; Rotenberg, 1994).[13] If chronically lonely individuals evaluate other people more negatively and grow more distrusting in general, it is possible that loneliness can radiate political actors and political organisations as well. The empirical association between social and political distrust is still debated and there are conflicting empirical cross-sectional findings (Uslaner, 2017; Zmerli & Newton, 2017). However, using longitudinal data from Denmark allowed scientists to find a bidirectional relationship between social and political trust (Sønderskov & Dinesen, 2016). Hence, while the link between trust and political trust is still debated, the evidence supports the idea that there is a potential spillover effect between generalised and political trust beliefs. This is supported by two of multinational cross-sectional studies that find such an association between loneliness and political trust using the European Social Survey (Schobin, 2018; Yang, 2019).

If it holds true that loneliness is causing distrust, we can consider distrust as one central mediating factor linking loneliness to political actions. Social trust is a central dimension of the social capital literature, and political scientists argue that distrust does not only lead to more critical attitudes towards politicians and other elites (which fuels populist voting), but also to a reduced faith in the functioning of democratic institutions and, correspondingly, to reduced policy compliance (Dalton, 2009; Hoffmann & Putnam, 2003; Pharr & Putnam, 2018). As the longitudinal analysis of Chapter 3 indicates, loneliness is indeed a likely cause of social distrust and, at least on a between-person level, political distrust.

It is an ongoing debate in the literature what level of social and political trust is needed for a democratic system to function. However, as authors were able to show that high levels of trust

[13] As chapter 3 indicates, the distrust of others can be found on a cross-sectional level for political institutions and actors. However, this effect is substantially smaller compared to generalised distrust of other people and insignificant in panel fixed-effect models.

exert stabilising functions for totalitarian as well as democratic regimes, it can be assumed that social trust is vital for societal and political stability. (Maloney & Roßteutscher, 2006; Roßteutscher, 2010). As Easton put it, "[W]hen support threatens to fall below a minimum level, the [political] system must either provide mechanisms to revive the flagging support or its days will be numbered.'(D. Easton, 1965).

1.3.4. Loneliness and political demobilisation: Alienation and the sense of duty to vote

Likewise, distrust and the feeling of being left out likely cause a sense of social alienation and disconnectedness. In line with authors in the tradition of anomie and mass society theory (compare Chapter 1.2.3.), several authors argue that loneliness does not only stem from a perceived inadequacy of contact, but also from the person's sense of fitting into the broader social setting (for instance the village/city) and also of being an integral part of society (Franklin & Tranter, 2021; Stein & Tuval-Mashiach, 2015). While this field is rather underexplored, some qualitative studies support the idea that the experience of loneliness in marginalised groups stems from a sense of disconnectedness from the greater society and other members of society in general (Bower et al., 2018; Rokach, 2014). As shown in Chapter 3, this can be found in the general population as well. Considering this sense of disconnectedness, it is plausible to assume that lonely individuals feel less obligated to take part in the democratic process or, if they do, are more likely to express their distrust and social discontent through political protest and electoral support for populist parties that oppose the current system.

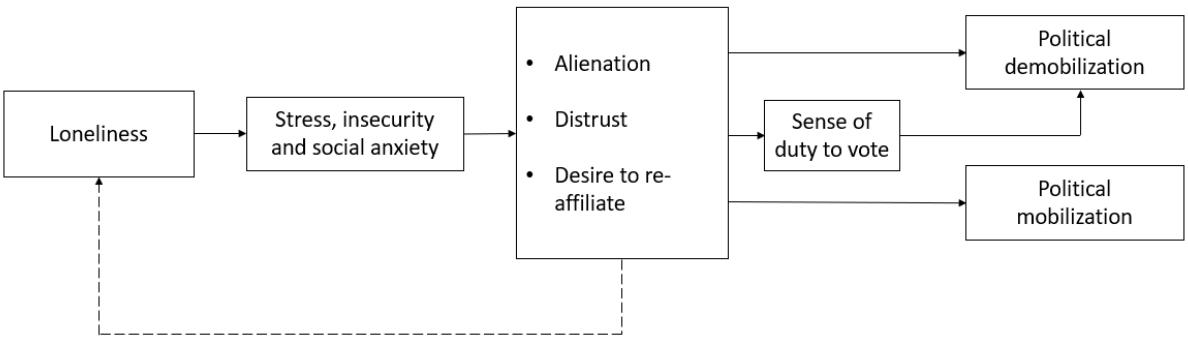
Hence, while loneliness motivates individuals to seek out social interactions, repeated failure to overcome their loneliness causes additional fear of negative social interactions and, ultimately, fosters social distrust and a sense of alienation from the larger society. This may lead to a reduced perceived obligation to partake in the democratic process for lonely individuals, or even to active protest against the system that has failed to include them.

This relationship between loneliness and social alienation is of particular importance in explaining the effect of loneliness on electoral demobilisation. As Blais and Achen argue, two of the strongest predictors for voter turnout are the perceived personal relevance of the electoral outcome and the perceived sense that voting is a moral obligation (Blais and Achen, 2019). They argue that citizens are more likely to be motivated to vote either because they feel that the outcome of the election has an impact on their lives or because it is the right - or moral - thing to do. If both motives fail to apply, they likely tend to abstain. From their perspective, citizens' sense of duty to vote stems from feelings of loyalty, patriotism, or general attachment to the community (Blais and Galais, 2016; Graham et al., 2011). Therefore, if loneliness is associated with a sense of alienation, disconnectedness from society and the moral obligation to vote, loneliness should be negatively associated with a sense of duty to vote. Hence, the effect of loneliness on voting behaviour is likely mediated through a reduced sense of duty to vote.

1.3.5. Loneliness and political (de)mobilisation: A dual-outcome model

To conclude, I argue that these three mechanisms, 1) the motivation to re-affiliate, 2) the sense of social disconnectedness, and 3) alleviated levels of distrust, are the central mechanisms linking loneliness to political actions. Figure 1.4. illustrates the general theoretical model linking loneliness to political participation that emerged during the dissertation.

Fig. 1.4. Conceptual model linking loneliness to political actions



Note: The question of under which conditions loneliness leads to political mobilisation or demobilisation has not yet been empirically investigated and hence is not part of the model. Potential moderating variables are discussed in Chapter 6.

On a very general level, socio-psychological models of voter turnout presume that turnout is a function of citizens' motivation to vote, ability to vote and the cost of voting (Harder & Krosnick, 2008). This can be generalised to political actions at large, as any political act becomes more likely if motivation is high, costs are low, and the ability to partake is given. Applying this logic to the model depicted in Figure 1.4., we can suspect that loneliness has a mobilising as well as a demobilising effect.

As political movements provide a sense of community or ideology and are therefore appealing to lonely individuals, as they provide a platform for re-affiliation, we can expect lonely individuals to be more likely to partake in such movements. Likewise, social distrust and a sense of disconnectedness from 'mainstream' society might lead to a form of 'protest voting' in favour of populist parties. In this sense, loneliness can lead to political mobilisation.

In contrast, generalised distrust and a sense of alienation weaken the individual's perception of being an incremental part of a functioning society. Individuals who feel disconnected and alienated from society might not feel morally obligated to participate in the electoral process

and, therefore, lose their sense of duty to vote. Also, if they believe the political system is not trustworthy or illegitimate, they are likely to lose their motivation to turn up.

This is in line with a classic approach of expressing political discontent. As argued by Wingrove and Hirschman (1971), discontent can lead to two expressions of political discontent: voice and exit strategies. An open question remains as to under which conditions loneliness leads to either of the two outcomes, a point that I will discuss in greater detail in Chapter 6.

Another challenge of the model is the issue of reverse or bidirectional causality, illustrated by the dashed line in Figure 1.4. To a certain degree, we can expect the dynamic between loneliness and the three mechanisms to be bidirectional and to be characterised by a negative feedback loop. Distrusting individuals are likely to be less well included and to suffer more from loneliness. Likewise, feeling disconnected from society might very well trigger loneliness. This is why it is important to control for the possibility of reverse causality using longitudinal data. This was accounted for in Chapter 3 through the utilisation of cross-lagged panel fixed effect models.

Considering the whole model presented above, the expectation is that trusting citizens are more likely to perceive political decisions as legitimate and are more motivated to participate in a just and functioning system. Simply put, if citizens are trusting and perceive themselves as incremental parts of society, they are more likely to partake in it in a constructive way. In contrast, if they do not feel included, they are more likely to perceive the system or the general society as unreliable and not trustworthy. In this case, they either abstain from participating (as they do not see any purpose in it), or express their discontent through protest or parties opposing the status quo.

This is of crucial importance. Civil societies and democratic institutions require the constructive participation of their citizens as well as their general compliance to function. Social and political trust as well as social cohesion are important sources of institutional legitimacy and policy compliance (Brehm & Rahn, 1997; Marien, 2011; Marien & Hooghe, 2011; Welch et al., 2005). This means in the greater picture that loneliness, mediated through distrust and disconnectedness, can cause an erosive effect on important democratic functions.

1.4.1. Epidemiology of loneliness

"Imagine a condition that […] is associated with a 26% increase in the risk of premature mortality. Imagine too that in industrialised countries around a third of people are affected by this condition, with one person in 12 affected severely, and that these proportions are increasing. […] The effects of the condition are not to some peculiarity of the character of a subset of individuals, they are a result of the condition affecting ordinary people. Such a condition exists—loneliness."

(Cacioppo & Cacioppo, 2018b p. 426)

So far, I have outlined what loneliness is (1.2.1), how it can be distinguished from other theoretical concepts established in the related literature (1.2.2 + 1.2.3), and how loneliness likely exerts an influence on political behaviour (1.3.1 to 1.3.5). If this theoretical model holds true, we can expect that wide spread loneliness exerts a potentially threatening influence on modern democracies.

However, in order to assess the relevance of loneliness for modern democracies, it is helpful to look beyond the mere presence of the relationship between loneliness and electoral decision making; we need to consider the scale of the problem as well. If just a small fraction of society is impacted by loneliness and if loneliness is either a stable or a shrinking phenomenon, one might argue that its impact on political actions is negligible. Social theorists such as Georg Simmel or Zygmunt Bauman suspected for decades that modern life might lead to the atomisation of society, but the empirical picture is often less clear. Following this line of reasoning, this Chapter will take a descriptive look at the frequency and distribution of loneliness in Europe before turning to the subsequent empirical. With that, we can contextualise the empirical findings of this dissertation and shed light on the scope of the problem at hand.

1.4.2. Loneliness: a spreading phenomenon?

As outlined in 1.2.3, loneliness was not in the scientific spotlight for most of the 20th century. After some theoretical authors pioneered the field in the second half of the 20th century (Weiss, 1973), a few empirical scientists took up the subject. Consequentially, there are no reliable, long-term panel datasets measuring the development of loneliness in Western democracies over several decades. Making do with what has been available, most studies discussing the issue of growing loneliness has relied on fairly short-term datasets or have limited their focus to specific social groups such as students or elderly (Clark et al., 2015; Dykstra, 2009). These studies do not support the decade-long suspicion put forward by post-modernist critics and authors in the tradition of social anomie/mass society theory research, that loneliness is on the rise. However, large-scale social trends are typically slow and social change expresses itself over several decades. Although whether social networks are objectively shrinking or not it is a controversial debate (Fischer, 2011; Olds & Schwartz, 2009; Paik & Sanchagrin, 2013), it seems evident that perceived loneliness and disconnectedness grow more common.

As discussed in the introduction, a research team recently found support for the growth hypothesis by collecting mean values of surveys over decades. The authors compiled a dataset that contained 449 mean values of loneliness from 437 independent samples gathered between 1976 and 2019 (Buecker et al., 2021). The meta-analysis suggests that loneliness has grown slowly but steadily during the last 46 years in Western democracies, with particularly strong growth in the United States. While methodological problems inherent to such analysis do not allow for a definitive answer to the question of how loneliness has developed over time, the results are in line with the concerns of experts claiming that loneliness is likely to spread because of an increase in structural risk factors (Cacioppo & Cacioppo, 2018b; Hertz, 2021; Holt-Lunstad, 2017). Other arguments in favour of this hypothesis are other long-term socio-demographic changes that are considered risk factors for loneliness.

Holt-Lundstad argued that sociodemographic trends such as ageing societies, increasing divorce rates, smaller families, more single households, shrinking group memberships in social organisations, and smaller social networks in Western societies give reason to suspect that loneliness might be increasing over time (Holt-Lunstad, 2017; Holt-Lunstad et al., 2017). While other scientists challenge this view arguing that comparatively short-term observations do not support aggravation of the issue (Clark et al., 2015; Dykstra, 2009; Ortiz-Ospina, 2019), the majority of scholars share the concern that loneliness is likely a growing problem.

Although the true nature of the long-term dynamic of the growth of loneliness around the world remains elusive and the surrounding debate controversial, the majority of scientists support the hypothesis that loneliness is on the rise. But slow, long-term trends can be interpreted as an indication that loneliness is a problem of the future. Shifting the focus from the future to the present, though, indicates otherwise.

1.4.3. Loneliness in Europe: Assessing the scale of the problem

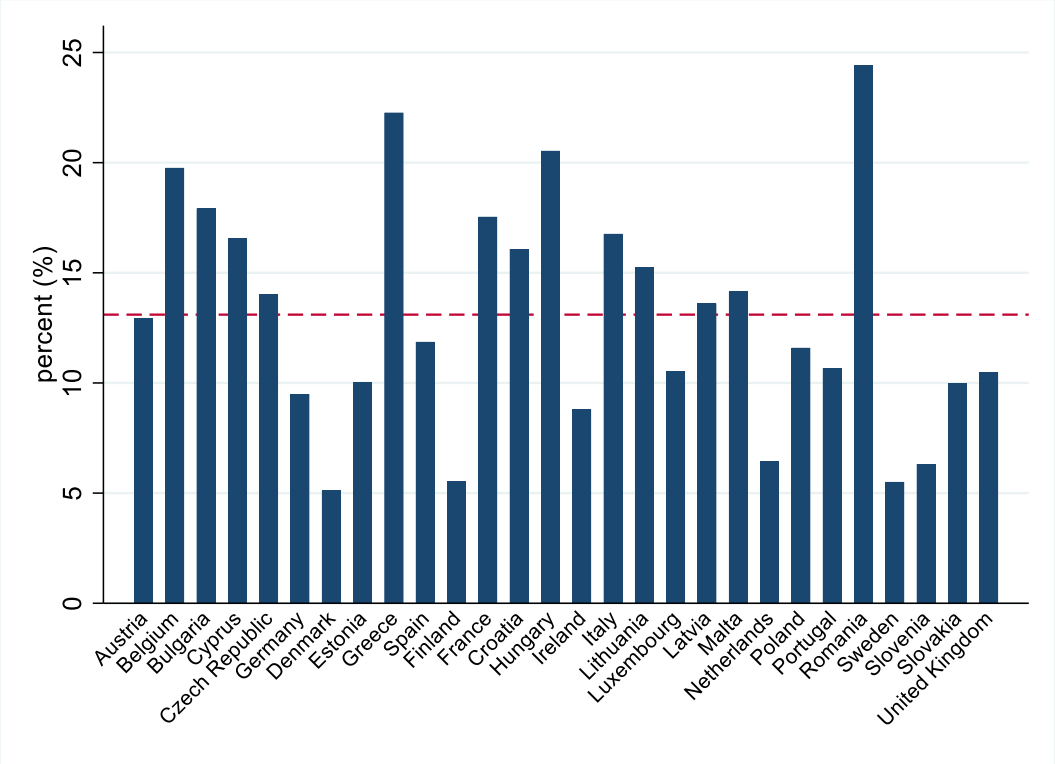
Independent of the question of whether loneliness is increasing, shrinking, or has remained fairly stable over time, the scale of the problem at present is substantial. Several national surveys in Europe and the United States highlight that loneliness rates are at daunting levels. A report published by the Jo Cox Commission on Loneliness claims that more than 9 million citizens in the United Kingdom, roughly 14% of the adult population, often or always feel lonely (Jo Cox Commission on Loneliness, 2017). Other Western countries show a similar pattern. Cigna, a large health insurance company in the U.S., launched a large survey interviewing 20,000 U.S. citizens, and revealed that roughly 50% of the interviewed people sometimes or often feel left out and alone (Cigna, 2018). Furthermore, 43% report that they have the feeling that their relationships are not meaningful. A follow-up study from 2020 documents a considerable increase since in the wake of the COVID-19 pandemic (Cigna, 2020).

Likewise, survey data gathered in Germany in 2013 and 2017 indicated that about 10% of the adult population considered itself frequently lonely (Eyerund & Orth, 2019).

Broadening the scope to Europe as a larger geographical area, Yang and Victor used data from the European Social Survey to provide evidence that in almost all European countries several percent of the interviewed people reported often or all the time being lonely, and that the prevalence of loneliness is in some nations shockingly high. Referring to the authors, for some Eastern European nations up to 34% of the participants report most of the time being lonely (Yang, Victor 2011).

This is mirrored by more recent data from the European Quality of Life Survey (EQLS) fielded in 2016. In the EQLS Survey, participants were asked to indicate how often they had felt lonely during the last two weeks, with the possible answer categories: 1 “at no time”, 2 “some of the time”, 3 “less than half”, 4 “more than half”, 5 “most of the time”, and 6 “all of the time”. Figure 1.5. displays the percentage of individuals who reported feeling lonely half of the time or more separated by country.

Fig. 1.5. Percent of individuals reporting being lonely more than half of the time, separated by country.

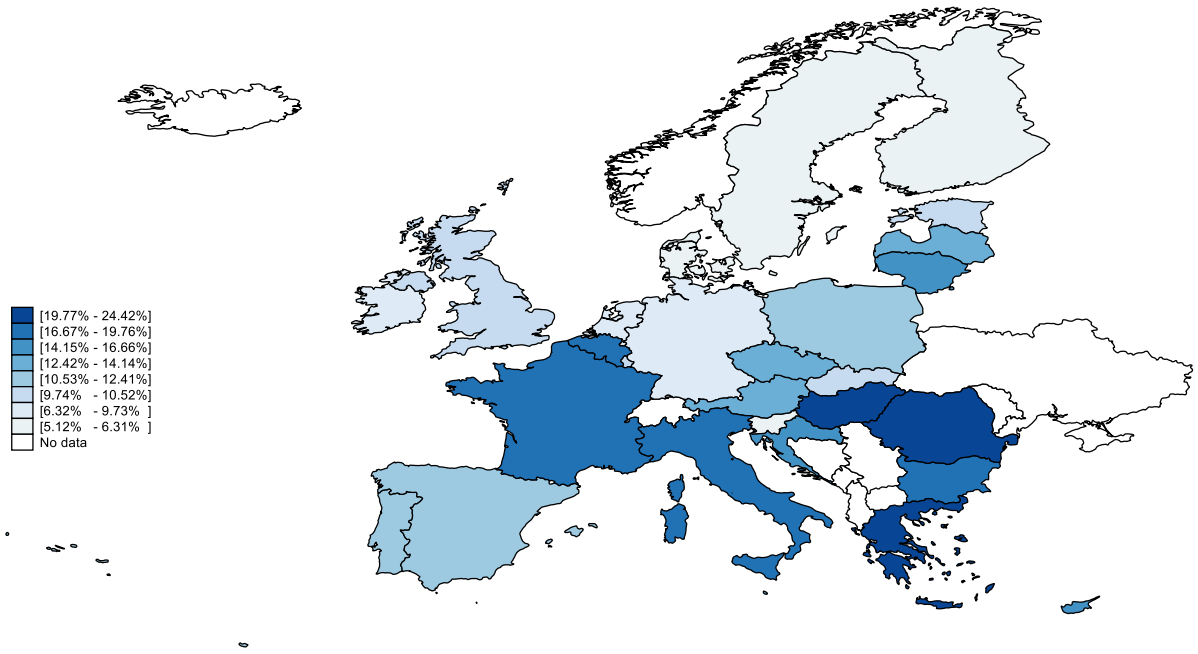


Note: Data obtained from the European Quality of Life Survey (2016); Red line = overall average (14,8%)

Overall, taking into consideration in every single country that participated in the survey, more than 5% of the participants reported feeling lonely at least half of the time, with 10 out of 28 countries reporting rates of over 15%. This in itself indicates that loneliness is not a country-specific issue, but is rather wide spread across Europe, a situation that has likely worsened in the course of the COVID-19 pandemic (L. Dahlberg, 2021; Entringer & Kröger, 2022). Considering that approximately 14.8% of the European adult population is affected by loneliness, we can begin to grasp the scale of the problem.

Furthermore, the distribution of loneliness across countries indicates that the problem of loneliness is more urgent for some regions than for others. Figure 1.6 displays the same information as Figure 1.5, but in form of a geographical heath map to visualise this point more intuitively.

Fig. 1.6. Geographical heatmap –Percentage of individuals reporting being lonely more than half of the time.



Note: Data obtained from the European Quality of Life Survey (2016); Values rounded to the second decimal. Shapefile obtained from https://hub.arcgis.com/datasets/UIA::uia-world-countries-boundaries

As the EQLS data indicate, there is a geographical divide in Europe with roughly three geographical areas: Northwestern Europe with comparably low rates, Southwestern countries higher rates, and East Europe with the highest reported rates in Europe. This replicates findings from other multi-national studies based on Gender and Generation Survey and ISSP data that do find the same three-region pattern (Hansen & Slagsvold, 2016; Yang & Victor, 2011).

This pattern is most likely due to differences in regional social values and social norms. Countries with more collectivistic values or a norm of larger family structures tend to show higher rates of loneliness compared to more individualistic countries (Lykes & Kemmelmeier, 2014; Swader, 2019). This pattern seems paradoxical at first sight, as individualistic values are often expected to foster loneliness, but social scientists explain this difference through different difficulties to comply with the regional norms (Heu, Hansen, & van Zomeren, 2021; Swader, 2019). They argue that people living in countries with higher social expectations have more trouble fulfilling the social standards and are consequentially at higher risk of feeling like social failures or outcasts. In contrast, people in individualistic countries are less likely to break the social norm because their social environment expects fewer relationships. Other risk factors such as a region's economic strength and related poverty risk play a role as well, but the effect of social norms remains robust under statistical control of factors such as GDP or employment rates.

Still, even in countries with comparatively low rates, loneliness is a problem affecting millions. For instance, with roughly 6 million inhabitants and a loneliness rate of about 5%, Denmark has approximately 300.000 citizens suffering from loneliness. In terms of Germany`s approximately 80 million citizens and its approximately 10% loneliness rate, this corresponds with about 8 million inhabitants that are affected by loneliness. These numbers have to be taken with a grain of salt, of course. Loneliness is a stigmatised subject and is likely to be considerably biased by social desirability. Likewise, depending on the applied instrument (indirect loneliness

scale versus direct single item) as well as the interview mode (personal, telephone, self-administered), we can expect a certain variation. Other social strata such as elderly living in care facilities or homeless individuals are typically not reached by surveys. However, these factors all speak in favour of a conservative estimate of loneliness rates. Therefore, the statistics speak clearly: loneliness is a widespread phenomenon in Western democracies.

1.4.4. Loneliness across socio-demographic groups

So far, I provided a short review of average loneliness rates in Europe. However, thinking about the societal consequences of these daunting loneliness rates, one could ask the question of whether mean values on the country level tell the full story. Decades of studies indicate that social inequalities such as economic hardship, employment, education, and wellbeing are very much segregated by social strata (Decancq et al., 2015; Isengard, 2003; Wilkinson & Pickett, 2009; Yitzhaki & Lerman, 1991). There is little reason to believe that this is different for loneliness.

Zooming in to the demographic level, studies indicate that groups that are already socially disadvantaged are especially at risk of experiencing loneliness. As such, loneliness is a subject of social inequality as well, and its influence on political behaviour is likely to be especially potent in social strata that are already disadvantaged and marginalised.

While the distribution of loneliness between males and females shows no substantial differences throughout the life course (Maes et al., 2019), this is not the case for a broad range of other socio-demographic characteristics. As regards age, loneliness is often assumed to be a problem for the elderly (Tesch-Römer et al., 2013). However, loneliness is particularly prevalent for young adults up to their mid-twenties as well as those who reach the age of 75 and beyond, with surprising consistency all over Europe (Yang & Victor, 2011). A study based on

German data of the Socio-economic Panel even suggests that young individuals are experiencing the highest loneliness rates across age groups, up until the very high end of the age distribution spectrum overtakes them (Luhmann & Hawkley, 2016). This is mostly due to illness and mortality in the case of the latter group, and the young strata are lonelier under statistical control of these factors. Substantially, young adults and the elderly are especially likely to suffer from loneliness.

Likewise, factors such as poverty, migration background, or being member of a gender minority group increase the risk of loneliness. Typically, this is due to restricted chances of participation, experiences of discrimination, and a sense of social alienation.

Poverty is a well-established risk factor for social exclusion, as limited resources limit the ability to partake in social activities (Böhnke, 2021). Likewise, poverty increases the risk of suffering from poor mental and physical health (DAC Network on Poverty Reduction, 2003). Unsurprisingly, a link between loneliness and economic hardship has been found in several studies investigating social groups with low income as well as in homeless individuals (Batsleer & Duggan, 2020; Bower et al., 2018). In a recent, broader study that reviews the current literature and confirms the findings with data from the socio-oeconomic panel found a clear connection between poverty and loneliness (Dittmann & Goebel, 2022).[14]

In a similar fashion, migration background can cause substantial problems in terms of language barriers, experiencing discrimination, and feeling alien to the host-society (Barrett & Mosca, 2013; Koelet & de Valk, 2016). As feeling alien within and separate from the community can be a predictor of loneliness, a migration background is a risk factor for loneliness. While there are very few studies providing a comprehensive overview, various national studies found the relationship between loneliness and migration (Johnson et al., 2019;

[14] The article is forthcoming at the time of writing.

Neto, 2016; Salma & Salami, 2020). Although meta-analysis are needed to get a better understanding of the empirical picture, it seems evident that migration background is a risk factor for loneliness.

A similar argument can be made for other minority groups. For instance, although the number of studies is small, research indicates that gender minorities as well as homosexual individuals are more likely to feel excluded and discriminated against as compared with mainstream society (Eres et al., 2021; Gorczynski, & Fasoli, 2021). This is likely due to repeated experiences of social exclusion[15], a corresponding sense of social alienation from society, and weak social support networks (Fischer, 2022)[16]. Repeated experiences of social ostracism are logically linked to an increased sense of alienation and a sense of exclusion and, consequentially, sexual and gender minorities are at high risk of experiencing loneliness. Also, studies found homosexual individuals have on average weaker social support networks and move out in faster (Fischer & Kalmijn, 2021).

Taking all these insights into account, scholars concluded that social marginalisation is a general risk factor for loneliness (Rokach, 2014). This suggests that the negative consequences of loneliness (in terms of health as well as political behaviour) are likely to be concentrated in already disadvantaged social strata. This is important as socially marginalised groups are known to be less politically engaged and more likely to vote for radical or populist parties (Crowley, 2001; Rooduijn, 2018). Hence, loneliness might additionally fuel the disengagement and polarisation of these social groups.

[15] This includes direct social discrimination as well as structural exclusion by discriminating laws.
[16] The article is forthcoming at the time of writing.

To conclude, I argued in Chapter 4 that loneliness should be considered a large-scale problem that is not restricted to a specific region or demographic group. Despite national differences, the phenomenon exists across the whole of Europe and, in the long term, is most likely growing. In light of this slow, long-term dynamic we have to relativise claims from the media that Europe suffers from a "loneliness pandemic". However, socio-demographic trends such as ageing societies and shrinking household sizes could indicate an intensifying problem. Presuming the theoretical model presented in Chapter 1.3. is correct and loneliness does indeed cause a sense of alienation, political apathy, and distrust, it can be concluded that widespread loneliness plays a substantial, erosive role for democracies as a whole.

1.5.1. Cumulative dissertation – structure and overview

In this Chapter, I provide a comprehensive summary of the empirical studies that make up the cumulative part of the dissertation. This includes a discussion on how each study contributes to the overall research question, how the theoretical framework presented before developed throughout the thesis, and how the studies are interlinked with one another. With that, the Chapter clarifies how the contributions complement each other in respect of theoretical development and empirical insights. Please note that I harmonised the referencing style, language (from American to British English), the headings of the sections, and formatting of the figures and tables so that the style is consistent throughout the dissertation. Likewise, I changed the titles of the tables and figures slightly so that they are distinctly numbered and self-explanatory (for instance, every paper had a Table 1. These tables are now renamed to Table 1.1, 2.1 … 5.1 depending on the Chapter). This is why the Chapters deviate slightly from the original publication, but remain unchanged in respect of content. The DOI to the original publication can be found in Table 3 and at the beginning of every Chapter and in Table 1.3.

In respect of the general order of the studies, the dissertation starts with the most general theoretical development and empirical exploration of the research question and becomes gradually more detailed and specific in scope. Table 1.3. provides an overview of the central concepts and findings of the four studies.

Table 1.3. Overview of Studies

	I	II	III	IV
Title	Enhancing, suppressing or something in between–loneliness and five forms of political participation across Europe.	The influence of loneliness on perceived social belonging and trust believes–longitudinal evidence from the Netherlands.	Lonely Hearts, Empty Booths? The Relationship between Loneliness, Reported Voting Behaviour and Voting as Civic Duty.	Populism and Layers of Social Belonging: Support of Populist Parties in Europe.
Investigating	Association between loneliness and five types of political participation	Effect of loneliness on indicators of social cohesion	Effect-decomposition: effect of loneliness on non-voting mediated through sense of duty to vote.	Association between indicators of social belonging and non-voting as well as left- and right-wing populist voting.
Outcomes (explained concept)	(1) Reported voting behaviour, (2) signing petitions, (3) contacting politicians, (4) being a member of a political organisation and (5) participating in public demonstrations	Perceived social connectedness, political trust and social trust.	Self-reported voter turnout and attitudes towards voting as a civic duty.	Self-reported voting, voting for left wing populist party (versus non-populist party, voting for right wing populist party (versus non-populist party)
Predictor (main explaining variables)	Loneliness (self-reported loneliness, single item)	Gierveld loneliness scale (indirect measures, 6-item)	UCLA loneliness scale (indirect measures, 3 items) and Gierveld loneliness scale (indirect measures, 6-item)	Contact frequency, availability of trusted social contacts, perceived relative social activity compared to similar others
Scope	Multi-national, repeated cross-sectional data; regional focus on Europe	Long-term longitudinal data, regional focus on the Netherlands	Cross-sectional data, regional focus on Germany and Netherlands	Multi-national, repeated cross-sectional data; regional focus on Europe
Data	Data from the European Social Survey (34 countries, years: 2006, 2010, 2012 and 2014)	Panel data from the Netherlands (2008 - 2020)	Two independent representative sample: German (2018) and the Netherlands (2010)	Data from the European Social Survey (25 countries, year: 2012, 2014, 2016 and 2018)
Findings	Strong support that loneliness is associated with political demobilisation, mixed support that loneliness fosters political protest.	Strong support that loneliness fosters a sense of disconnectedness and distrust, mixed support that loneliness fosters political distrust.	The effect of loneliness on voting is mediated through a reduced sense of duty to vote in both samples.	All indicators of social belonging are associated with an increased probability of non-voting as well as right wing populist voting
Status	Published at: European Societies in 2021 DOI: https://doi.org/10.1080/14616696.2021.1916554	Under Review at: 'Journal of Social and Personal Relationships' Pre-Print DOI: 10.31219/osf.io/erpja	Published at: Social Science Quarterly in 2021 DOI: https://doi.org/10.1111/ssqu.12946	Published at: *Political Psychology in* 2022 DOI: https://doi.org/10.1111/pops.12827

1.5.2. Authorship of the Chapters

All Chapters of this dissertation except Chapter five are solo-authored. Chapter five is the result of a collaboration between me and Simon Bienstman. While my main contribution lies in the development of the research question and the theory, Simon Bienstman prepared the data and executed the analysis. That being said, both authors contributed to the paper equally and took part in the writing of every part of the paper.

1.5.3. Overview of studies

As outlined in the agenda-setting of this dissertation (Chapter 1.1.), the first goal of the thesis is to establish loneliness as a valid predictor of political involvement and to open new avenues of investigation for upcoming studies. The second, subsequent goal of the thesis is to pin down the underlying mechanism driving the link between loneliness and political participation.

The second Chapter of the dissertation, called *"Enhancing, suppressing or something in between – loneliness and five forms of political participation across Europe"* (Langenkamp, 2021a), aims for a first empirical exploration of the influence of loneliness on various political actions citizens can take. Here, I concentrate on five prominent forms of political participation, namely reported voting behaviour, (2) signing petitions, (3) contacting politicians, (4) being a member of a political organisation and (5) participating in public demonstrations. The considered political actions cover institutionalised as well as non-institutionalised political participation which are exercisable in most modern democracies. With that, the analysis explores how loneliness relates to several of the most important types of political participation in Europe.

On a theoretical level, the study reviews and links so far independent strings of literature. First, the study provides a summary of the literature concerning political mobilisation and argues that loneliness is an important, but so far overlooked predictor of political behaviour in the literature. Secondly, based on studies concerned with socio-psychological consequences of loneliness, it is theorised that loneliness has a mobilising (enhancement hypothesis) as well as demobilising (suppression hypothesis) effect depending on the potential of a political act to alleviate loneliness. Third, by reviewing studies that investigate what motivates individuals to participate in the considered political activities, it offers a qualitative classification of the political actions in respect of their potential to alleviate loneliness.

Briefly summarised, I argue in the Chapter that political actions that offer a strong platform for identity, community, and belonging should become more likely for lonely individuals as they see these activities as means to reduce their loneliness. In contrast, actions with little potential for re-affiliation should become less likely as loneliness is expected to cause alienation, distrust, and (ultimately) political apathy. Empirically, the study employs multi-level regressions using data from the European Social Survey. Results indicate that loneliness has a mostly demobilising effect in respect of voting, signing petitions, and contacting politicians, but is positively associated with partaking in public demonstrations. The relationship to political party membership, however, is insignificant.

The results indicate an interesting dynamic: loneliness is associated with two types of political reactions. On the one hand, loneliness seems to have a strong demobilising effect on citizens who become more likely to abstain from several types of political participation. This effect was particularly strong for electoral participation, but was also found for signing petitions and contacting politicians or government officials. On the other hand, lonely individuals become more likely to participate in public protests.

However, considering the null result concerning party and political group membership, it is possible that the idea that loneliness fosters political activity if the political act offers a platform for re-affiliation might not tell the whole story. Rather, loneliness may foster either political demobilisation or increased political dissatisfaction which fosters protest and political polarisation. As elections offer a setting for protest voting and abstention which can be considered *voice* and *exit* strategies for political discontent respectively (Wingrove & Hirschman, 1971), the subsequent Chapters of the dissertation focus on electoral behaviour and test this hypothesis gained from Chapter two.

As argued in the theory section in Chapter two, loneliness likely exerts its influence through distrust and alienation. To investigate these potential mediators, the third Chapter of the dissertation, called *"The influence of loneliness on perceived connectedness and trust beliefs – longitudinal evidence from the Netherlands"* (Langenkamp, 2021c), investigates whether within-person changes in loneliness reduce levels of perceived social connectedness, political distrust, and generalised interpersonal trust.

By analysing 12 waves of panel data from the Netherlands gathered between 2008 and 2020 (n= 41,508), the analysis shows that intra-personal variation in loneliness predicts citizens' sense of connectedness and interpersonal trust beliefs. This confirms that loneliness causes a sense of disconnectedness, i.e., alienation from society, as well as social distrust, which in turn likely influences political behaviour. In contrast, the relationship between loneliness and political distrust was comparatively small but statistically significant using between effect regressions. However, the effect turned insignificant using panel fixed effect regressions. This either indicates that loneliness does not exert an effect on political trust and the pattern is due

to unobserved covariates, or that the effect is too small to be detected using within variance alone.[17]

The implications of these findings are twofold. First, disconnectedness and political distrust can, potentially, reduce the citizen's perceived value of elections leading them to decide that participation is not worth their effort (Marien & Hooghe, 2011). Secondly, generalised distrust and alienation can lead to a strong desire to express this discontent and makes lonely individuals more receptive to rhetoric that promotes collective identity/community, security, or discontent with the system (Hertz, 2021). This corresponds with the insights of Chapter two that lonely participants are more likely to partake in public demonstrations that offer identification with the movement and a sense of community. Transferring this idea to electoral decision-making, loneliness may relate to electoral abstention as well as political polarisation or protest voting.[18]

The fourth Chapter *"Lonely Hearts, Empty Booths? The Relationship between Loneliness, Reported Voting Behaviour and Voting as Civic Duty"* picks up the idea that loneliness is associated with an increased sense of social alienation and investigates this demobilising mechanism of loneliness on turnout in more detail (Langenkamp, 2021b). The Chapters' contributions are threefold. First, on a methodological level, the study tackles multiple shortcomings from the analysis of Chapter two by replicating the finding that loneliness is associated with reduced voter turnout in two new samples and with an alternative operationalisation. This is especially important as large multinational datasets such as the ESS data used in Chapter two are prone to produce significant results due to their large sample size which are potentially too small in size to be considered relevant (Bernardi et al., 2017).

[17] Given that several studies found the correlation between loneliness and political distrust in cross-section datasets across various operationalisations, the latter seems to be theoretically and empirically more likely.

[18] Although the question which conditions lead to either outcome is not empirically investigated here, I discuss potential moderating mechanisms in chapter 6.1.3.

Replicating the general relationship between loneliness and turnout in a German and Dutch dataset alleviates these concerns. Furthermore, by operationalising loneliness with a validated loneliness scale instead of a single item measuring loneliness directly, the study utilises a more nuanced measure of loneliness that is better suited to capture loneliness (Marangoni & Ickes, 1989). By replicating the general finding that loneliness predicts non-voting across datasets and operationalisations, I hope to ascertain the validity of the relationship.

On a theoretical level, the study offers a more detailed discussion of whether and why loneliness is associated with reduced voter turnout. By first elaborating on how loneliness differs from other related, but distinct concepts in political theory such as social capital and social embeddedness, the argument is made that loneliness has to be considered an independent predictor for electoral behaviour.[19] With this, I aim to pre-empt the common misconception that loneliness is a mere expression of aloneness and with that synonym of existing theoretical models in political science. In particular, I differentiate the concept of loneliness from social embeddedness and social capital and elaborate on how loneliness and embeddedness exert their influence on electoral behaviour through different mechanisms. Secondly, and more importantly, the paper provides evidence that this relationship stems from the effect of loneliness on political attitudes, namely a reduced sense of duty to vote.

Thirdly, the study employs a mediation analysis and confirms that loneliness indeed affects voting behaviour through a reduced sense of duty to vote. Briefly summarised, I argue that loneliness causes a sense of alienation and disconnectedness from society which, consequentially, reduces the perceived moral obligation to participate in the electoral process. By using an effect decomposition technique, the analysis shows that the relationship between a citizen's loneliness and voter turnout is partially mediated by a reduced perception that voting

[19] Considering the journal format, this discussion is much shorter compared to chapters 1.2.2 and 1.2.3 and focuses more on the distinction between loneliness and social capital. This was done because of the reviewer's requests.

is a civic duty. Hence, the results indicate that the demobilising effect of loneliness on voter turnout is partially explained by the participants' perceived moral obligation to partake in elections.

Finally, the fifth Chapter *"Populism and Layers of Social Belonging: Support of Populist Parties in Europe"* turns its focus toward the second-mentioned implication of Chapter three, namely that loneliness can also lead to political polarisation (Langenkamp & Bienstman, 2022). The Chapter brings together insights from the former three Chapters and investigates how a weak sense of social belonging (using proxy variables for loneliness) is associated with electoral abstention and voting in favour of populist parties on the left and the right side of the political spectrum simultaneously.

Importantly for the operationalisation of this Chapter is the historical development of populist party successes during the last two decades. Populist parties, especially on the right side of the political spectrum, experienced increasing electoral successes since 2010 all around Europe (Rooduijn, 2019). Given that studies investigating populist voting suffer from issues related to a strong social desirability bias in surveys, earlier investigations suffered from a small number of observations and, correspondingly, insufficient statistical power. Using data from the European Social Survey gathered between 2012 and 2018, the analysis builds on a sufficient empirical basis for such an investigation. However, while a systematic investigation of populist voting became more feasibly in respect of observable cases during this period, the European Social Survey did not continue to include the question directly measuring loneliness after 2014.

I circumvent this issue by using multiple measures as proxy variables for loneliness. Since loneliness stems mostly from the interplay between the quality of social contacts, quantitative availability of these social contacts, and the mental representation of these contacts (social comparison), the Chapter investigates how deprivation in these three aspects of social belonging

(as a proxy for loneliness) is associated with voter turnout and populist voting for left and right-leaning populist parties.

The study argues that weak social belonging causes citizens to become increasingly lonely. The resulting emotional reactions and corresponding affective needs, especially alienation, anxiety, and distrust, and the resulting desire for security (and aversion against social change), community, and identity, are theorised to correspond with populist narratives.

In line with insights gained from two, three, and four, the study finds that weak social belonging (and corresponding high loneliness) is indeed associated with electoral abstention as well as a higher probability to support right-wing populist parties instead of non-populist parties. This link is less robust for left-wing populist parties, indicating that the affective needs of lonely individuals correspond with right-wing populist messaging in particular.

To sum up, the four empirical Chapters of this dissertation are concerned with the question of how loneliness relates to political behaviour and attitudes. But they do so with very different scopes and operationalisations. Starting from a very general and exploratory approach in Chapter two which identified the relationship between loneliness and various political activities, the subsequent Chapters three and four narrow their scope and investigate the underlying forces explaining this dynamic on the example of voting behaviour. The fifth Chapter combines the gained insights of the former three Chapters and investigates how different aspects of social relationships that constitute loneliness are associated with both, political demobilisation and political polarisation. Hence, the four Chapters build on one another, fill the main gaps of the former and did contribute to the theoretical model presented in Chapter 1.3. in an iterative fashion.

Taken together, the four empirical studies support the idea that loneliness leads to both, political abstention as well as mobilisation in specific cases. Furthermore, the studies suggest that this dynamic stems from the effect of loneliness on social alienation, distrust and a reduced sense of duty to vote as important underlying mechanisms.

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2. Enhancing, suppressing or something in between – loneliness and five forms of political participation across Europe

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Abstract: *This study investigates the link between perceived loneliness and five forms of political participation. A bidirectional re-affiliation model of political action is proposed, stating that loneliness increases the probability of political participation if the political act fosters social belonging and interaction (enhancement hypothesis). However, if the political act has little potential for re-affiliation, a decrease in participation is expected (suppression hypothesis). Using data from the European Social Survey (ESS), the study investigates the relationship between loneliness and (1) reported voting behaviour, (2) signing petitions, (3) contacting politicians, (4) being a member of a political organisation and (5) participating in public demonstrations. The analysis finds strong support for the suppression hypothesis and mixed support for the enhancement hypothesis. With that, the study is one of the first to highlight the importance of perceived loneliness alongside objective social embeddedness as a predictor for political participation. Furthermore, it shows that the relationship cannot simply be generalised to all political acts but is dependent on its potential for social interaction.*

2.1. Introduction and relevance

In the last few years, the topic of rising loneliness in Western democracies frequently made headlines and got framed as an epidemic at times, which sparked a debate about whether politics should tackle the issue of loneliness more directly (Easton, 2018; Hafner, 2016). In consequence, the interest in research with a particular focus on causes and the long-term consequences of loneliness on mental and physical health grew rapidly (Holt-Lunstad et al., 2010; Leigh-Hunt et al., 2017). However, other outcomes of social interest received less attention, and comparatively little is known about the consequences of rising loneliness for outcomes such as social and political participation, social cohesion or policy compliance.

This is problematic for two reasons. First, a too-narrow focus on the consequences of loneliness for a society underestimates its relevance for policymakers which might partially explain why governments just rarely take concrete action to fight societal loneliness systematically. Secondly, although loneliness is known to exert substantial influence on cognition and behaviour it is rarely the subject of sociological and political research and most explanatory models do not account for this dimension of social reality. While a large body of research in political and social sciences investigated the structural component of social embeddedness, such as group membership or social influences such as peer pressure, extensively, loneliness is yet to be investigated (Blais et al., 2019; Smets & van Ham, 2013). Especially the well-documented tendency of lonely individuals to social withdrawal and social anxiety relates to themes such as political and social participation and suggests a high potential for our explanatory models (Hawkley & Cacioppo, 2010; Qualter et al., 2015).

This study aims to fill this gap in the literature by investigating the link between perceived loneliness and the political engagement of citizens in Europe. The study contributes to the literature in two ways in particular. First, by reviewing the relevant literature, I derive a

bidirectional re-affiliation model of political action, stating that lonely individuals are increasingly likely to participate in political actions if those forms of political actions have a high potential for social re-affiliation. In contrast, political acts that offer little potential are expected to become less likely. With this, the paper offers the first comprehensive framework explaining how perceived loneliness relates to political action.

Secondly, by utilising the European Social Survey, hereafter ESS, I test the proposed relationship for reported voting behaviour, participating in demonstrations, signing petitions, working for a political group and contacting politicians. By testing the model in a representative, multi-national setting for five prominent forms of political participation, the study highlights that loneliness is a fruitful field of investigation for upcoming studies.

2.2. Theoretical background

What motivates civic political participation? Discussed in the context of voter turnout, Harder and Krosnick review the economic choice model of political action. From this perspective, the probability to vote can be formalised as a function of how difficult it is to participate, the individuals` motivation to participate, and the ability to enact the participation (Harder & Krosnick, 2008). While this framework originated in the literature concerned with voting behaviour, other forms of political action are based on similar principles. Given a sufficient motivation, resources, and costs of a political act, a person should be likely to participate (Harder & Krosnick, 2008; Huddy, 2013).

While loneliness is so far not considered in the political participation literature, other network characteristics are a frequent subject of investigation. Therefore, it is helpful to briefly differentiate between loneliness and social embeddedness in order to clarify how both concepts impact the motivation or ability to participate in different ways. Objective measures of social

networks such as memberships in organisations or positions within a network are common characteristics in the political participation literature and are, in combination with interactive measures such as political conversations or peer pressure, common variables to measure social capital (Bhandari & Yasunobu, 2009).

Authors investigating the link between such measures of social networks and political action often argue that the social network provides resources such as information, material resources, social support and social control. These resources can be utilised in various ways: for instance, information might boost citizens' ability to make informed decisions, foster self-efficiency, and increase motivation to participate in the democratic process. In contrast, social control and norms can increase the motivation to vote to prevent conflicts. Therefore, the mechanisms that link objective social embeddedness and political participation revolve around the idea that social networks channel collective assets the individual can utilise and which increase the motivation or ability to participate.

In contrast, perceived loneliness is not a characteristic of the network but rather a subjective individual perception and is strongly influenced by the individuals' evaluation and social forces such as social comparison and socialisation (Cacioppo & Cacioppo, 2016; de Jong Gierveld et al., 2006; Perlman & Peplau, 1981). Consequentially, it cannot be operationalised with measures capturing frequency or type of social interaction (Russell et al., 2012). While most studies review loneliness as a unidimensional construct (Russell, 1996), other authors have argued that social relationships fulfil various needs and depending on the kind of missing relationship, individuals experience loneliness differently (DiTommaso & Spinner, 1997). However, an essential part of the loneliness experience is the wish to physically or emotionally connect with other individuals and, if not successful, leads to negative psychological consequences such as passivity, social anxiety, distrust and low self-efficacy (Qualter et al., 2015; Spithoven et al., 2017). Correspondingly, two mechanisms explaining how loneliness relates to political participation can be derived from the literature.

The first suggests that political participation will become less likely if people suffer from loneliness due to passivity, alienation from society, distrust and lower self-esteem. This expectation is founded on the accumulated evidence that loneliness has severe consequences for the individual's perception of the trustworthiness of other people, one's own belonging to social groups and society as a whole, as well as the attitude toward self-efficacy (Spithoven et al., 2017). In line with this reasoning, recent correlative studies found evidence that loneliness is associated with a reduced sense of duty to vote and lower reported voter turnout (Langenkamp, 2021). As numerous studies have shown that social identity, political self-efficacy and social trust are strong predictive factors for political participation, loneliness is likely to be negatively associated with political participation (Hadjar & Beck, 2010; Mieriņa, 2014; Reichert, 2016).

The second hypothesised mechanism is based on the idea that political participation can be a potent setting for social reconnection. While I argued above that loneliness should exert an inhibiting influence on political participation, one might raise the question of whether loneliness is always related to a general withdrawal from political actions or whether it fosters some, more interactive forms of political participation. The recently revised re-affiliation perspective suggests that lonely individuals have a strong motivation to reconnect with other people (Qualter et al., 2015; Spithoven et al., 2017). Typically, social relationships have to be perceived as meaningful and lasting to reduce loneliness effectively. Therefore, I expect actions that enhance a feeling of belonging and provide a platform for prolonged interaction to be potential settings for lonely individuals to overcome their aversive situation. Research points to the conclusion that successful coping with loneliness is associated with the conscious reflection of the own situation, adopting of behaviour and actively seeking activities and contact. Thus, it is reasonable to assume that political actions are actively and consciously chosen settings for social reconnection (Rokach, 1990; Vasileiou et al., 2019).

While all political activities are subject to social influence to some extent, some activities

- such as voting - offer little opportunities for sustained or meaningful social interactions while others - such as participating in demonstrations - are more feasible for the goal of prolonged interaction and strengthening the person`s belonging to the group (Mazzoni & Cicognani, 2013). If the assumption holds true that lonely individuals have a strong motivation to re-affiliate with others in a persistent and meaningful way, and that collective actions can be useful means to achieve this goal, loneliness should be positively associated with the probability of participating in such political actions.

To summarise, the two proposed mechanisms lead to an overall expectation that the relationship between loneliness and political participation is dependent on the potential of the political act for meaningful social encounters. On one hand, loneliness should decrease the probability of participating in political affairs in general due to the psychological consequences of loneliness summarised above. On the other hand, this effect might be weakened or even reversed depending on the potential of the political act for re-affiliation.

H1: Political participation becomes less likely for lonely individuals (suppression hypothesis).
H2: Forms of political participation that are likely to foster social interactions become more likely for lonely individuals (enhancement hypothesis).

2.3. Social and non-social forms of political participation

To investigate the proposed hypotheses, it is necessary to distinguish between forms of political participation that offer a strong platform for re-affiliation and those that are less feasible for such a goal. To be clear, while it is possible to socialise during most political actions, some are interactive by default and make contact very likely while others are more individualistic by concept. This study will focus on five of the most predominant forms of political participation, summarised in Table 2.1. The chosen political acts cover institutionalised as well as non-

institutionalised political participation that is exercisable in all considered countries (for potential exceptions, see the section 'robustness tests'). With that, the analysis covers the most relevant political actions in Western democracies. Furthermore, the political acts offer different potentials for social interaction and, as argued below, can be categorised by their potential for social re-affiliation.

Table 2.1. Classification of political actions by their potential for social reconnection

Classification	Political action	Wording
strong potential for affiliation	*demonstration*	Taken part in a lawful public demonstration last 12 months
	political group	Worked in political party or action group last 12 months
↕		
	contact politician	Contacted politician or government official last 12 months
Weak potential for affiliation	*petition*	Signed petition last 12 months
	vote	Voted last national election

While many articles propose possible classifications of political actions, they typically do not discuss the dimension relevant for this paper. Rather, they differentiate the institutionalisation of the political act, what person or group the action is supposed to address, whether the action is enacted by citizens or other groups within a society such as lobbyists, or whether the action is voluntary (Theocharis & van Deth, 2018; van Deth, 2014). Therefore, this study cannot rely on pre-existing classification schemes. Instead, I qualitatively assess the potential of the political acts to foster social re-affiliation based on their potential to (1) enable a person to interact with other individuals for a prolonged period of time and (2) foster a sense of belonging due to meaningful social interaction and commonly expressed goals and attitudes.

Political demonstrations serve as a very illustrative example. The question of what the primary motivating factors for citizens to participate in public demonstrations are was the

subject of several qualitative and quantitative studies. The existing social-psychological models emphasise that the motives behind protest movements are manifold (Möller et al., 2009). Especially motives such as social identification and empowerment, a sense of belonging to the group, and the pursuit of shared goals are major motivational factors of participation in protest movements – online as well as offline (Jost et al., 2018). Qualitative studies illustrate that not just the development of new social ties, but also the preservation of intimate community ties, are relevant motives for political activists, an insight in line with the political mobilisation literature (Mazzoni & Cicognani, 2013). In addition, the literature concerned with recruitment for social movements highlights that informal network relationships such as friends and families do play an important role in the motivation to join a movement (Jasper & Poulsen, 1995). In an investigation of the Fridays for Future movement, scientists confirmed that around 87% of the student's protests together with friends, and lone protesters are the exception (Wahlström et al., 2019). Interestingly, this is not limited to friendly or neutral interactions. Studies investigating the Gezi Park protests pointed out that joining social movements can have a lasting impact by creating an atmosphere of exchange and tolerance between previously hostile groups (Budak & Watts, 2015; Taştan, 2013). Given that joining a social movement or protest does foster social contact, stimulates a sense of belonging, often thrives on political organisations that join the movement, and offer a platform for prolonged social encounters, this form of political participation should appeal to lonely people in particular. In respect of the classification scheme, participants of political protests are continuously enabled to participate in the group activity over a substantial amount of time and get in touch with like-minded individuals.

Working in a political party or political action group can provide a space for purposeful interaction as well. While studies investigating the motives of party memberships are relatively rare, reported motivations do include the goal of sustaining or creating new social contacts. In a study from the 1970s, the scientists found that almost half of the members of a Canadian political party stated that they sustained party activity primarily for social reasons (Clarke et

al., 1978). Similar patterns can be observed in a more recent German case where, alongside other motives, political parties offer the possibility to get in touch with friendly people with similar attitudes and interests (Laux, 2011). With respect to other political groups, community service or volunteerism, the overall picture is the same (Holdsworth, 2010; Sheldon et al., 2016; Stewart & Weinstein, 1997). Consequently, political groups are considered a useful platform for prolonged and purposeful social interactions similar to participating in a protest movement.

While demonstrations and political organisations are classic forms of political engagement, the act of signing petitions received increasing attention in the last decades due to the rapidly growing frequency of e-petitioning through the internet (Jungherr & Jürgens, 2011). In contrast to the first two discussed political actions, petitions provide a less obvious platform for social encounters. As summarised by Lindner and Riehm (Lindner & Riehm, 2011), petitions fulfil mainly three functions for participants: they are an easy way to (1) express their attitude and influence politics, (2) protect their rights and interest and (3) mobilise others for their cause and increase the individual's empowerment.

While authors do mostly agree that signalling one's political support by signing a petition does foster an individual`s identification with the cause and the success of a petition is evaluated on multiple factors (Wright, 2016), there is no evidence that signing a petition is used to foster social interactions in communities or social groups. Social networks are important for the distribution of a petition and mobilisation of participants, but the duration of the political act is typically very brief and the act itself is not interactive. No study that I am aware of mentions social interaction as a key motivator for participating in petition campaigns. While the absence of evidence does not prove the opposite, recent studies investigating digital petition platforms show that many contributors sign large numbers of petitions either out of habit or just spontaneously, while most other users remain inactive after just one petition (Halpin et al., 2018; Puschmann et al., 2017). This speaks against a considerable potential for social re-affiliation of lonely people. Rather, participants are motivated by factors such as expression of

personal attitudes, empowerment, solidarity with a cause, and sometimes ideology (Wright, 2016). Thus, for the purpose of this study, the act of signing petitions is considered an unlikely context for social re-affiliation compared to protests or activity in political groups.

Another way citizens can influence politics directly is by contacting their elected representative or other relevant government officials. Even though it would be a short social encounter, contacting political representatives is unlikely to be used as a means to overcome loneliness. While studies have shown that pre-existing ties between citizens and representatives are stronger predictors than individual factors (Aars & Strømsnes, 2007), there is no in-depth study suggesting that the social interaction itself is a motivating factor for citizens to get in touch with political figures or government officials. In contrast to demonstrations and political groups, contacting a politician does typically not allow for sustained or repeated interaction, intimate encounters, or group identity.

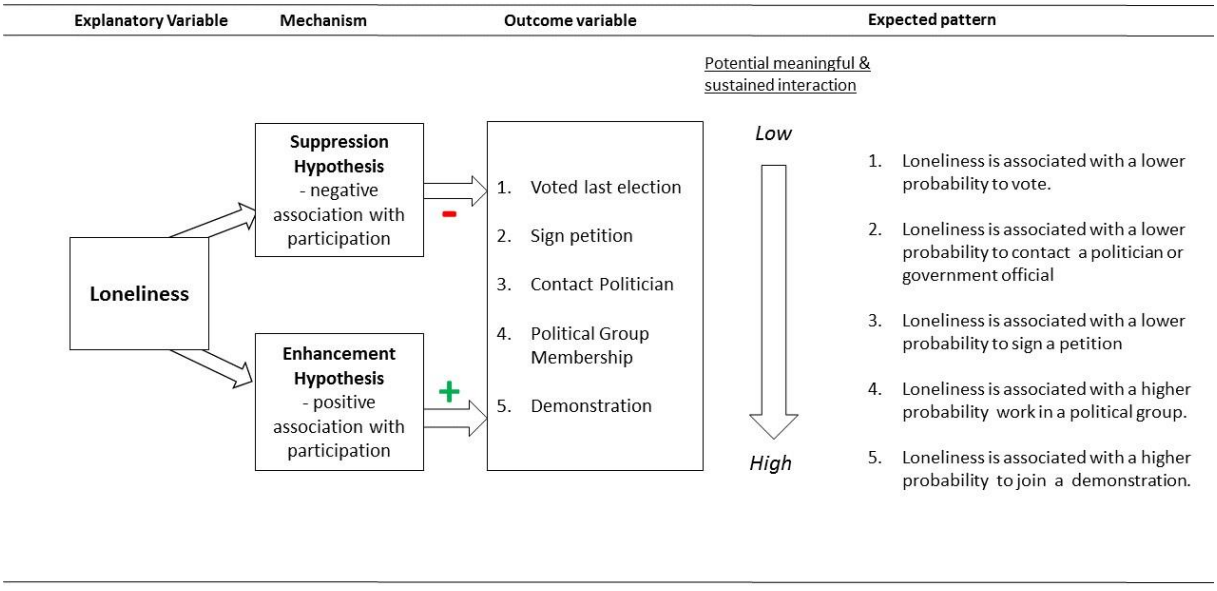
There is some evidence in other settings that people try to cope with their loneliness by using institutional contacts. For instance, in an interview study of exchange students in Australia, 8% of the students who reported that they felt lonely tried to cope with the situation by contacting student services as well as academic staff (Sawir et al., 2008). In another case, researchers found that loneliness in old age is a predictor of visiting one's general practitioner despite being healthy (Ellaway et al., 1999). However, such cases are usually found in professions that are meant to deal with personal care or supervision and that can be contacted frequently, without institutional barriers. Given that contacting politicians is usually brief and infrequent, contacting politicians or government officials is considered to have a low potential for reconnection and is expected to become less likely for lonely individuals

Concerning voting behaviour, social forces play a major role in mobilisation (Bond et al., 2012; Smets & van Ham, 2013). However, the empirical finding that peer pressure or social contacts motivate citizens to vote does not imply that the act of voting is considered a useful

setting for lonely individuals to revive their social ties. Studies investigating the intrinsic motivation of citizens to vote usually find motives such as fulfilling one's civic duty, outcome preference due to personal beliefs or ethical reasons (Ali & Lin, 2013; Galais & Blais, 2016), but no personal incentives such as enjoyment of the group activity or the aim to socialise. Furthermore, voting is a rather short-lived activity and does not provide a basis for sustained interaction either. Hence, voting is not considered a potent setting for individuals to socially re-affiliate.

To summarise, it has been argued that the relationship between loneliness and political participation depends on the potential of the political act to foster sustained and meaningful social interactions. If political engagement is likely to foster an individual's embeddedness by providing a platform for meaningful social interaction, it is possible that lonely individuals utilise this engagement to fight their aversive social situation. In absence of this motivation, I argued that loneliness should be negatively associated with the probability to participate. Figure 2.1. summarises the proposed argument and the expected pattern in the outcome variables.

Fig. 2.1. Theoretical Framework – the relationship between loneliness and participation conditional on the potential for re-affiliation



2.4. Dataset

This study investigates the link between loneliness and political participation in a multinational setting. This is important for two reasons. First, multinational datasets are useful to avoid statistical artefacts due to nation-specific characteristics such as differences in the political system, wealth, or demographic compositions (Schmidt-Catran et al., 2019). Given the large variation in age composition and economic strength of the countries considered in this sample (Niedzwiedz et al., 2016; Yang & Victor, 2011), the methodological approach increases the reliability of the results by taking the contextual effects into account.

At the same time, the sample consists mostly of European, liberal and democratic countries and attempts to generalise the results to other nations with other characteristics should be cautiously made. Second, loneliness as well as some of the considered political actions are comparatively rare events, and multinational samples are useful to avoid problems stemming from insufficient observations and related issues with statistical power. To analyse the derived hypotheses, the data from the third, fifth, sixth, and seventh waves of the European Social Survey (ESS) are utilised. The questionnaires of the other waves do not include a measure of loneliness and cannot be used in this analysis.

After deleting missing values on the individual level as well as the exclusion of participants below age 18, the data consist of 166,815 observations from 34 countries that participated in at least two and up to four waves between 2006 and 2014.

2.5. Operationalisation

The forms of political participation are all binary measures and report whether an individual has participated in one of the actions listed in Table 2.1. during the last 12 months. The only exception is the voting variable that measures whether a participant voted in the last national election.

Loneliness is coded on an ordinary scale with four categories. The participants had to report how often they felt lonely in the past week: (1) almost none of the time (2) some of the time (3) most of the time or (4) almost all of the time. Treating loneliness as a metric instead as a categorical variable does not change the results. Likewise, the analysis has been double-checked using a binary coding of loneliness differentiating between people who almost never felt lonely versus categories 2, 3 and 4. In all models, the direction of the effect and significance levels remain unchanged. The effect sizes in the metric operationalisation are smaller compared to the other control variables while the effect sizes in the binary operationalisation seem to be somewhat inflated. Therefore, the reported results are based on the metric operationalisation for reasons of caution, clarity and comprehensibility.

Furthermore, I consider several control variables. It is possible that political actions might be mostly utilised for reconnection by people highly involved with politics. To account for this possibility, I control for self-reported political interest. Another important control is general health. Several decades of research have shown that loneliness exerts a negative influence on physical as well as psychological health (Heinrich & Gullone, 2006), and that poor health decreases participation (Mattila et al., 2013). The ESS contains a variable that measures the perception of one's subjective general health. Given the lack of more objective health measures, this variable is included as crude control for the general physical and mental wellbeing of the participants.

Also, I incorporate income into the model via subjective satisfaction with one's financial

situation, given that financial worries might play a major role in the probability to participate in protests, petitioning and party membership. The perception of one's financial situation has two major advantages compared to the direct measure included in the ESS. First, the direct measure has over 24% missing values which would reduce the sample size substantially. Second, given that objective income is biased due to social desirability, household size, and other social factors, indirect measures capture the financial situation more adequately.

Furthermore, I add several sociodemographic variables commonly controlled for in turnout and participation models. Namely, I include gender, age, and the highest level of educational attainment. Finally, one might argue that the relationship between loneliness and participation is merely an expression of one's lack of objective social contacts. To pre-empt such concerns, I add a variable measuring how often the participant socially meets with friends, colleagues, or relatives into the model as well as an indicator for unemployment because the workplace is a major source of social interaction in adult lives (Table 2.2).

Table 2.2. Descriptive statistics

n=166815	original ESS label	mean	range	description
Outcome variables				
Vote	vote	0.77	0-1	Voted last national election?
Petition	sgnptit	0.21	0-1	Signed petition last 12 months?
Demonstration	pbldmn	0.06	0-1	Taken part in lawful public demonstration last 12 months?
Political group	wrkprty	0.04	0-1	Worked in political party or action group last 12 months?
Contact politicians	contplt	0.14	0-1	Contacted politician or government official last 12 months?
Independent variables				
Loneliness	fltlnl	1.46	1-4	Felt lonely, how often past week?
Social interaction	sclmeet	4.78	1-7	How often socially meet with friends, relatives or colleagues?
Political interest	polintr	2.39	1-4	How interested in politics?
Being unemployed	uempla / uempli	0.07	0-1	Being currently unemployed
Financial satisfaction	hincfel	2.14	1-4	Feeling about household's income nowadays
Being female	gndr	0.55	0-1	Gender
General health	health	2.28	1-5	Subjective general health
Age	agea	50.23	18-114	Age of respondent
Education	edulvlb	--	1-5	Highest level of education
ISCED 0-1	--	0.12	--	Less than secondary
ISCED 2	--	0.14	--	Lower secondary
ISCED 3	--	0.38	--	Upper secondary
ISCED 4	--	0.05	--	Post secondary, non Tertiary
ISCED 5-6	--	0.3	--	Tertiary completed

Values are rounded to the second decimal

2.6. Analysis

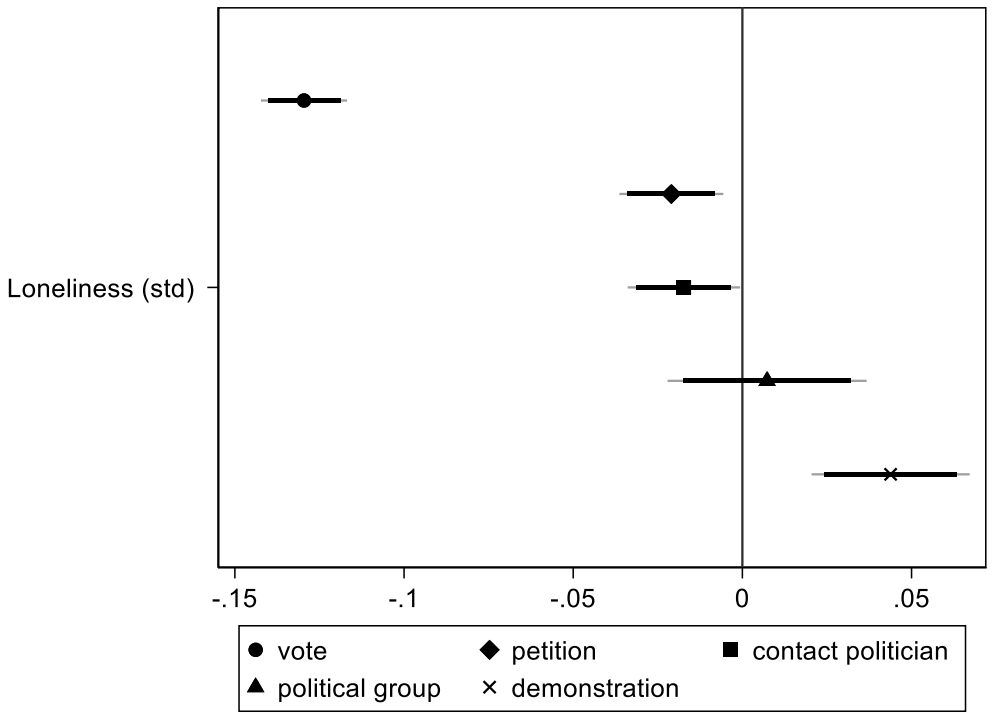
To investigate the proposed pattern, I employ three-level logistic regression models to account for the clustering of the individual observations within the participating countries and waves. As a first analytical step, I discuss the valence and significance of the relationship between loneliness and the five outcomes to confirm that the data match the expected pattern. Valance and statistical significance are of course just rough indicators for the substantial relevance of an explanatory variable. As pointed out by Bernardi and colleagues, statistical significance can be misused to claim links between variables that are significant, but so small that they cannot be considered substantial or socially relevant (Bernardi et al., 2017). This consideration is especially important in regression analysis based on large sample sizes such as this one. Therefore, I will discuss the size of the effect in the second part of the analysis. In order to evaluate the substantial strength of the relationship, I standardise all non-binary variables and compare the effect strength of loneliness with other established predictors for political participation.

2.6.1. The overall pattern

Figure 2.2. displays the x-standardised logistic regression coefficients of loneliness on all five previously discussed political actions. The corresponding regression models can be found in the appendix in Table A.2.1 and Table A2.2. While it is not possible to compare effect sizes between probability models, the plot gives a comprehensive overview of the valence as well as the significance level of the coefficients.

As expected, loneliness does significantly lower the probability of voting ($p < .001$), signing a petition ($p < .01$), and contacting a politician ($p < .05$). In respect to the assumed positive relationships, loneliness is significantly associated with an increased probability of joining a demonstration ($p < .001$). In contrast, the effect on the probability of working in political groups is insignificant ($p < .791$). Overall, the results are in line with the proposed hypothesis. Loneliness seems to decrease political participation in several dimensions, especially those that do not offer many opportunities for social interaction. For political actions that are more interactive, the effect is either insignificant or positive. This might indicate that the general decreasing impact of loneliness is overshadowed or partially attenuated by the motivation to re-affiliate with others.

Fig. 2.2. Multilevel mixed-effect logistic regression loneliness on political participation

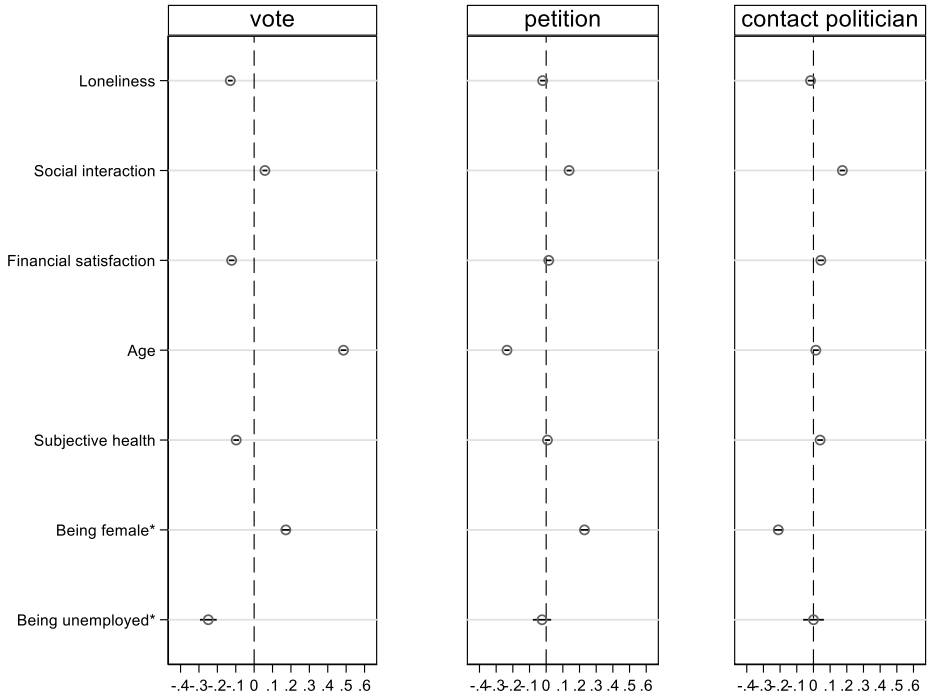


Note: Confidence intervals at 95% and 90%

2.6.2. Effect size – substantial or just significant?

Figures 2.3. and 2.4. report the standardised coefficients separated by the significant outcome variables. For the sake of visibility, I omitted political interest and education from the plot because the effect sizes are comparatively large, which would make it difficult to compare the other variables with each other. However, the values can be found in Table A.2.1 and A.2.2. As can be seen in Figure 2.3, loneliness predicts voting behaviour in a way that is both statistically and substantially significant.

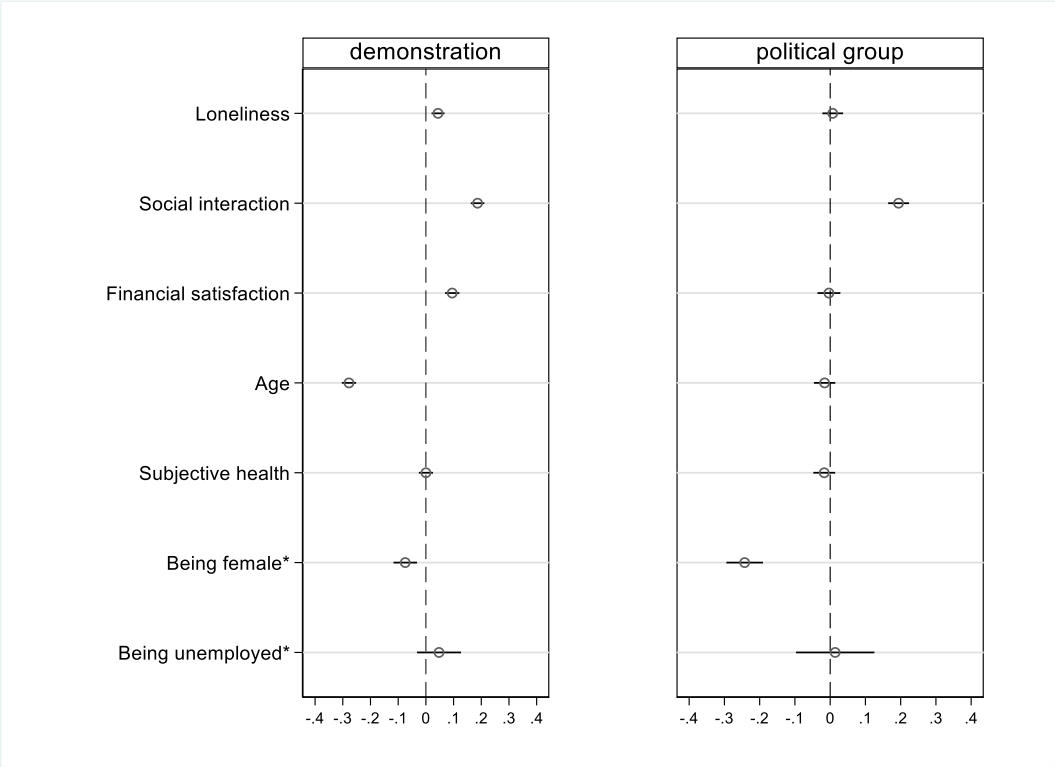
Fig. 2.3. Loneliness on political actions - Comparison of effect sizes per standard deviation



Note: *= not standardised; CI displayed at 95%; education and political interest not displayed

Every additional standard deviation in loneliness (std. = .74 on a 4-point scale) increases the probability to vote by 0.129. Translated into average marginal effects, every additional standard deviation increase in loneliness decreases the probability to vote by 1.86%. With that, perceived loneliness correlates with the reported voting behaviour more strongly than the frequency of social interactions (std. coef. = 0.059; AME = 0.86%; $p < .001$), and an increase of two deviations is almost as large as the difference between being employed and being unemployed (std. coef. = −0.249; AME = 3.7%; $p<0.001$). Similar to voting behaviour, loneliness is associated with a lower probability of signing petitions (std. coef. = −0.021; AME = 2.09%; $p < .007$) as well as contacting a politician (std. coef. = −0.017; AME =0.2%; $p < .001$). In comparison, frequency of social encounters is associated with signing a petition. In comparison, frequency of social encounters is associated with a five to six times larger probability of signing a petition compared to loneliness (std. coef. = 0.138; AME=18.6%; $p < .001$). In respect to the probability of contacting politicians, loneliness is about 10 times smaller than frequency of social interaction (std. coef. = 0.174; AME = 1.9%; $p < .001$). Therefore, compared to the frequency of social contact with peers, the association between loneliness, signing petitions and contacting politicians is comparatively weak, but still exceeds several other predictors in the model as can be seen in Table A.2.1 and A2.2. In contrast, the association between loneliness and voting behaviour is substantial.

Fig. 2.4. Loneliness on political actions - Comparison of effect sizes per standard deviation



Note: *= not standardised; CI displayed at 95%; education and political interest not displayed

In respect of the probability of joining a demonstration, every additional standard deviation in loneliness increases the probability to demonstrate by 0.044 (AME = 4.38%; $p < .001$). In comparison, frequent social interactions are associated with an increase by 0.187 (AME = 18.6% $p < .001$). Given that one additional standard deviation in loneliness is about 23% of the effect size of the frequency of social encounters, loneliness can only be considered as a moderate predictor for joining a demonstration.

Overall, I interpreted the pattern as evidence that loneliness is associated with a lower probability to participate in political acts if they offer little opportunity for affiliation (voting, signing petitions, and contacting politicians). While objective social encounters exceed the influence of perceived loneliness in most cases, it is still a considerable predictor. Hence, the analysis provides support for the suppression hypothesis (H1). Considering the insignificant relationship to working for a political group and the significant, but a comparatively small association with the probability of joining demonstrations, the analysis provides only mixed support for the enhancement hypothesis (H2).

2.6.3. Robustness tests

One possible concern for the electoral participation model is the amount of time that lies between the interview and the last election held in each of the countries. All forms of political participation tend to become more frequent with nearing elections, and memory biases are less problematic with short time gaps. I have constructed a variable that measures the amount of time between the last national election and the corresponding date of the interview to determine whether the relationships between loneliness and political acts are confounded by the time measure. Including this variable in the model does not change the results. Thus, this variable is not included in the final models reported in the analysis.

Furthermore, recent studies have established a relationship between wellbeing and political behaviour. Given that loneliness and subjective wellbeing are logically interlinked, the found relationship between loneliness and political participation might be a confounded effect of wellbeing. To resolve this concern, I tested whether the link remains robust under control for general life satisfaction. Adding this variable does not change the results except for the ‘contacting politicians’ model where loneliness remains marginally significant after adding the variable ($p = .083$). However, the strong inter-correlation between loneliness and life

satisfaction (corr. = 0.35) is likely to bias the effect strength considerably and the investigation of the substantial effect size would not be possible due to over-controlling. Thus, life satisfaction is not controlled for in the final models.

Finally, the two countries included in the analysis might be considered problematic. First, voting is compulsory in Belgium, resulting in atypically high voter turnouts. Second, Russia has a very repressive policy regarding public demonstrations and its elections are characterised by suppressed and barred candidates and repeated allegations of irregularities. Omitting these countries from the voting model and demonstration model respectively does not change the results.

2.7. Conclusion and limitations

This study provides evidence that loneliness can be seen as a valuable predictor for reported political behaviour. I theorised that political participation should become less likely for political acts that are unlikely to foster social engagement (suppression hypothesis), while political acts that foster social engagement were expected to become more likely (enhancement hypothesis). In line with these expectations, all three political actions that offer little opportunity for social re-affiliation are negatively associated with loneliness.

In contrast, loneliness did predict one out of two political actions that were theorised to foster social interaction. In light of the mixed support for the enhancement hypothesis, upcoming research should investigate why loneliness and working in a political group seem to be unrelated. One possible explanation might be that being active in political groups is perceived as more demanding. The higher degree of commitment required to join organised groups such as political parties is especially problematic for lonely individuals who tend to be socially anxious and suffer from depressed mood. Therefore, while providing a platform for social reconnection, demanding institutional barriers might prohibit lonely individuals from join such

organisations. Likewise, leaving these groups should happen rarely as well; it is more likely that members become increasingly inactive while trying to preserve the membership in order to reconnect with other members in the future.

Furthermore, the results of the analysis should be read in light of some limitations. First, very little research has shed light on the question of what political action is motivated by the wish to socialise. While there are clear reports that citizens go to demonstrations to meet with like-minded people and to remain in touch with friends, the categorisation of the other forms of participation is based on only a few studies. Upcoming qualitative studies should investigate this question which might allow a more sophisticated categorisation. In a similar fashion, one key distinction in the loneliness literature is the difference between emotional and social loneliness (DiTommaso & Spinner, 1997). Investigating how both types of loneliness relate to the proposed hypothesis is a promising field of investigation for upcoming research.

Furthermore, the analysis is based on correlations of cross-sectional multilevel data and cannot account for typical limitations of such designs such as causality or unobserved confounding. Especially unobserved personality traits or social media usage could be confounding factors that cannot be controlled for in this study (Buecker et al., 2020; Ryan & Xenos, 2011). Upcoming research might try to tackle this issue with panel data on the individual level to account for the time constant, unobserved variables.

In the broader picture, this study relates to the core debate in political science about social embeddedness and social capital. While many political scholars do focus on network characteristics such as mutual trust and objective characteristics of one's social environment, loneliness relates to the subjective perception of these characteristics and offers an interesting additional facet of this phenomenon that is yet to be discussed in the literature. Given that Great Britain has already tasked a minister with combatting loneliness and policies such as social prescriptions are implemented in Great Britain and the Netherlands, a more comprehensive understanding of the phenomenon is needed to provide the groundwork for informed policy

decisions.

2.8. Bibliography of Chapter 2

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2.9. Appendix of Chapter 2

Table A.2.1. Multi-level logistic regression models (Appendix) - vote, petition, and contacting politicians

	vote	petition	contact politician
Individual level variables			
Loneliness	-0.129 ***	-0.021**	-0.017*
Political interest	0.622***	0.442***	0.547
Social interaction	0.059 ***	0.138***	0.174***
Age	0.486 ***	-0.235***	0.015
Financial satisfaction	-0.122 ***	0.016	0.044***
Subjective health	-0.097 ***	0.008	0.040***
*Being unemployed	-0.249 ***	-0.025	-0.004
*Education			
ISCED 0-1	--	--	--
ISCED 2	-0.033	0.304***	0.166***
ISCED 3	0.191 ***	0.637***	0.373***
ISCED 4	0.402 ***	0.876***	0.585***
ISCED 5-6	0.521 ***	1.068***	0.792***
*Being female	0.172 ***	0.229***	-0.211***
Constant	-1,236***	-2.504***	-2.313***
Variance components			
Country level	0.261***	-0.665***	0.152***
Year level	0.051***	0.105***	0.050***
Statistics			
N1 (Country)	34	34	34
N2 (Country-years)	102	102	102
n (Individual)	166815	166815	166815

*p>=0.05 ** p>0.01 ***p>=0.001 (two-sided tests); variables are x-standardized, except when marked with *

Table A.2.2. Multilevel logistic regression models (Appendix) – demonstrations and political groups

	demonstration	political group
Individual level variables		
Loneliness	0.044***	0.007
Political interest	0.577***	1.045***
Social interaction	0.187***	0.194***
Age	-0.278***	-0.016
Financial satisfaction	0.095***	-0.004
Subjective health	0.001	-0.017
*Being unemployed	0.048	0.014
*Education		
ISCED 0-1	--	--
ISCED 2	0.210***	0.148
ISCED 3	0.453***	0.432***
ISCED 4	0.654***	0.559***
ISCED 5-6	0.875***	0.725***
*Being female	-0.074**	-0.243***
Constant	-3.608***	-4.018***
Variance components		
Country level	-0.439***	0.170***
Year level	0.107***	0.047***
Statistics		
N1 (Country)	34	34
N2 (Country-years)	102	102
n (Individual)	166815	166815

*p>=0.05 ** p>0.01 ***p>=0.001 (two-sided tests); variables are x-standardized, except when marked with *

Table A.2.3. Observations by country and wave (Appendix)

country	2006	2010	2012	2014	Total
AL	0	0	952	0	952
AT	1,982	0	0	1,603	3,585
BE	1,537	1,551	1,621	1,563	6,272
BG	1,166	2,223	2,11	0	5,499
CH	1,409	1,094	1,126	1,054	4,683
CY	856	937	998	0	2,791
CZ	0	2,141	1,472	1,82	5,433
DE	2,584	2,582	2,483	2,697	10,346
DK	1,359	1,311	1,376	1,258	5,304
EE	1,214	1,487	1,949	1,556	6,206
ES	1,614	1,58	1,697	1,623	6,514
FI	1,69	1,656	2,01	1,871	7,227
FR	1,69	1,502	1,755	1,648	6,595
GB	0	2,158	2,015	1,998	6,171
GR	2,198	2,443	0	0	4,641
HR	0	1,294	0	0	1,294
HU	1,375	1,468	1,726	1,522	6,091
IE	1,398	2,255	2,31	1,987	7,95
IL	0	1,701	1,993	1,857	5,551
IS	0	0	561	0	561
IT	0	0	765	0	765
LT	0	1,331	1,783	1,806	4,92
LV	1,388	0	0	0	1,388
NL	1,741	1,606	1,676	1,688	6,711
NO	1,581	1,328	1,371	1,237	5,517
PL	1,518	1,125	1,298	1,003	4,944
PT	1,97	1,949	1,924	1,116	6,959
RO	1,69	0	0	0	1,69
RU	1,96	2,066	2,023	0	6,049
SE	1,736	1,344	1,619	1,593	6,292
SI	1,253	1,111	1,128	1,121	4,613
SK	1,474	1,679	1,649	0	4,802
UA	1,714	1,539	1,785	0	5,038
XK	0	0	1,123	0	1,123
Total	40,097	44,461	46,298	33,621	164,477

Table A.2.3. Multi-level logistic regression models control for life satisfaction – vote, petition, and contacting politicians (Appendix)

	vote	petition	contact politician
Individual level variables			
Life Satisfaction	**0.039*** **	**-0.04**	**0.005**
Loneliness	-0.152***	-0.03**	-0.020
Political interest	0.681***	0485***	0.599***
Social interaction	0.032***	0.086***	0.108***
Age	0.027***	-0.013***	0.001
Financial satisfaction	-0.108***	0.015	0.052***
Subjective health	-0.084***	0.006	0.045***
°Being unemployed	-0.229***	-0.026	0.005
°Education			
ISCED 0-1	--	--	--
ISCED 2	-0.03	0.301***	0.167***
ISCED 3	0.195***	0.634***	0.374***
ISCED 4	0.407***	0.873***	0.587***
ISCED 5-6	0.525***	1.065***	0.793***
°Being female	0.165***	0.231***	-0.212***
Constant	-1.539***	-3.38***	-4.520***
Variance components			
Country level	0.257***	-0.667***	0.151***
Year level	0.051***	0.105***	0.049***
Statistics			
N1 (Country)	34	34	34
N2 (Country-years)	102	102	102
n (Individual)	166229	166229	166229

*p>=0.05 ** p>0.01 ***p>=0.001 (two-sided tests)
variables are x-standardized, except when marked with °

Table A.2.4. Multi-level logistic regression models control for life satisfaction – demonstrations and political groups (Appendix)

	demonstration	political group
Individual level variables		
Life Satisfaction	**-0.038*** **	**0.006**
Loneliness	0.039*	0.012
Political interest	0.633***	1.147***
Social interaction	0.121***	0.119***
Age	-0.017***	-0.001
Financial satisfaction	0.079***	0.001
Subjective health	-0.017	-0.015
°Being unemployed	0.027	0.015
°Education		
ISCED 0-1	--	--
ISCED 2	0.205***	0.134***
ISCED 3	0.446***	0.428***
ISCED 4	0.646***	0.559***
ISCED 5-6	0.867***	0.721***
°Being female	-0.069**	-0.243***
Constant	-4.847***	-7.301***
Variance components		
Country level	0.438***	0.170***
Year level	0.105***	0.047***
Statistics		
N1 (Country)	34	34
N2 (Country-years)	102	102
n (Individual)	166229	166229

*p>=0.05 ** p>0.01 ***p>=0.001 (two-sided tests)
variables are x-standardized, except when marked with °

Table A.2.5. Multi-level logistic regression models control for distance to election – vote, petition, and contacting politicians (Appendix)

	vote	petition	contact politician
Individual level variables			
Loneliness	-0.176***	-0.028**	-0.022*
Time distance	***-0.002******	***0.001****	***0.001***
Political interest	0.684***	0.486***	0.601
Social interaction	0.036***	0.086***	0.108
Age	0.028***	-0.013***	0.001*
Financial satisfaction	-0.133***	0.017	0.05***
Subjective health	-0.104***	0.009	0.0043***
°Being unemployed	-0.25***	-0.024	0.004
°Education			
ISCED 0-1	--	--	--
ISCED 2	-0.027	0.307***	0.169***
ISCED 3	0.189***	0.638***	0.374***
ISCED 4	0.394***	0.878***	0.585***
ISCED 5-6	0.517***	0.107***	0.791***
°Being female	0.17***	0.23***	-0.212***
Constant	-0.1001	-3.553***	-4.54***
Variance components			
Country level	0.26626***	0.652***	0.152***
Year level	0.0519***	0.1**	0.046***
Statistics			
N1 (Country)	34	34	34
N2 (Country-years)	101	101	101
n (Individual)	165206	165206	165206

Table A.2.6. Multi-level logistic regression models control for distance to election – demonstrations and political groups (Appendix)

	demonstration	group member
Individual level variables		
Loneliness	0.058***	0.009
Time distance	**0.0002****	**0.001**
Political interest	0.634***	1.147***
Social interaction	0.116***	0.119***
Age	-0.016***	-0.001
Financial satisfaction	0.105***	-0.001
Subjective health	-0.001	-0.019
°Being unemployed	0.048	0.015
°Education		
ISCED 0-1	--	--
ISCED 2	0.208***	0.144*
ISCED 3	0.452***	0.434***
ISCED 4	0.657***	0.561***
ISCED 5-6	0.873***	0.727***
°Being female	-0.072***	-0.24***
Constant	-5.364***	-7.297***
Variance components		
Country level	0.393***	0.169***
Year level	0.101***	0.047***
Statistics		
N1 (Country)	34	34
N2 (Country-years)	101	101
n (Individual)	165206	165206

3. The influence of loneliness on perceived social belonging and trust beliefs–longitudinal evidence from the Netherlands.

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Abstract: *While social pluralism and diversity is an important characteristic of functioning democracies, civil society and democratic institutions require citizens to feel like an integral part of society in order to function. This stems from a general sense of unity and cohesion as well as a mutual understanding of citizens that institutions and other members of society are trustworthy. While objective aspects of social embeddedness, i.e. organisational membership and inter-relational contact, are established predictors of these outcomes, perceived loneliness is rarely investigated. This study investigates whether changes in loneliness reduce levels of perceived connectedness and political and interpersonal trust beliefs. By analysing 12 waves of panel data from the Netherlands gathered between 2008 and 2020 (n= 41,508), the analysis shows that intra-personal variation in loneliness predicts citizens' sense of connectedness and interpersonal trust beliefs. Regarding political trust, the relationship cannot be found with panel fixed effect.*

3.1. Introduction

To function, civil societies and political institutions rely on citizens' sense of social belonging and on citizens' mutual understanding that institutions and other members of society are trustworthy. Often discussed in the social cohesion and social capital literature (Chan et al. 2006)[20], trust in political actors and institutions is important for their legitimacy and citizens` policy compliance and civic morality (Bargain and Aminjonov 2020; Letki 2006), while inter-relational trust and a sense of unity and interconnectedness with other members of society are considered important sources for civic solidarity, identity and, ultimately, participation in socio-political processes (Brehm and Rahn 1997; Marien and Hooghe 2011; Welch et al. 2005)[21]. As trust and perceived connectedness are incremental parts of social cohesion and central to democracies to function (Chan et al. 2006; Vollhardt et al. 2009), scholars warned that surveys detected a slow, but steady decline in these crucial societal resources (Bovens and Wille 2008; Twenge et al. 2014)[22].

Authors in the tradition of social capital theory argue that trust and sense of social cohesion stem from activities in civic organisations, communities, and social interactions in general as they provide opportunities for cooperation, communal thinking and reinforcement of shared

[20] Social capital and social cohesion are ambiguous concepts with various definitions depending on the field of study. For extensive reviews of the concepts, compare Bhandari and Yasunobu (2009) and Chan et al. (2006).

[21] "Sense of cohesion" and "sense of connectedness" are used interchangeably throughout the document. Both concepts refer to a person's perception to be interconnected with other members of society in general. This is not to be confused with the term "social connectedness" which typically refers to the objective social embeddedness of a person (Cojuharenco et al. 2016).

[22] The practical relevance of trust and perceived social unity can be nicely exemplified by protest movements during the corona pandemic. Studies found that individuals who protested containment policies are characterised by very low levels of institutional trust and a perceived division in society (Devine et al. 2021; Frei et al. 2021).

civic virtues (Coleman 1988; Putnam 2000). Correspondingly, empirical studies often investigate the emergence of social cohesion, i.e. trust and sense of connectedness, with objective measures of social embeddedness, such as organisational membership, network characteristics and inter-relational contact (Fukuyama 2001; Jackson 2020; Paxton 2002). However, these operationalisations are often limited to observable aspects of social interactions. Considering the great importance of perception for the perceived social reality and social attitudes (Greifeneder et al. 2017), it is likely that subjective-perceptional aspects of relationships play an important role in the formation of trust beliefs and perceived social cohesion as well (Vollhardt et al. 2009).

This study contributes to this shortcoming by investigating the influence of *perceived loneliness* on social and political trust beliefs and perceived social connectedness. Loneliness is an emotional response to a perceived deficiency in one's own social network and has been found to influence a multitude of attitudinal and behavioural outcomes. However, sociological or political studies concerned with societal consequences of loneliness are small in numbers and mostly based on cross-sectional data (Langenkamp 2021; Schobin 2018; Yang 2019). One noteworthy study by Rotenberg and colleagues (Rotenberg et al. 2010) did investigate the relationship between generalised trust and loneliness with a 2-wave panel design in several age groups. This analysis, however, is based on comparably few observations in a very short panel, which potentially led to the reported insignificant effects of loneliness on trust. Therefore, the role of perceived loneliness in the formation of trust and cohesion can be considered underexplored.

This article tackles the issue that no study confirmed the relationship with well-powered longitudinal designs so far. By utilising 12 waves of longitudinal, representative panel data from the Netherlands gathered between 2008 and 2020, the study confirms that within-person variation in loneliness relates to intra-personal variation in the individuals' perceived

connection to others as well as their social trust beliefs. The relationship between loneliness and political trust, however, can only be found in models that rely on between-unit variation, but not with fixed effects models.

The study is structured as follows: First, the study reviews the concept of loneliness and its known consequences. Secondly, the theoretical argument for why loneliness relates to perceived trust, a sense of generalised connectedness and political trust is reviewed. Third, the data and analytical strategies are presented. The subsequent analysis tests the hypotheses. Implications and limitations are discussed in the conclusion.

3.2. Theory

3.2.1. Loneliness, what it is and what it does

Similar to hunger or thirst, loneliness is a universal human experience and, consequentially, the topic of countless philosophical and cultural writings (Svendsen 2017). Despite its cultural prominence, the notion of loneliness suffers from multiple misconceptions and gets confused with related concepts in public as well as in academia. Therefore, it is important to discuss in more detail what loneliness is, how it relates to objective social relationships and activities, and what is known about its consequences.

As reliable relationships were a central resource for survival throughout history, humans have developed a strong desire to form and maintain reliable social relationships and belong to a larger social group (Baumeister and Leary 1995; Gere and Macdonald 2010). Loneliness stems from a perceived discrepancy between one's desired and actual relationships and can be understood as the emotional expression of a perceived insufficiency in personal social relationships, either in respect of quantitative or qualitative aspects (Franklin and Tranter 2021; Perlman and Peplau 1981). The fields of psychology and neuroscience established that

loneliness developed as a painful emotional warning signal that motivates humans to re-affiliate with others in order to maintain the protective relationship network (Cacioppo and Cacioppo 2018; Qualter et al. 2015), and many scientists concerned with human motivation consider affiliation as one of the most important drivers of human action (Kovač 2016).

This close conceptual relationship between loneliness and social relationships led to the common misconception that loneliness is a synonym for aloneness. Although conceptually intermingled at times, loneliness and being alone are distinct empirical phenomena (Riva and Eck 2016) and loneliness is more dependent on the quality, rather than quantity, of social relationships and social activities (Gierveld et al. 2018). For instance, research repeatedly found statistically significant, but modest correlations between social isolation, social activity and loneliness (Coyle and Dugan 2012; Russell et al. 2012). These findings manifest themselves in an everyday observation: people can feel lonely despite being in company, but feel happy with very few contacts. In contrast, social connectedness and social embeddedness are often used interchangeably and refer to the objective social network of individuals (Reilly 2017). Simply put, aloneness and connectedness are physical states of being, but loneliness is a state of mind.

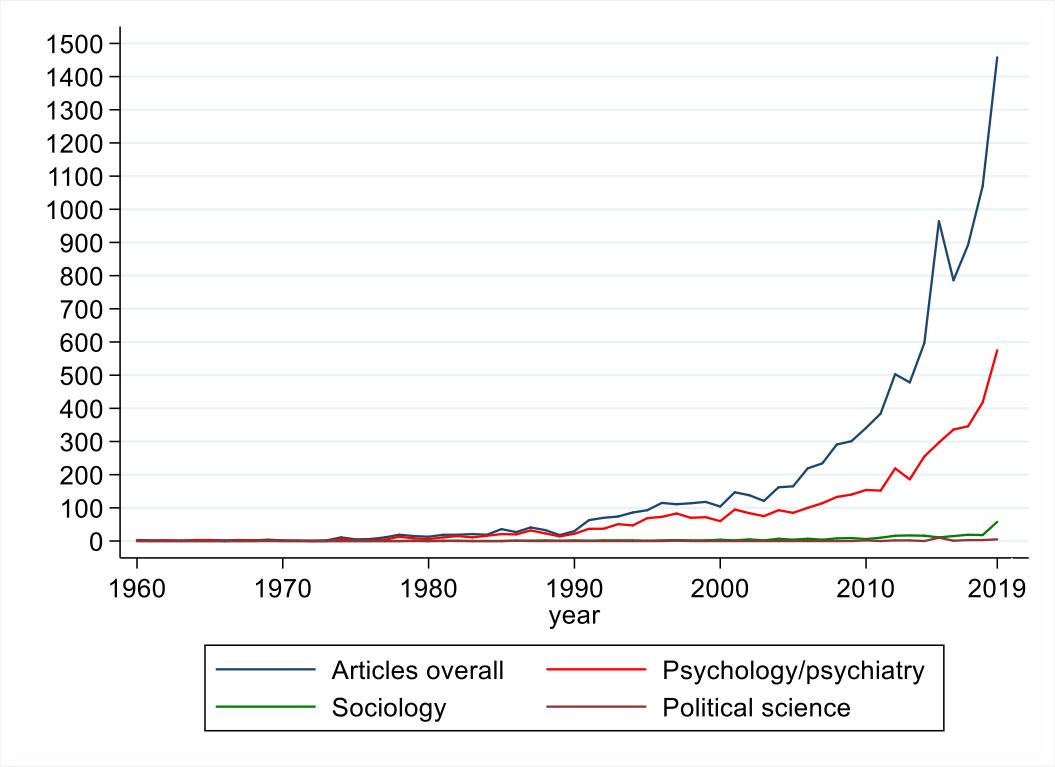
Due to its motivating function to re-affiliate, loneliness is a useful emotion in the short term. However, being unresolved, chronic loneliness has severe negative consequences. Keeping in mind that loneliness is a warning signal for seemingly insufficient or eroding social relationships, it is of little surprise that chronically lonely individuals tend to experience various negative emotions during social encounters such as anxiousness, insecurity, and risk aversion (Qualter et al. 2015; Spithoven et al. 2017). In their review, Spithoven and colleagues also conclude that chronically lonely individuals often show a self-preservation mindset.

Given that social ties provide security, loneliness is associated with increased stress which results in an elevated threat sensitivity, anxiety and risk avoidance (Cacioppo and Cacioppo 2018). Mediated through these stress reactions, loneliness is known to cause reduced sleep quality and unhealthy coping behaviours, which results in severe consequences for health and psychological wellbeing. Among others: dementia, depression, cardiovascular diseases, and reduced life expectancy (Hawkley and Cacioppo 2010; Lim et al. 2020). This led scientists to promote loneliness first and foremost as an issue for public health (Holt-Lunstad et al. 2017).

Despite these manifold consequences of loneliness concerning mental and physical health, fairly little is known about how chronic loneliness is associated with other aspects of public interest. Figure 3.1. displays the number of articles registered in the webofscience.org database published between 1960 and 2020 with the term 'loneliness' in the title, separated by scientific field. While this can only serve as a rough indicator, the graph illustrates that loneliness played just a minor role in empirical research throughout the 20th century, with particularly few publications in sociology and political science[23]. Out of the whole corpus of 12402 articles published between 1960 and 2019, only 336 and 54 research articles, respectively, are categorised as studies from the field of sociology or political studies respectively.

[23] The number of registered articles vary depending on the used database. However, a similar argument has been made by Yang in respect of the JSTOR database (Yang 2019).

Fig. 3.1. Number of research articles with 'loneliness' in the title by year and field



Note: data derived from webofscience.org (17.03.2021)

In consequence, it is of little surprise that the question of whether loneliness exerts an influence on social and political trust remains underexplored and the related empirical evidence is limited. This, however, might be an important shortcoming. A recent meta-study analysing over 449 means from 437 independent samples gathered between 1976 and 2019 suggests that loneliness grew slowly, but steadily during the last 46 years in Western democracies with particularly strong growth in the United States (Buecker et al. 2021). Furthermore, survey research indicates that loneliness has a strong prevalence in the U.S and other Western democracies already before the Corona pandemic aggravated the issue (Cigna 2018; Luhmann and Hawkley 2016). These findings suggest that the potential influence of loneliness on social cohesion might be of growing importance. The next Chapter reviews the theoretical mechanisms and existing evidence that links loneliness to the three considered indicators.

3.2.2. Loneliness, connectedness and trust beliefs

As reviewed in the preceding section, loneliness indicates insufficient or eroding social relationships. This is accompanied by feelings of anxiousness, insecurity, and risk aversion (Spithoven et al. 2017). Spithoven and colleagues also conclude that loneliness alters social perception and behaviour as soon as it becomes a chronic state. While loneliness motivates individuals to seek out social interactions, repeated failure to alleviate their loneliness causes additional fear of negative social interactions and, ultimately, the paradoxical behaviour that lonely individuals start to socially withdraw (Qualter et al. 2015).

This dynamic likely radiates from the perceived sense to be part of a social community and the sense to belong in general (Pretty et al. 1994). As elaborated before, humans have a strong need for social belonging (Baumeister and Leary 1995). This does not only refer to individual contacts, but also the person`s sense to fit into the broader social setting (for instance, the village/city) and to be an integral part of society (Franklin and Tranter 2021). Hence, feeling lonely logically relates to increased uncertainty about the own social standing, the reliability of others, and to what degree one has a generalised perceived connection to others[24]. Qualitative studies of loneliness in marginalised groups suggest that a sense of disconnectedness from the greater society and other people in general are part of experiencing loneliness (Bower et al. 2018; Rokach 2014). Likewise, studies investigating war veterans highlight the link between loneliness and disconnectedness from society (Stein and Tuval-Mashiach 2015). However, it is an open question whether these insights can be replicated with survey data of the general population.

[24] While the individuals connectedness refers to the personal network, the sense of generalised connectedness reflects a more general perceived unity and interdependence with others (compare Cojuharenco et al., 2016). A lack of feeling connected with friends while feeling lonely is trivial, the question whether lonely individuals feel disconnected from wider society is less so.

Likewise, the prolonged experience of feeling lonely likely fosters distrust against other people. As discussed, lonely individuals tend to grow anxious and insecure from social settings and interpret social encounters more negatively (Spithoven et al. 2017). This likely corresponds with a higher probability to experience negative social situations and, in the long run, become more distrusting. Unsurprisingly, observational studies found that loneliness correlated with interpersonal distrust in multiple countries and with various operationalisations (Nyqvist et al. 2016; Qualter et al. 2009; Rotenberg 1994). However, loneliness as well as trust beliefs are associated with time-invariant characteristics such as personality traits and correlations potentially due to self-selection (Buecker et al. 2020). Likewise, cross-sectional studies potentially suffer from unobserved confounding. Studies that of experimentally manipulation of situational loneliness support the idea that loneliness fosters anxiety (Cacioppo et al. 2006), but given that experimental manipulation of chronic loneliness is not feasible and cross-sectional data do not observe changes within individuals, it is unclear whether within-person changes in loneliness over longer timespans affects social distrust.

Finally, if loneliness causes distrust and disconnectedness, it potentially exerts an influence on the citizens' trust towards political actors and institutions as well. If chronically lonely individuals evaluate other people more negatively and become more distrustful in general, the idea that this might lead to generalised distrust against politicians and political organisations as well is not far-fetched. While several studies could not find a link between social and political trust (Uslaner, 2017 p.44), more recent studies found an association (Newton and Zmerli 2011). Likewise, longitudinal evidence from Denmark suggests a bidirectional relationship between social and political trusts (Sønderskov and Dinesen 2016).

All this supports the idea that loneliness potentially influences social as well as political trust. However, lonely individuals show these attitudinal changes out of a latent perceived insecurity and fear from further social exclusions. Political actors and institutions are more distant and

more abstract concepts for most individuals. Whether the social distrust radiates to a general distrust against political actors and their spheres of action (i.e. political institutions) is an open empirical question. There are a couple of multinational cross-sectional studies that find the association between loneliness and political trust using the European Social Survey (Schobin 2018; Yang 2019). However, the theoretical relationship between loneliness and political distrust is less clear compared to the other two discussed considered outcomes and suffers from the same issue that empirical findings are mostly based on cross-sectional data.

Taken together, despite a strong argument why loneliness likely causes insecurity and anxiety that, in turn, cause distrust and a reduced sense of generalised connectedness, the empirical evidence is fairly limited. Therefore, this study tests the hypotheses that loneliness is associated with reduced connectedness, and political as well as social trust.

H1: Increases in loneliness are associated with a decrease in perceived generalised connectedness.

H2: Increases in loneliness are associated with a decrease in social trust beliefs.

H3: Increases in loneliness are associated with a decrease in political trust beliefs.

3.3. Method and analysis

3.3.1. Data

The data utilised in this study are administered by the CentERdata Institute for Data Collection and Research, funded by the Dutch governmental organisation for scientific research (NOW). The "Longitudinal Internet Studies for the Social Sciences", hereafter LISS, is the central panel data project of the Measurement and Experimentation in the Social Sciences (MESS) project and is openly available for scientists[25]. The Survey is a true probability sample of the registered population in the Netherlands. Although the LISS is mainly organised as an internet survey, the institute puts emphasis on gathering data of people without internet connection. Participants without computer or internet access are provided devices so that they can participate. Therefore, the survey collection mode does not affect the representativeness of the sample. In the context of this study, this is particularly important because older age groups and low income households are less likely to have internet access and show higher probabilities to suffer from loneliness (Hawkley et al. 2020; van Deursen and van Dijk 2019).

Importantly, loneliness as well as perceived societal cohesion and trust beliefs are fairly stable over time (Marien 2011; Mund et al. 2020). Therefore, long-running panel models are needed to track within-person variations in both. Fielded the first time in 2008, the panel gathers data annually with the most recent wave fielded in October 2020. Furthermore, the LISS continuously included a 6-item version of the Gierveld loneliness scale since the first wave. As loneliness is a complex latent construct that is best captured with specific validated scales

[25] In order to access the data, users have to register at the website of the data provider. This is why the data used in this study cannot be shared directly in the supplementary material. However, the STATA syntax with explanations how to derive the data will be provided for replication purposes. Likewise, the code for the analysis will be found there.

(Marangoni and Ickes 1989), the long-running panel is uniquely suiTable for the purpose of this study.

This study is based on 12 out of 13 waves gathered between 2008 and 2020. The fifth wave (2012) was not included in the analysis as the variables measuring loneliness varied in their operationalisation in this specific wave. The panel itself is unbalanced, with permanent and temporary drop outs (average participation duration is 4.17 years). After excluding underage participants from the analysis (n=803) and list-wise deletion of missing cases, the final analysis sample contains 41,508 observations from 9,954 individuals.

3.3.2. Operationalisation

Dependent variables: Sense of connectedness is measured with a single item indicator. The participants had to answer a question asking them to what extent they feel connected to other people in general. The item is part of the personality core questionnaire and is presented with other questions measuring universal values and attitudes. The rating scale displayed 7 Figures of overlapping circles to visualise the degree to which the participants feel connected with other people in general. The original item is coded from 1 to 7, where higher values indicate high connectedness. To increase the comparability of the effect size between the three considered outcome variables, the item was rescaled so it ranges from 0-10.[26]

Social trust is measured with the item: "Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?" The participants had to indicate their trust on a scale ranged from 0-10, with high values indicating high social trust.

[26] The wave specific questionnaires can be found at https://www.dataarchive.lissdata.nl/study_units

Political trust is measured with a mean score index from 5 items (Cronbach alpha= 0.94). The participants were asked to indicate their confidence in several political actors and institutions: the government, the parliament, politicians, parties, and democracy overall. Similar to the social trust variable, all items and the resulting mean score range from 0-10, high values indicating high political trust.

Independent variable: Loneliness was measured with the shortened 6-item version of the Gierveld loneliness scale (Cronbach alpha= 0.79). The wording and scaling of the items are reported in appendix Table A.3.1. The Gierveld loneliness scale is a validated and widely used instrument to measure loneliness (de Jong Gierveld and van Tilburg 2010). Given that a loneliness variable generated from factor scores resulted in the same results as a simple sum score (both measures are interrelated with .98), but is less intuitive to interpret, all reported results are based on a simple additive measure. The final loneliness item ranges from 0-12, with high values indicating high loneliness.

Control variables: As elaborated in the theory section, many studies attempt to explain trust and perceived connectedness with measures of objective social inclusion. To ensure that the observed relationship between loneliness and the outcomes are not mere symptoms of limited social contacts, I control for membership in civic organisations as well as interaction frequency with family and friends, both measured on a 7-point scale. Other potential confounders are life events such as divorces (Van Tilburg et al. 2015). To account for major life events that trigger loneliness, I include dummies measuring widowhood, divorce, separation from a partner, being married, and whether a person lives with their partner in the same household.

Furthermore, the analysis accounts for several socio-demographic variables. First, the study controls for gender (male versus female) and level of education (“primary school”, “intermediate secondary education/junior high school”, “higher secondary education”, “intermediate vocational education/junior college”, “university”). Furthermore, to account for

age effects, the models control for the age groups "18-24 years", "25 - 34 years", "35 - 44 years", "45 - 54 years", "55 - 64 years", and "65 years and older". Also, as loneliness is correlated with health, I include a self-reported measure of general health, ranging from 1 to 5, with high values indicating good health. Likewise, financial hardship can increase political and social distrust and is a predictor of social exclusion. To account for this, I include a variable measuring subjective satisfaction with the personal financial situation. The subjective measure was preferred over self-reported income because income measures tend to have very high proportions of missing values and are biased due to social desirability. Moreover, financial satisfaction captures financial hardship better, as it accounts for household size, changing living standards, and other social forces such as social comparisons.

Finally, longitudinal data might show period effects, due to specific events in time. This is often tackled by including arbitrary time dummies, but this can cause biases and introduce issues in respect of effect interpretation (Kropko and Kubinec 2020). Following recommendations from the literature (Brüderl and Ludwig 2014), the analysis does not rely on arbitrary time dummies but includes specific, theory-driven period events.

First, during the survey period, the European Union experienced the so-called refugee crisis as well as the European sovereign debt crisis. Both events are in a way ongoing and it may be difficult to clearly define an official start and end to them. However, the Netherlands, similar to most other European countries, experienced record numbers of asylum seekers during 2015/16 (Tolsma et al. 2021). This is mirrored by the frequency of related media articles published in print media, which were highest in 2015 and 2016 (Czymara and Klingeren 2021). To account for this, a dummy indicating the years 2015 to 2016 is included. In respect of the debt crisis, the sovereign debt crisis is typically considered to have started in 2010 and ended with the introduction of the central banks` Outright Monetary Transactions (OMT) program that effectively ended immediate concerns about speculations against the currency (Ehrmann

and Fratzscher 2017). Furthermore, the Netherlands elected their parliament twice times during this period.[27] As election periods are often accompanied by negative media reports and aggressive campaigns, scholars suspect that this affects trust beliefs (Bovens and Wille 2008). To account for this, the analysis contains a dummy variable indicating whether an observation was gathered during an election year. Table 3.1. provides an overview of the descriptive statistics of all variables.

[27] The Netherlands experienced a third election in 2012. However, as explained in the description of the dataset, this wave had to be dropped due to inconsistent measurement of loneliness. Therefore, the event is not mentioned here.

Table 3.1. Descriptive Statistics (Pooled)

n=9954; N= 41508	mean	Std. dev	min	max
Social trust	6.14	2.13	0	10
Political trust	5.44	1.77	0	10
Sense of connectedness	6.02	2.52	0	10
Loneliness	2.84	2.40	1	13
Female	0.51	-	0	1
Age categories				
18-24	0.07	-	0	1
25-34	0.11	-	0	1
35-44	0.14	-	0	1
45-54	0.19	-	0	1
55-64	0.23	-	0	1
65+	0.27	-	0	1
Education				
Primary	0.07	-	0	1
Secondary	0.23	-	0	1
Higher secondary	0.11	-	0	1
Vocational	0.23	-	0	1
Higher vocational	0.25	-	0	1
University	0.10	-	0	1
Contact friends	3.60	1.46	1	7
Contact family	4.44	1.41	1	7
Financial satisfaction	6.89	1.73	0	10
Health	3.12	0.76	1	5
Couples living together				
yes	0.73	-	0	1
Civic status				
Never been married (ref)	-	-	0	1
Being widowed	0.06	-	0	1
Being divorced	0.10	-	0	1
Being separated	0.01	-	0	1
Being married	0.59	-	0	1
Group membership	0.07	-	0	1
Time periods				
Election year	0.17	-	0	1
Refugee crisis	0.18	-	0	1
Fiscal crisis	0.18	-	0	1

Note: values are displayed to the second decimal

3.4.1. Results

For the analysis, I estimate between-effects (BE) as well as fixed-effects (FE) panel models. To investigate the hypotheses, the analyses will mainly focus on FE models, which are controlled for unobserved heterogeneity. However, as an additional analytical step BE models are calculated as well. This is done for several reasons: First, comparisons between individuals are better suited to describe differences between sociodemographic groups, while FE models are preferable for causal inference (Brüderl and Ludwig, 2014 p.353). As loneliness and trust beliefs are fairly robust over time, BE are especially useful to describe more permanent differences between the most and least lonely parts of the population. Also, given that most previous research is based on cross-sectional data, i.e. between-person comparisons, the BE models can be seen as replications of these results.

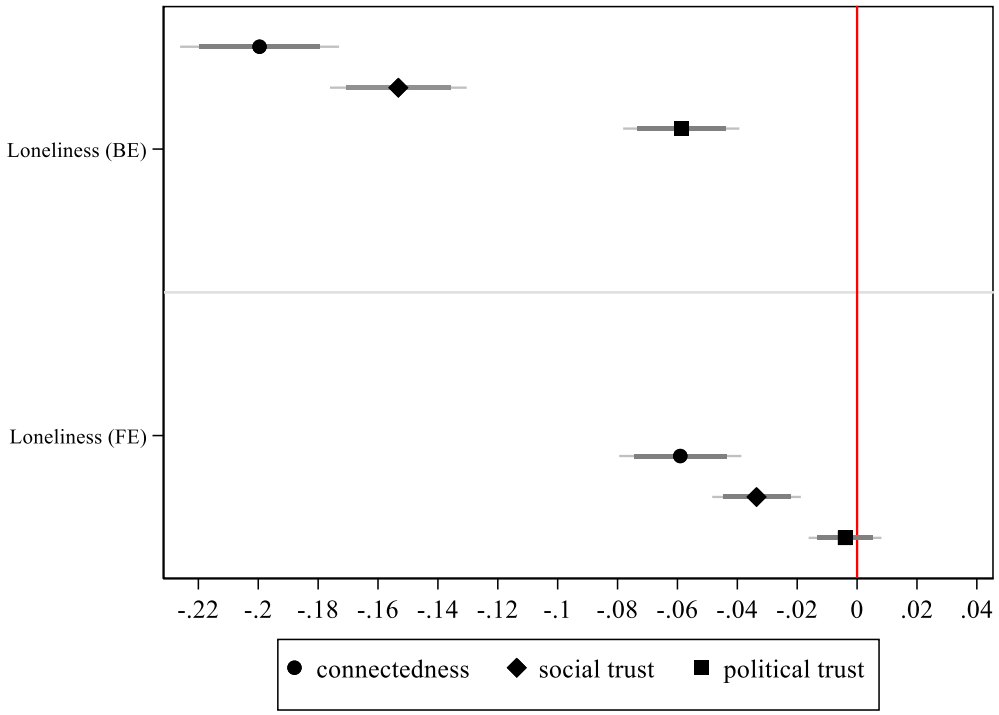
However, BE models suffer from issues of self-selection and confounding from unobserved individual characteristics (Andreß et al. 2013). As FE models only use within-person variation to estimate coefficients, they are particularly useful to account for these shortcomings. Therefore, to show the dynamic part of the relationship and to ensure that the relationship is not biased by time-invariant confounders, FE models are calculated. Please note that time-invariant variables such as gender are omitted in the FE models by design.[28] The FE models are calculated with cluster robust standard errors. Figure 3.2. summarised the key effects of interest out of 6 regression models. The full regression tables can be found in Appendix Table A.3.2. and Table A.3.3.

The first three coefficients report the between-effect of loneliness on the sense of connectedness, social trust, and political trust. On average, every additional point of loneliness

[28] Strictly speaking, gender identity can change of course. However, the cases where gender truly changed are rare and most variations in panel Surveys stem from measurement errors.

is associated with a lower perceived connectedness of roughly 0.2 points ($p \leq 0.001$). Over the full range of the loneliness scale, this accumulates to a difference of roughly 2.39 points on a 10-point scale between the most and the least lonely individuals. Likewise, loneliness is negatively associated with social trust (coef. = -0.153; $p \leq 0.001$) as well as political trust (coef. = -0.059; $p \leq 0.001$). Considering the scale of the variables, this accumulates to a difference between the most and the least lonely of 1.824 and 0.708 respectively. This confirms the previously found relationships: lonely individuals are, substantially more likely to feel disconnected and to be socially and politically distrusting.

Fig. 3.2. Effect of loneliness on trust and sense of connectedness



Note: BE= between effects; FE=fixed effects; FE models use cluster robust standard errors; confidence intervals displayed at .99 and .95

However, these effects are still confounded by self-selection and time-invariant unobserved confounders. This is especially important in the context of loneliness, as personality characteristics such as extraversion, agreeableness, conscientiousness, neuroticism, and openness are known predictors for loneliness (Buecker et al. 2020). To account for this, the last three coefficients reported in Figure 3.2 are based on panel fixed effects which are not biased by time-invariant unobserved confounders.

The within-person effects shrink considerably in size compared to the between effect coefficients, but remain statistically significant in two out of three models. With respect to the effect size, every increase in loneliness is, on average, associated with a decrease in perceived connectedness by roughly 0.059 ($p \leq 0.001$), accumulating to a potential effect of -0.708 on a 10 point scale between the most and the least lonely. With respect to trust beliefs, every additional point in loneliness is associated with a reduction in social trust of 0.034 ($p \leq 0.001$). The effect of loneliness on political trust, however, is no longer statistically significant ($p=0.393$).

With that, the analysis supports hypotheses 1 and 2: Loneliness erodes social trust and perceived connectedness. In contrast, the analysis finds only limited support for hypothesis 3. While it is still a possibility that the effect of loneliness on political trust is too small to be detected on a within-person level, the significant between effects and insignificant fixed effects suggest that the relationship between loneliness and political trust might stem from self-selection or unobserved confounders.[29]

[29] One might wonder whether the effect of loneliness could be heterogeneous for the 5 indicators of political trust. For instance, it might be the case that distrust spreads to politicians, but not the institutions. However, the pattern for all 5 measures is the same as for the index: between-person differences are significant (all with $p \leq 0.001$), but all fixed effects are insignificant (all with $p \geq 0.1$).

3.4.2. Robustness – alternative model specifications

To get a better understanding of the robustness of the results, I calculated several alternative model specifications. First, the reported results are based on adults only. Including the excluded underage participants does not change the results. Secondly, the last wave was fielded in October 2020, a time the COVID-19 pandemic likely had a strong exogenous effect on loneliness as well as perceived social solidarity and political trust. However, removing this wave from the analysis does not change the results either.

Third, while panel fixed effects are powerful tools for inference statistics, they can be biased if the exogeneity assumption is not met. Intuitively speaking, if unobserved traits such as maturation or learning effects do influence the effect of loneliness on the outcome of interest, these estimates can be biased (Wooldridge 2010). The potential issue that the effect of loneliness on beliefs and perceived connectedness might change based on the duration/chronicity of loneliness stands to reason. Fixed effects with individual slopes relax the exogeneity assumption and serve as a remedy of this problem (Brüderl and Ludwig 2014). Using the STATA program XTFEIS (Ludwig 2019), repeating the analysis using panel fixed effects with individual slopes leads to the same conclusions. All robustness tests are available in the supplementary material.

3.4.3. Issue of reverse causality

The results and robustness tests presented so far suggest that rising loneliness causes reduced trust and a diminished sense of connectedness. However, one issue deserves particular attention. In contrast to experimental designs, observational data struggle inherently with issues related to reverse causality (Leszczensky and Wolbring 2019). To be more specific, it is plausible that not only loneliness affects trust beliefs and sense of connectedness, but that the individuals` loneliness is itself influenced by the latter two variables. That is, a person growing less trusting is likely becoming lonelier; likewise, a person that feels disconnected might become lonelier as well. In order to establish that loneliness actually causes the outcome variables, this potential reciprocal dependency needs to be accounted for.

Traditionally, this issue is approached with cross-lagged panel models. However, these models came under criticism for their strict model assumptions and the, consequentially, often biased estimates (Allison et al. 2017; Mund and Nestler 2019). Luckily, recent advances in statistical inference allow to control for the issue of reverse causality by combining panel fixed effect estimation with cross-lagged panel models (Allison et al. 2017; Leszczensky and Wolbring 2019). With that, the estimates control for the effect of the outcome variable on the dependent variable, i.e. loneliness.

The Stata command xtdpdml allows to compute linear dynamic panel-data models using full information maximum likelihood and robust standard errors (Williams et al. 2018). This approach combines the advantages of fixed-effect estimation (accounts for unobserved heterogeneity) with cross-lagged panel models (solves the issue of reverse causality between x and y).

Table 3.2. Cross-lagged fixed effect Regression (full maximum likelihood)

	Connected	Connected	Social Trust	Social Trust
Explanatory variable				
Loneliness	-0.056***	-0.063***	-0.033***	-0.037***
Loneliness t-1	-0.005	-0.006	-0.027**	-0.249**
Loneliness t-2		-0.008		-0.017*
Auto-regressive effect on outcome				
connectedness	0.089***	0.079***	-	-
social trust	-		0.159***	0.156***
BIC:	344904	327762	323023	307473

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; robust standard errors are used. Note: these models are computationally demanding and run into problems to converge if they include too many covariates, especially with panels exceeding 10 time points. To keep the model as parsimonious as possible, the models are run without additional covariates. Together with the autoregressive error term (the effect of loneliness on the outcomes is under statistical control of the Outcome at T-1) and the fixed effects, the models are still conservative estimates.

As summarised in Table 3.2., within-person variation of loneliness at t and at t-1 predicts social trust beliefs statistically significant. With respect to perceived connectedness, loneliness at t has a significant negative effect, while the coefficient of loneliness at t-1 shows the expected direction but is not significant. Substantially, this indicates that the effect of loneliness on the outcomes is robust even under consideration of a reverse influence from the outcomes on loneliness. The effect of loneliness on social trust seems to be particularly strong and lasting, given that loneliness exerts a statistically significant influence on social trust up to two years later. This supports the idea that loneliness does indeed exert a causal influence on both outcomes.

3.5. Conclusions

The central goal of this study was to investigate whether perceived loneliness erodes people`s generalised sense of social cohesion/connectedness and political and social trust beliefs. In accordance with hypotheses 1 and 2, the results show that rising loneliness is indeed negatively associated with social trust and perceived cohesion, a relationship that was neglected previously. In respect of political distrust, the results are mixed as the relationship can be found in between-person comparisons, but not in fixed-effects models. Substantially this means that lonely individuals are, on average, less trusting toward politicians and political institutions, compared to not lonely individuals. However, an effect of increasing loneliness on political distrust could not be found within persons, either because the effect is too small to be detected or because it is not present at all. This potentially indicates that the negative influence of loneliness on trust is not generalisable to political actors and institutions.[30]

The results have important implications for existing as well as upcoming empirical research concerned with social capital, social cohesion, and political attitudes formation. The analysis suggests that loneliness potentially exerts an influence on political attitudes and behaviour, at least partially mediated through the three investigated outcomes. For instance, studies have found that loneliness is associated with a reduced sense of duty to vote and lower self-reported voter turnout (Langenkamp 2021). Assuming lonely individuals feel less connected to other people and therefore not as an incremental part of society, this potentially explains a reduced perceived moral obligation to participate in the democratic process. Likewise, findings that loneliness is associated with a higher probability to sympathise with conservative beliefs and more xenophobic attitudes might directly relate to the enhanced distrust and anxiety of lonely

[30] It is noteworthy that out of the three outcome variables considered in this study, political trust has the lowest variation over time across the observed time period (std. dev. = 0.86). Hence, the relationship between loneliness and political trust may be simply too small to be detected.

individuals (Floyd 2017). Furthermore, a strong sense of social connectedness is associated with pro-social behaviour and contributing to public goods such as activity in pro-environmental organisations (Cojuharenco et al. 2016) and higher salience of social values and cooperation (Triandis 2018; Utz 2004). Hence, loneliness potentially threats these societal resources as well. Upcoming research might investigate whether a potential negative influence of loneliness on these outcomes is mediated through social trust and the sense to connectedness.

In the greater theoretical picture, the study speaks to the debate of how (and which) emotions and social relationship characteristics influence social behaviour and cognition. Research established that objective social interaction, social organisations, and network characteristics foster trust beliefs and cohesion. This contribution speaks to these research fields and suggests that loneliness plays an independent role in predicting indicators of social capital/social cohesion and is a useful additional measurement complementing these more established constructs.

However, the results and conclusions of this study have to be interpreted in light of some limitations. First, while the within-person analysis ensures that the effects is not confounded by time-invariant variables, the threat of time-variant confounders remains. To reduce this risk, the analysis took major life events such as changes in family life, unemployment, and changes in financial satisfaction into account. Still, confounding remains an inherent issue of any observational analysis. Secondly, loneliness is a stigmatised and painful emotional state. Therefore, social desirability might pose a bias to the analysis that is difficult to assess. Third, while the study tried to establish that loneliness exerts an influence on social trust beliefs and sense of connectedness, the reverse effect was not tested, just controlled for. This means that the study does not give any information about a potential bi-directional feedback loop between loneliness and the considered outcomes.

In response to these potential shortcomings, I like to add that research does not happen in a vacuum and results need to be interpreted in the context of the literature. For instance, eye-tracking studies indicate that lonely children have enhanced hypervigilance for social threats and studies using a Prisoners dilemma paradigm found that lonely individuals grow less trusting faster if they get crossed in the game (Qualter et al. 2013; Rotenberg 1994). This supports the conclusion of this study that lonely individuals become distrusting based on experiences faster compared to non-lonely individuals. Likewise, attempts to manipulate state loneliness experimentally suggest that loneliness causes anxiety, anger and fear of negative evaluation (Cacioppo et al. 2006). Other methodological approaches come to similar results. Qualitative research suggests that feeling disconnected from society is part of the loneliness experience, for marginalised groups in particular (Rokach 2014; Stein and Tuval-Mashiach 2015). These and other studies support the idea that loneliness fosters distrust and alienation which make reverse causality unlikely.

In respect of the threat of social desirability bias, one has to keep in mind that the used loneliness scale measures loneliness indirectly and was developed with that issue in mind. Furthermore, the scale is one of the most broadly validated scales in the field (de Jong Gierveld and van Tilburg 2010). These and similar findings support the general conclusions of the present study.

Taken together, while all the mentioned limitations of this study have to be taken seriously, this study in conjunction with the empirical context allows us to conclude with some confidence that loneliness causes a reduction in social connectedness and shrinking social trust beliefs. With that, loneliness likely has serious implications for political attitude formation and behaviour.

3.6. Bibliography of Chapter 3

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3.7. Appendix of Chapter 3

Table A.3.1. Gierveld loneliness scale (Appendix)

Question	Range	Mean
Can you indicate for each statement to what degree it applies to you, based on how you are feeling at present?		
I have a sense of emptiness around me.	1-3	1.22
There are enough people I can count on in case of a misfortune.	1-3	1.28
I know a lot of people that I can fully rely on.	1-3	1.50
There are enough people to whom I feel closely connected.	1-3	1.36
I miss having people around me.	1-3	1.31
I often feel deserted.	1-3	1.16

Original coding categories 1= yes; 2=more or less; 3=no. All items were recoded so that high values indicate high loneliness.

Table A.3.2. Between Effect Regression Models (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-1.99	-0.153***	-0.059***
	(0.01)	(0.009)	(0.008)
Age (18-24=ref.)	.	.	.
25-34	-0.030	-0.109	-0.223**
	(0.098)	(0.084)	(0.071)
35-44	0.068	0.110	-0.237**
	(0.099)	(0.085)	(0.073)
45-54	0.551***	0.288**	-0.300***
	(0.104)	(0.089)	(0.076)
55-64	0.814***	0.380***	-0.303***
	(0.106)	(0.091)	(0.078)
65+	1.185***	0.562***	-0.245**
	(0.109)	(0.093)	(0.079)
Sex (Male=ref)	.	.	.
Female	0.621***	0.092**	0.064*
	(0.041)	(0.035)	(0.030)
Education (primary=ref)	.	.	.
Secondary education	0.022	0.036	-0.039
	(0.088)	(0.076)	(0.065)
Higher secondary	-0.163	0.512***	0.433***
	(0.100)	(0.086)	(0.073)
Vocational education	-0.001	0.271***	0.210**
	(0.090)	(0.078)	(0.066)
Higher vocational education	-0.095	0.675***	0.590***
	(0.090)	(0.078)	(0.066)
University	-0.434***	0.901***	0.862***
	(0.103)	(0.089)	(0.075)
Contact friends	0.228***	0.148***	0.034*
	(0.018)	(0.016)	(0.014)
Contact family	0.122***	-0.034*	0.011
	(0.018)	(0.016)	(0.013)
Financial satisfaction	0.013	0.239***	0.266***

	(0.014)	(0.012)	(0.010)
Health	0.023	0.283***	0.146***
	(0.032)	(0.028)	(0.024)
Living with partner	0.228***	0.104	-0.040
	(0.064)	(0.055)	(0.047)
Being widowed	0.490***	0.146	-0.059
	(0.112)	(0.096)	(0.082)
Being divorced	0.283**	-0.034	-0.169**
	(0.086)	(0.074)	(0.063)
Being separated	0.520	-0.368	-1.640***
	(0.426)	(0.367)	(0.312)
Being married	0.267***	-0.124*	-0.178***
	(0.069)	(0.059)	(0.050)
Group membership	0.269*	0.372***	0.284***
	(0.106)	(0.091)	(0.078)
Election year	-0.173	-0.100	-0.145
	(0.116)	(0.099)	(0.084)
Refugee crisis	-0.307***	-0.130	-0.306***
	(0.089)	(0.077)	(0.065)
Fiscal crisis	0.370***	0.140	0.085
	(0.096)	(0.082)	(0.070)
Constant	3.919***	2.913***	3.252***
	(0.208)	(0.179)	(0.152)
n	9954	9954	9954
N	41508	41508	41508

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; brackets = std. error

Table A.3.3. Fixed Effect Regression Models (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-0.059***	-0.034***	-0.004
	(0.008)	(0.006)	(0.005)
Age (18-24=ref.)	.	.	.
25-34	-0.417***	0.070	0.089
	(0.102)	(0.072)	(0.058)
35-44	-0.707***	0.215*	0.125
	(0.129)	(0.097)	(0.080)
45-54	-1.166***	0.113	0.039
	(0.145)	(0.108)	(0.092)
55-64	-1.410***	0.040	0.070
	(0.154)	(0.116)	(0.099)
65+	-1.574***	0.104	0.063
	(0.161)	(0.122)	(0.103)
Education (primary=ref)	.	.	.
Secondary	-0.093	0.018	-0.053
	(0.175)	(0.146)	(0.097)
Higher secondary	-0.317	0.116	0.121
	(0.162)	(0.120)	(0.106)
Vocational	-0.445*	-0.044	-0.057
	(0.179)	(0.130)	(0.108)
Higher vocational	-0.422*	0.155	0.082
	(0.178)	(0.124)	(0.114)
University	-0.169	0.423**	0.189
	(0.191)	(0.150)	(0.130)
Contact friends	0.058***	0.007	-0.008
	(0.011)	(0.008)	(0.006)
Contact family	0.024*	0.000	-0.005
	(0.011)	(0.008)	(0.006)
Financial satisfaction	0.011	0.057***	0.066***
	(0.011)	(0.008)	(0.007)

Health	0.034	0.027	0.004
	(0.022)	(0.017)	(0.013)
Living with partner	0.029	0.070	-0.052
	(0.072)	(0.053)	(0.043)
Being widowed	-0.479*	0.126	0.232*
	(0.189)	(0.141)	(0.110)
Being divorced	-0.030	0.041	0.072
	(0.182)	(0.131)	(0.105)
Being separated	-0.235	-0.291	0.065
	(0.301)	(0.222)	(0.197)
Being married	-0.187	-0.114	0.078
	(0.098)	(0.086)	(0.067)
Group membership	0.021	-0.008	0.021
	(0.041)	(0.031)	(0.023)
Election year	-0.191***	0.084***	-0.231***
	(0.026)	(0.019)	(0.014)
Refugee crisis	-0.168***	0.040*	-0.180***
	(0.024)	(0.018)	(0.014)
Fiscal crisis	-0.082**	0.048*	0.313***
	(0.029)	(0.022)	(0.018)
Constant	8.201***	5.302***	4.260***
	(0.461)	(0.363)	(0.508)
n	9954	9954	9954
N	41508	41508	41508

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; brackets = std. error

Table A.3.4. Fixed Effect individual slopes (Appendix)

	Sense of connectedness	social trust	political trust
Loneliness	-0.049***	-0.023***	0.001
Age (18-24=ref.)	.	.	.
25-34	-0.102	-0.117	-0.032
35-44	-0.003	0.028	-0.166
45-54	-0.113	-0.038	-0.198
55-64	-0.167	-0.144	-0.157
65+	-0.192	-0.186	-0.178
Education (primary=ref.)	.	.	.
Secondary education	-0.260	0.025	-0.150
Higher secondary	-0.376	0.063	0.188
Vocational education	-0.602**	-0.278	0.024
Higher vocational education	-0.284	-0.038	0.052
University	-0.374	0.002	0.017
Contact friends	0.029**	-0.005	-0.011
Contact family	0.005	-0.006	-0.002
Financial satisfaction	0.004	0.033***	0.058***
Health	0.005	-0.016	0.012
Living with partner	-0.039	0.154*	-0.045
Being widowed	-0.649*	0.049	0.076
Being divorced	-0.170	0.142	-0.011
Being separated	0.123	-0.237	0.048
Being married	-0.117	-0.215	-0.081
Group membership	0.011	-0.030	0.008
Election year	-0.150***	0.076***	-0.274***
Refugee crisis	-0.132***	0.052**	-0.127***
Fiscal crisis	-0.159***	0.097***	0.362***
N	35719	35719	35719

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3.5. Between effect models - without 2020 (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-0.210***	-0.151***	-0.054***
Age (18-24=ref.)			
25-34	-0.140	-0.097	-0.313***
35-44	-0.008	0.098	-0.329***
45-54	0.465***	0.293***	-0.392***
55-64	0.736***	0.354***	-0.447***
65+	1.084***	0.563***	-0.384***
Being Female	0.609***	0.074*	0.060*
Education (primary=ref.)			
Secondary education	-0.043	-0.046	-0.160**
Higher secondary	-0.229*	0.420***	0.292***
Vocational education	-0.063	0.210**	0.071
Higher vocational education	-0.168*	0.599***	0.466***
University	-0.523***	0.813***	0.704***
Contact friends	0.222***	0.155***	0.040**
Contact family	0.116***	-0.028	0.005
Financial satisfaction	0.009	0.239***	0.265***
Health	0.014	0.280***	0.145***
Living with partner	0.210**	0.097	-0.011
Being widowed	0.477***	0.129	-0.076
Being divorced	0.313***	-0.050	-0.168**
Being separated	0.539	-0.355	-1.527***
Being married	0.276***	-0.120*	-0.171***
Group membership	0.272*	0.307***	0.290***
Election year	-0.255**	-0.132	-0.076
Refugee crisis	-0.273**	-0.105	-0.164*
Fiscal crisis	0.401***	0.152*	0.162*
Constant	4.223***	2.962***	3.375***
N	37942	37942	37942

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3.6. Fixed effect models - without 2020 (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-0.058***	-0.033***	-0.002
Age (18-24=ref.)			
25-34	-0.427***	0.064	0.108
35-44	-0.718***	0.241*	0.102
45-54	-1.178***	0.131	-0.040
55-64	-1.479***	0.068	-0.108
65+	-1.680***	0.135	-0.222*
Being Female	-	-	-
Education (primary=ref.)			
Secondary education	-0.106	0.014	-0.075
Higher secondary	-0.266	0.112	0.141
Vocational education	-0.450*	-0.001	-0.076
Higher vocational education	-0.368*	0.168	0.061
University	-0.170	0.400*	0.177
Contact friends	0.061***	0.004	0.008
Contact family	0.025*	-0.003	-0.003
Financial satisfaction	0.010	0.056***	0.056***
Health	0.036	0.025	0.017
Living with partner	0.065	0.097	-0.044
Being widowed	-0.479*	0.161	0.183
Being divorced	-0.078	0.044	0.109
Being separated	-0.217	-0.263	0.156
Being married	-0.207	-0.135	0.076
Group membership	0.036	-0.011	0.022
Election year	-0.180***	0.080***	-0.169***
Refugee crisis	-0.162***	0.033	-0.121***
Fiscal crisis	-0.090**	0.050*	0.300***
Constant	7.300***	5.524***	4.957***
N	37942	37942	37942

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3.7. Between effect models - with underage participants (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-0.197***	-0.142***	-0.055***
Age (18-24=ref.)			
25-34	-0.109	-0.155	-0.310***
35-44	-0.012	0.070	-0.314***
45-54	0.471***	0.253**	-0.373***
55-64	0.739***	0.349***	-0.377***
65+	1.104***	0.525***	-0.321***
Being Female	0.617***	0.083*	0.076*
Education (primary=ref.)			
Secondary education	-0.011	-0.065	-0.156**
Higher secondary	-0.217*	0.420***	0.301***
Vocational education	-0.038	0.191**	0.095
Higher vocational education	-0.133	0.591***	0.479***
University	-0.476***	0.817***	0.748***
Contact friends	0.232***	0.154***	0.039**
Contact family	0.118***	-0.024	0.013
Financial satisfaction	0.011	0.245***	0.266***
Health	0.029	0.290***	0.151***
Living with partner	0.209***	0.106	-0.009
Being widowed	0.484***	0.144	-0.056
Being divorced	0.290***	-0.025	-0.162*
Being separated	0.512	-0.379	-1.639***
Being married	0.281***	-0.121*	-0.191***
Group membership	0.264*	0.373***	0.271***
Election year	-0.181	-0.150	-0.086
Refugee crisis	-0.271**	-0.124	-0.281***
Fiscal crisis	0.380***	0.160*	0.043
Constant	4.031***	2.876***	3.350***
N	42256	42256	42256

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table A.3.8. Fixed effect models - with underage participants (Appendix)

	Sense of connectedness	Social trust	Political trust
Loneliness	-0.059***	-0.035***	-0.004
Age (18-24=ref.)			
25-34	-0.430***	0.075	0.080
35-44	-0.721***	0.220*	0.118
45-54	-1.177***	0.117	0.030
55-64	-1.424***	0.044	0.061
65+	-1.589***	0.109	0.053
Being Female			
Education (primary=ref.)			
Secondary education	-0.002	0.053	-0.057
Higher secondary	-0.327**	0.195*	0.035
Vocational education	-0.473**	-0.017	-0.066
Higher vocational education	-0.431**	0.221*	0.034
University	-0.176	0.513***	0.113
Contact friends	0.059***	0.007	-0.007
Contact family	0.023*	-0.000	-0.005
Financial satisfaction	0.012	0.057***	0.065***
Health	0.033	0.027	0.003
Living with partner	0.028	0.059	-0.048
Being widowed	-0.489**	0.112	0.232*
Being divorced	-0.030	0.028	0.073
Being separated	-0.235	-0.299	0.064
Being married	-0.190	-0.121	0.077
Group membership	0.024	-0.008	0.021
Election year	-0.184***	0.088***	-0.229***
Refugee crisis	-0.165***	0.037*	-0.179***
Fiscal crisis	-0.089**	0.050*	0.311***
Constant	7.253***	5.495***	4.979***
N	42256	42256	42256

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

4. Lonely Hearts, Empty Booths? The Relationship between Loneliness, Reported Voting Behaviour and Voting as Civic Duty

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Abstract:

Objective. *The study investigates the relationship between perceived loneliness and the individuals' attitude about whether voting is a civic duty. With that, it is the first study to shed light on the mechanism linking perceived loneliness to voting behaviour.* ***Methods***. *Two independent, cross-sectional, and representative datasets from Germany (n = 1641) and the Netherlands (n = 1431) are analysed.* ***Results.*** *The regression results and effect decomposition techniques show that loneliness is associated with reduced intention to vote as well as a lower sense of duty to vote. The effect of loneliness on voting behaviour is partially mediated through a reduced sense of duty.* ***Conclusion***. *Loneliness is associated with political disengagement. The study provides empirical evidence that the relationship between loneliness and turnout is partially mediated through sense of duty. This showcases that lonely individual tend to feel detached from society and are less likely to feel obligated to participate in the electoral process.*

4.1. Introduction

In the last few years, scientific insights and repeated media reports about concerning levels of loneliness in Western democracies have drawn attention to the question of whether loneliness should be a more prominent topic for policymakers (Easton, 2018; Yang, 2019). While research concerned with the negative outcomes of prolonged loneliness is mostly focused on questions of public health (Holt-Lunstad et al., 2010; Leigh-Hunt et al., 2017), other outcomes of societal interest such as its influence on policy compliance or political participation were mostly ignored.[31] However, as many scientists suspect that loneliness is rising in modern societies, an eroding impact of loneliness on outcomes such as political participation might become increasingly relevant in the future.

This study builds on two theoretical perspectives. First, studies of subjective loneliness highlight that a sense of detachment from peers and society is a central aspect of the loneliness experience (Bower et al., 2018; Rokach, 2014; Stein & Tuval-Mashiach, 2015). Second, political studies have established that a perceived sense of duty to vote is a major predictor of voter turnout, which stems from feelings of loyalty and general attachment to the community (Blais & Achen, 2019). Combining both lines of research, this paper investigates whether loneliness is associated with a decrease in sense of duty to vote, a major predictor for voter turnout, as well as reported voting behaviour.

To that end, this paper is organised in five sections. The second reviews how loneliness differs from the well-established concept of social embeddedness. This debate briefly reviews what the notion of loneliness comprises, clarifies why loneliness is not included in

[31] Two rare exceptions are the Netherlands and the United Kingdom. The British government recently established a government-wide workgroup and appointed a minister tasked with developing measures to fight loneliness (Yeginsu, 2018). Likewise, Ireland, the Netherlands, and the UK are currently experimenting with social prescriptions." Beyond these policies, there are very few large-scale, systematic attempts to combat loneliness directly.

contemporary turnout models, and pre-empts common misconceptions that loneliness is a mere synonym for being alone or insufficiently socially embedded. The third section presents the reasoning why perceived loneliness is likely to exert influence on citizens' perceived duty to vote and, correspondingly, reported voting behaviour. After deriving the hypothesis, this section also presents the datasets from Germany and the Netherlands as well as the operationalisation. Empirically testing the argument, the fourth section analyses the data and shows that loneliness is significantly associated with a lower sense of duty to vote and a lower probability of voting. Mediation analysis confirms that the relationship between loneliness and voting is partially mediated through sense of duty. Then, the final section discusses limitations and implications for upcoming research.

4.2. Theory

4.2.1. Loneliness in Political Science, Novel or Not?

Fuelled by the continuous decline in voter turnout in almost every Western democracy since World War II, one of the most frequently investigated questions in the social sciences is which mechanisms increase voter turnout. To review the manifold proposed mechanisms is beyond the scope of this paper. Briefly summarised, the body of research ranges from socioeconomic variables, such as income and education, to partisanship, social class, social capital, a variety of emotions, the electoral system, and even more exotic explanations such as rainfall and genetic variation (Harder & Krosnick, 2008; Lynggaard, 2019; Smets & van Ham, 2013). Considering that the idea that social relationships exert influence on political attitudes and electoral participation is not new, it is important to clarify how loneliness is defined and how loneliness differs from other related predictors for political attitudes and behaviour. To that end, this paper first considers how social influence is typically conceptualised in political science

before turning to the question what loneliness is and how it exerts influence on the sense of duty to vote and voter turnout.

From a social embeddedness and social capital perspective, an individual's social relationships provide resources such as information, social support, or enforcement of social norms (Smets & van Ham, 2013). These resources can be utilised in various ways. For instance, information can increase the motivation to vote or simply remind people when the election is and social support can help immobile people to overcome practical difficulties to vote (Bhandari & Yasunobu, 2009; Harder & Krosnick, 2008). Likewise, social norms, social comparison, and peer pressure reinforce voting and political attitudes through social pressure and social desirability (Blais et al., 2019; Bond et al., 2012). Consequentially, peer networks, neighbourhoods, romantic partnerships, and household composition are important concepts in the political mobilisation literature and are typically strong predictors for political participation (Bhatti et al. 2017; Lazer et al. 2010; Levine et al. 2018). Typically, this is measured through network characteristics such as network type and size, individual traits such as reputation or position within the network, or the ability to coordinate collective actions (Jackson, 2020). Thus, the social capital and the social embeddedness perspective suggest that social relationships influence political attitudes and actions through resources that get channelled through social relations.

In contrast to this resource-based argument, loneliness is commonly understood as an individual emotional trait and refers to a perceived, undesirable lack in quality or quantity of social contacts. Psychological models highlight the role of cognition and evaluation in the emergence of loneliness (Perlman & Peplau, 1981). Individuals do not necessarily feel lonely because they are alone, rather they feel lonely because they believe their contact to be insufficient in some way. Social psychological mechanisms such as social comparison or cultural norms heavily impact this evaluation. It is worth stressing that feeling lonely and being

poorly embedded are conceptually distinct concepts and, as a result, empirically often just weakly correlated. Studies investigating how much objective and subjective isolation co-occur with each other highlight this difference. Russell and colleagues find that the correlation between several measures of social activity and close friends account for about 11 percent of the variation of loneliness (Russell et al., 2012). Other studies employing regression models or network analysis confirm the statistically significant, yet modest link between actual and perceived loneliness (J. T. Cacioppo et al., 2009; Coyle & Dugan, 2012). Consequentially, consensus within literature over the past several decades has built around the idea that becoming lonely is not necessarily accompanied by changes in a person's social embeddedness (Gierveld et al., 2018). While objective network structure plays an important role in the development of loneliness, other factors such as cultural influences, comparison standards, and personal predisposition exert a major influence in this evaluation process (Gierveld et al., 2018; Swader, 2019). Studies investigating the relevance of social ties for loneliness over the life course further support the argument by showing that, depending on an individual's age and social setting, different types of social relationships are relevant for preventing loneliness and protecting personal wellbeing (Qualter et al., 2015). Therefore, loneliness must be considered conceptually and empirically distinct from social embeddedness and related concepts, such as social capital.[32] Rather, loneliness is the emotional expression of a perceived deprivation of some kind of social relationship, qualitatively or quantitatively. Ultimately, this means that common measures of

[32] Besides the concerns that loneliness is a mere proxy objective network characteristic, one may wonder whether it is just another expression for sadness or depressed mood given that there are studies have investigated the influence of depressed mood and subjective wellbeing (SWB) on political participation (Flavin & Keane, 2012; Liberini et al., 2017; Ojeda, 2015). While loneliness and depressed mood certainly co-occur, early studies show that depression and loneliness scales measure distinct constructs (J. T. Cacioppo et al., 2006). However, I acknowledge that due to the strong relationship between satisfaction and loneliness it is not possible to disentangle the two constructs in a cross-sectional survey analysis. Future research should investigate this.

social capital and embeddedness are unlikely to capture a potential effect of loneliness due to the weak statistical interrelation.

4.2.2. The Missing Link: Loneliness and the Sense of Duty to Vote

Considering that loneliness is the emotional expression of a subjective lack of sufficient and meaningful social encounters, prolonged loneliness is logically associated with a feeling of not belonging and abandonment. As an inherently social species, feeling lonely serves the purpose to motivate humans to sustain reciprocal relationships that provide the security and resources vital for survival (Baumeister & Leary, 1995; J. Cacioppo & Patrick, 2009). Being deprived of such relationships leads to a painful emotional reaction that motivates people to sustain their existing relationships and build new ones if necessary (Qualter et al., 2015).[33]If attempts to resolve the aversive emotional situation fail and individuals feel lonely for a prolonged period of time, they suffer from several psychological biases that can cause self-defeating behaviour, causing loneliness to become a chronic state (for an extended review, see Spithoven, Bijttebier, and Goossens 2017). At this point, loneliness tends to become hypervigilant toward social threats and feeling emotionally disconnected (J. T. Cacioppo & Hawkley, 2009; Satici et al., 2016).

While empirical investigations linking loneliness to overall detachment from society are comparatively rare, studies that focus on marginalised groups and war veterans show that the feeling of detachment from society is a substantial part of their loneliness experience (Bower

[33] Evolutionary theories of loneliness suggest that loneliness actually induces emotional pain comparable to physical suffering (J. T. Cacioppo & Cacioppo, 2018). The theory states that dependence on the support of social groups, group membership, and reciprocal social contacts were a key asset to survival in the human evolution. Studies comparing neurological functions of physical pain and emotional pain indicate that both are processed in a comparable way (Eisenberger, 2012). Socially induced pain is transmitted through similar neurological pathways as physical pain, showing how deeply loneliness is rooted in our cognitive function. "Because of the adaptive value of mammalian social bonds, the social attachment system […] may have piggybacked onto the physical pain system to promote survival" (Eisenberger et al., 2003 p.291).

et al., 2018; Rokach, 2014; Stein & Tuval-Mashiach, 2015). Likewise, qualitative research reports that lonely elderly in Hong Kong perceive a growing distance between themselves and overall society and show, in turn, a more passive lifestyle and overall negativity (Wong et al., 2017). Considering that the group solidarity and social identity literature suggests that attachment fosters participation, it is likely that the emotional disconnectedness from society reduces the perceived obligation to vote which, in turn, results in reduced motivation to participate in political activity overall (Abramowitz & Saunders, 2006; Miller et al., 1981). Following that line of argumentation, loneliness causes a general emotional disconnectedness from society, which expresses itself through a reduced sense of duty to participate in the political process. The perceived disconnection from society is central for the logical link between loneliness and the sense of duty to vote. As Blais and Achen argue, two of the strongest predictors for voter turnout is outcome preference, namely the personal feeling of how important the election outcome is, and the perceived sense that voting is a moral obligation (Blais & Achen, 2019). As they argue at length, citizens are motivated to vote either because they feel that the outcome of the election is relevant for them or because it is the right -or moral- thing to do. Furthermore, the literature suggests that citizens' sense of duty to vote stems from feelings of loyalty, patriotism, or general attachment to the community (Blais & Galais, 2016; Graham et al., 2011). Hence, if loneliness is associated with eroding attachment and connectedness to society and the moral obligation to vote, loneliness can be assumed to be negatively associated with a sense of duty to vote.

To summarise, the relationship between loneliness, emotional disconnection from society and the sense of duty to vote offer a theoretical link between loneliness and electoral turnout. If this argument holds true, loneliness should be statistically correlated with sense of duty to vote.

H1: Lonely individuals are less likely to perceive voting as a civic duty.

Assuming this holds true, loneliness should be associated with a lower probability of participation in elections as well.

H2: Lonely individuals are less likely to participate in national elections.

Implicit in this reasoning is that at least a part of the relationship between loneliness and voter turnout is mediated through sense of duty.

H3: The relationship between loneliness and voter turnout is mediated by sense of duty to vote

4.4. Data and Method: Two Settings

The analysis was conducted in two different settings to increase its reliability. The next two sections present the Dutch and German datasets, followed by the operationalisation in both datasets.

4.4.1. The Dutch case

The first considered dataset is based on cross-sectional modules of the "Longitudinal Internet Studies for the Social Sciences," hereafter LISS, of the CentERdata Institute for Data Collection and Research. The institute is financed by the Dutch governmental organisation for scientific research (NWO) and the data are openly available for the scientific community. The LISS is structured in various sub-surveys focused on specific topics that are fielded with short time lags in between. The majority of variables used in this study are derived from the "Dutch National Elections for House of Representatives questionnaire" fielded in June 2010, immediately after Dutch national elections took place. Since the data were collected very close to the election, the reliability of the reported voting behaviour is strong. The loneliness and social embeddedness measures used in this study were surveyed in the third wave of the "social integration and leisure time core questionnaire" in February 2010, several weeks before the election questionnaire was fielded. Considering that the loneliness measures predate the voting behaviour measure, issues of reverse causality are unlikely. The LISS is a true probability sample and drawn from the registered population in the Netherlands. Participants without computer or Internet access were provided with such to participate in the panel. Although it is unlikely that the survey is truly representative, the method of questioning does not affect the representativeness of the sample, and the Internet sample includes infrequent or nonusers of the Internet as well. This is important

because older age groups show the highest rates of loneliness and are more likely to lack Internet access (Loges & Jung, 2001; Singh & Misra, 2009). The final sample consists of 1431 individuals, all of whom are Dutch citizens and at least 18 years old.

4.4.2. The German case

The second analysed sample is the German ALLBUS dataset from 2018, hereafter ALLBUS. The ALLBUS is a representative social survey conducted every second year by the research institute GESIS. Similar to the LISS, the GESIS is mostly funded by the German state and shares their data freely. In contrast to the LISS, the ALLBUS is not an Internet-based survey and uses personal interviews. The sampling strategies rely on a twostep, disproportionate weighted random sample. First, the survey selects communities in East and West Germany proportionate to the number of adult residents of each region in order to account for extant regional differences. Second, the citizens of these communities are randomly sampled. The 2018 survey was chosen because it was the first ALLBUS to include the shortened version of UCLA loneliness scale. The most recent national election took place about six months prior the survey period, so the relationship between reported behaviour and loneliness should be interpreted with more caution than in the LISS dataset. The final sample consists 1641 participants who are at least 18 years old.

4.4.3. Operationalisation

Both samples were prepared as similarly as possible to increase comparability in the analysis.

Loneliness: The ALLBUS included a shortened version of the UCLA loneliness scale (Cronbach's alpha = 0.82), while the LISS includes a six-item version of the Gierveld loneliness scale (Cronbach's alpha = 0.81). Wording and detailed information of the items are reported in the supplementary Table 4.1.

Reported voting behaviour: In both samples, the participants were asked whether they voted in the most recent national election. In the Dutch case, this refers to the House of Representatives election that took place just before the survey period. In the German case, this refers to the last federal elections six months prior to the survey period.[34]

Duty to vote: Both samples include a variable measuring whether a citizen perceives voting as a civic duty, but the questions differ in detail. The LISS asked the participants whether they perceive voting as a civic duty or a free choice. The question is a dummy and the participants were asked to choose one option. In contrast, the ALLBUS asked the participants to what extent they agree or disagree with the statement that voting is a civic duty. Participants rated their agreement on a 1–4 scale. To avoid varying estimation methods between the samples, the variable was recorded into a dummy. As about 75 percent of the people completely agreed with the statement and just 407 people chose one of the remaining options, these categories were grouped into one. Hence, the German dataset compares full agreement versus people who fully

[34] Arguably, reported voting behaviour does not necessarily reflect actual voting behaviours. Scholars use public voting records to validate survey data. Unfortunately, public voting records are not available for Germany or the Netherlands. While the survey data commonly over-report voting, Achen and Blais compare predictors of intention to vote, reported vote, and validated vote, and conclude that all three outcomes are influenced by the same variables and that "…their relational proportions are usually unchanged", which gives additional confidence in the validity of the dependent variable (Achen and Blais 2016 p.206).

disagree, partially disagree and somewhat agree. Repeating the analysis with the original coding of the variable and an ordered logit model leads to the same results. Likewise, choosing a different cut point and comparing disagreement and partially disagreement versus full and partial agreement leads to the same conclusions.

Control variables: As summarised by Smets and Van Ham in a comprehensive literature review, there is no consensus as to what control variables should be included in electoral turnout models and the applied operationalisations vary heavily between studies (Smets & van Ham, 2013). In light of their findings, this analysis controls for the following variables.

To ascertain that the observed pattern is no mere expression of objective embeddedness, dummy variables to measure membership in social organisations, frequency of meeting with friends, and the number of persons living with the respondent in a shared household are included. Relationship status was also considered as a control, but omitted from the analysis because it was not included in the LISS and, in the German case, is highly intercorrelated with household size. Including relationship status instead of household size in the German case also does not change the conclusions. Furthermore, studies show that poor health is associated with loneliness as well as a lower probability of voting due to limited mobility (Mattila et al., 2013; Stockemer & Rapp, 2019). Both samples contain a question that measures self-rated health, which is included to account for the confounding effect of poor mental and physical health. Furthermore, several sociodemographic variables are considered as standard controls for turnout as well. Age and age squared are both associated with voting and loneliness (Dassonneville, 2016; Luhmann & Hawkley, 2016). A dummy variable asking whether the respondents are male or female is included to account for the most common sociodemographic variables included in turnout models identified by Smets and Van Ham. Although the concept of gender and biological sex encompasses more dimensions, the questionnaires do not cover them so they cannot be accounted for. As both samples measure educational degree differently, the original coding is

clustered into primary educational level or below, intermediary level, and higher degree. Finally, for the German case, a dummy is added that accounts for the east-west divide in Germany.

Table 4.1. provides a comprehensive overview of the variables and corresponding descriptive statistics. The composition of both samples is quite similar with regard to gender, age, and average health and the only noTable deviation between the samples is the small number of individuals without higher education in the Netherlands.

Table 4.1. Descriptive statistics

	ALLBUS (N=1641)			LISS (N=1431)		
	mean	std.dev.	range	mean	std.dev.	range
Key variables of interest						
Reported to vote	0.87	--	0-1	0.91	--	0-1
Sense of duty	0.75	--	0-1	0.54	--	0-1
Loneliness	2.48	2.11	1-13	2.80	2.38	1-13
Control Variables						
Age	51.78	17.38	18-92	48.17	16.20	18-92
Being Female	0.48	--	0-1	0.51	--	0-1
Frequency meeting friends	2.46	0.89	1-5	3.83	1-45	1-7
General health	3.69	1.01	1-5	3.17	0.75	1-5
Household Size	2.39	1.14	1-10	2.63	1.29	1-8
Membership in Clubs	0.45	--	0-1	0.71	--	0-1
Educational degree			0-3			0-3
Primary level or less	0.24	--	0-1	0.09	--	0-1
Intermediate level	0.35	--	0-1	0.47	--	0-1
College or university degree	0.41	--	0-1	0.44	--	0-1

Values are rounded to the second decimal

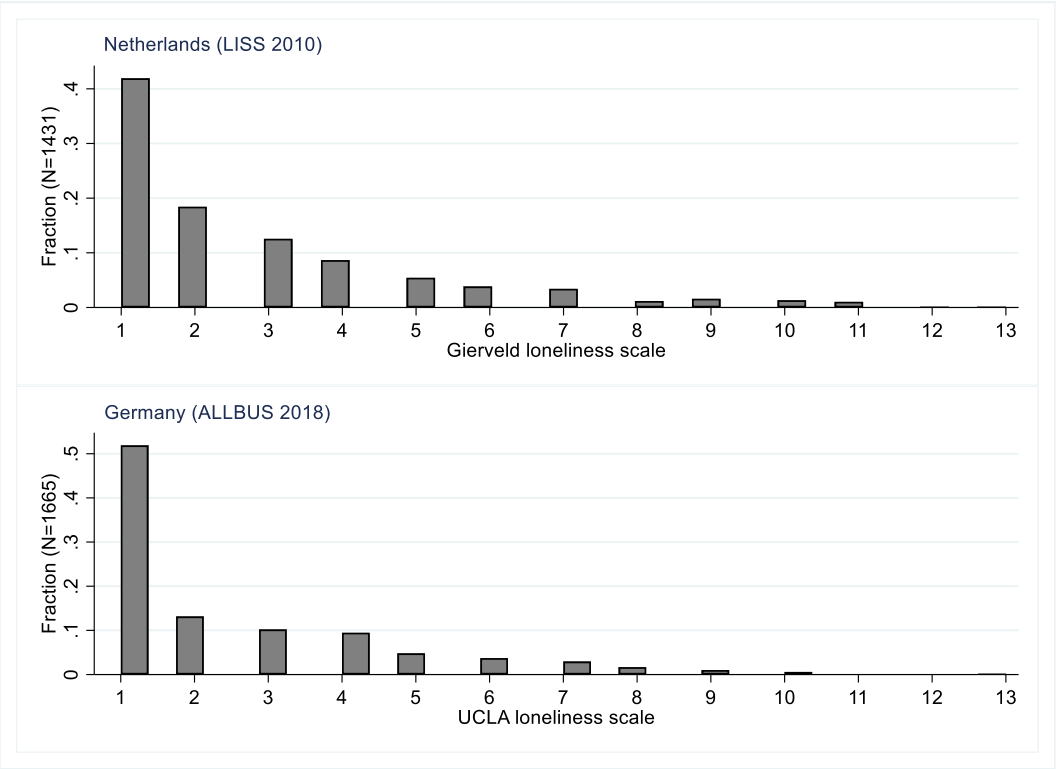
4.5. Analysis and Results

The analysis and corresponding results are presented in four steps. First, a preliminary analysis contains important regression diagnostics for the following analysis. This is followed by the multivariate regression analysis. Third, the observed relationship between loneliness and reported voting behaviours is divided into a direct path and a mediated relationship through sense of duty to vote. Finally, the results of robustness tests are reported, which can be found in the supplementary material.

4.5.1 Preliminary analysis

Prior to multivariate regression analysis, the distribution of the loneliness scales in both samples reveals two important aspects. First, as displayed in Figure 4.1., both distributions are strongly left-skewed, which can cause issues with assumptions of the applied regression models, most notably the presence of outliers. To account for the skewed distribution, the loneliness scales are transformed to $\log_{(10)}$ scales. Second, any conclusions drawn about high loneliness scores are based on very few cases. Therefore, inference about the relationship of extreme loneliness and the outcome variables should be interpreted in light of the limited cases and viewed with caution.

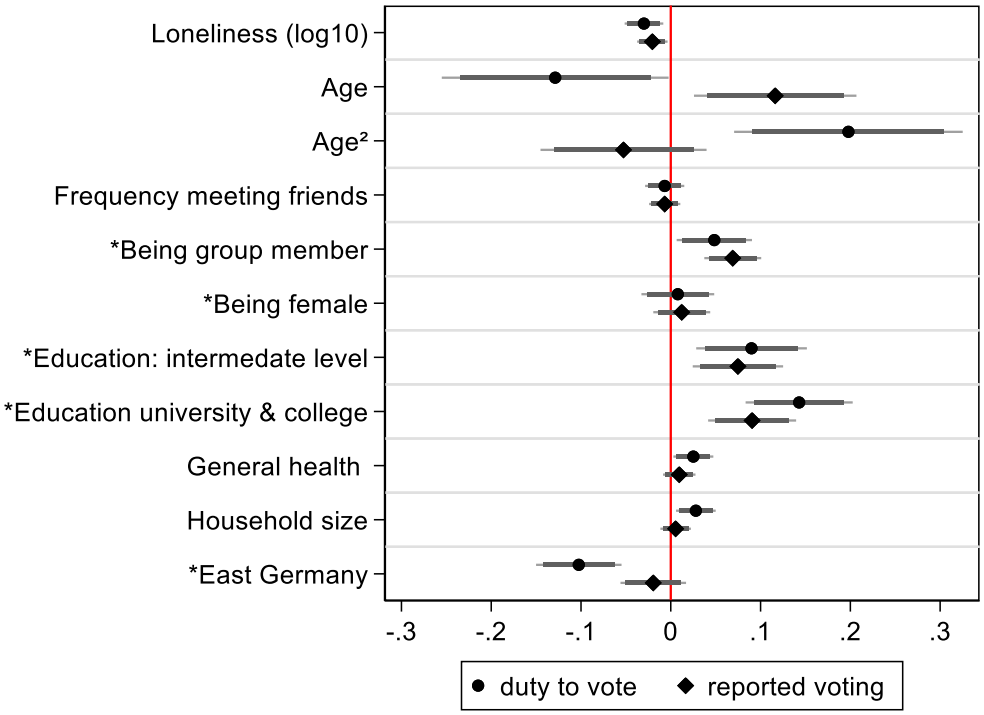
Fig. 4.1. Distribution of loneliness



4.5.2. Results

Because both outcome variables are binary, multivariate probit models are applied. All regression results are based on Hubert/White robust standard errors to avoid issues with heteroscedasticity. For improved interpretability, Figures 4.2. and 4.3. display the average marginal effects per standard deviation separated by outcome variable. The corresponding regression coefficients are reported in Table 4.2.

Fig. 4.2. Margins effect plot – loneliness on voting and duty to vote *(ALLBUS 2018)*



Note: Confidence intervals displayed at 95% & 90 % effect per standard deviation (*=dummies are not standardised) reference level of education = primary level or less

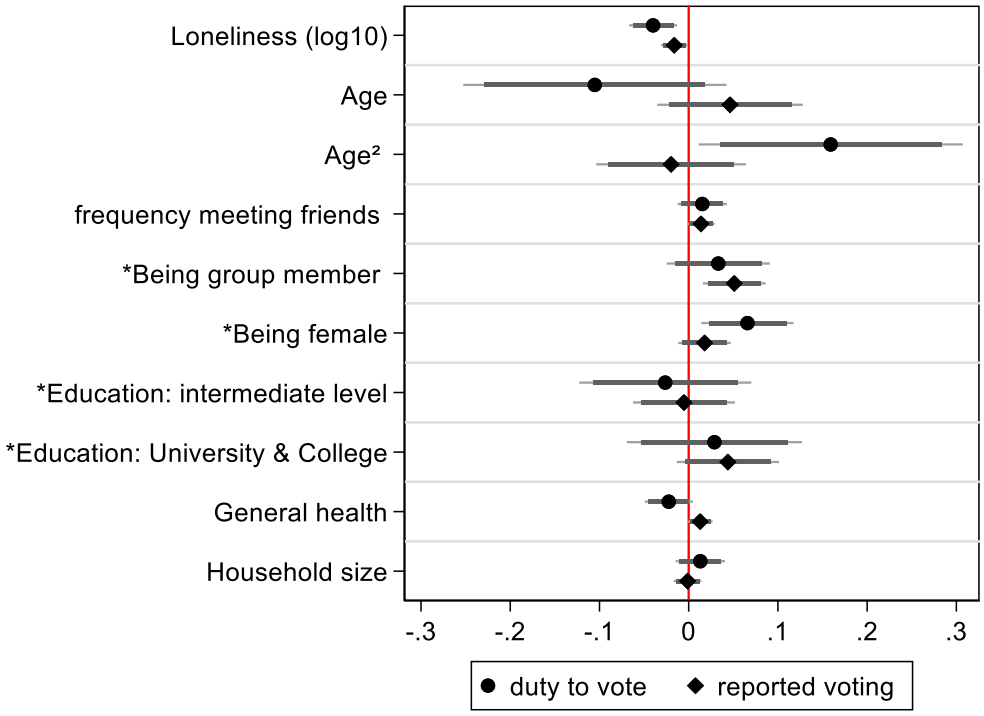
Starting with the German case, the regression model reveals that high levels of loneliness are associated with a lower perceived sense of duty to vote. With every additional standard deviation, the probability to perceive voting as a civic duty decreases by 3.9 percent (p=0.007). In contrast, group membership (6.9 percent; p = 0.024) and household size 0.4 percent per standard deviation; p = 0.013) are positively associated with the sense of duty. The frequency of meeting friends is the only social embeddedness variable that does not significantly correlate with the sense of duty to vote. Overall, this is in line with the expectations from the social embeddedness literature. That loneliness remains statistically significant despite controlling for group membership, friendships and household compositions supports the idea that loneliness exerts influence on political attitudes alongside objective social embeddedness. As Bernandi and colleagues highlight, statistical significance is just one part in evaluating a variable's predictive value and discussing the substantial effect sizes is important for determining a predictor's

substantial relevance (Bernardi et al., 2017). Considering the metric scale of the loneliness measure, its association exceeds the impact of group membership on sense of duty to vote over the full range of the scale. Thus, the relationship can be considered significant in substantial terms as well.

This is in line with the second outcome of the analysis. Lonely participants are significantly less likely to report that they voted in the last election. With every additional standard deviation in loneliness, individuals become 4.1 percent less likely to vote (p =0.006). Likewise, every additional standard deviation in household size increases the probability of voting by 2.7 percent, which is approximately as large as the relationship of feeling lonely and voting. As family and peers are an important factor in the political mobilisation literature, this relationship is significantly large (Bhatti et al., 2017). These results provide strong evidence in favour of the two proposed hypotheses. Hence, the German data suggest that the associations between loneliness, voting behaviour, and perceived sense of duty are not just statistically significant. Rather, the relationships have a significant size from a substantial perspective as well.

Arguably, there are some limitations to finding this pattern in the ALLBUS data, such as the circumstance that the reported voting behaviour took place before the loneliness measurement. To ensure the robustness of the relationship, the analysis was repeated with the LISS dataset that does measure loneliness prior to the election. The results from the Netherlands validate the conclusions from the German case. Lonely individuals are less likely to report that voting is a civic duty (−3.9 percent per standard deviation). Likewise, loneliness is negatively related to the probability to have voted in the election (coef. = -0.140; p = 0.036).

Fig. 4.3. Marginal effect plot - loneliness on voting and duty to vote *(LISS 2000)*



Note: confidence intervals displayed at 95% & 90 % effect per standard deviation (*=dummies are not standardised) reference level or education = primary level or less

Comparing the substantial effect size of loneliness with other predictors suggests that the relationship is somewhat weaker compared to the German case, but still substantial. Every additional standard deviation in loneliness reduces the probability to vote by 1.7 percent. For comparison, the impact of being a member in a social organisation is 5.1 percent. Interestingly, contact to friends and household size seems to exert no influence in this specific sample. Yet, considering that just 133 individuals, roughly 9.4 percent of the sample, reported having not voted in the election, this may be due to the limited number of observations.

To conclude, both samples show that loneliness is a substantial predictor for electoral participation and for the perceived sense of duty to vote.

Table 4.2. Probit models by country

	ALLBUS (N=1641)		LISS (N=1431)	
	Sense of duty	Voting behaviour	Sense of duty	Voting behaviour
Key variables of interest				
Loneliness (log_{10})	-0.101**	-0.104*	-0.103**	-0.140*
Control Variables				
Age	-0.431*	0.59*	-0.271	0.296
Age^2	0.663***	-0.267	0.411*	-0.126
Being female	0.013	0.031	0.17*	0.057
Frequency meeting friends	=-0.023	-0.034	0.039	0.088
General health	0.084*	0.031	-0.058	0.082
Household size	0.082* (0.094)	0.027	0.034	-0.008
Being a group member	0.162* (0.081)	0.179***	0.039*	0.138**
Educational degree				
Primary level or less	--			
Intermediate level	0.131**	0.161***	-0.034	-0.015
College or university degree	0.227***	0.209***	0.037	0.147
New states	-0.153***	-0.045	--	--
Constant	0.299***	-0.615***	0.265	-0.119

*p>=0.05 ** p>0.01 ***p>=0.001; effects are reported for x-standardised coefficients dummy variables are not standardised

4.5.3. Mediation analysis

Although the results point to a robust relationship between loneliness and the two outcome variables, the analysis has thus far not tested the proposed mediation directly. While there are well-documented limitations inherent in testing mediation with cross-sectional data with regard to causality and direction of the effect, decomposing the mediation effect in cross-sectional datasets presents an initial impression of the magnitude of the potential mediation (Preacher, 2015). To account for the binary nature of the outcome variable, this study uses the same model specifications as described in the previous regression analysis within the KHB method, a decomposition technique capable of decomposing direct and indirect effects for binary dependent variables proposed by Kohler, Karlson, and Holm (Kohler et al., 2011).[35] Table 4.3 displays the results. The first row reports the relationship between loneliness and voting without accounting for sense of duty, and the next two rows decompose the full relationship: The second row summarises the remaining effect of loneliness after accounting for the indirect effect through sense of duty and the third row displays the indirect of loneliness mediated through sense of duty.

[35] While mediation analysis is well established in the linear case, the same methodology cannot be used in a nonlinear situation (Kohler et al., 2011). As reviewed by Kohler and colleagues, the key issue in comparing nested nonlinear models is the rescaling of probability models whenever new variables are added. Substantially, this alters the main effect of the variable of interest (X) on the outcome (Y) whenever a mediator variable (Z) is included, regardless of whether Z actually relates to X or not. Briefly summarised, the KHB method solves this issue by comparing a model that includes the X and Z coefficients with a model that includes X and a residualised version of Z with respect to X (Breen et al., 2018). This leads to uncorrelated Z and X, which, in turn, allows the coefficients of the independent variables to be compared across models free of rescaling or attenuation bias. Alternatively, applying generalised structural equation models to solve this issue leads to the same conclusion.

Table 4.3. Decomposition of the relationship between loneliness and voting behaviour

	ALLBUS 2018		LISS 2010	
Loneliness	coef.	p-value	coef.	p-value
Full effect	-0.263	0.017	-0.160	0.024
Direct effect	-0.206	0.063	-0.107	0.130
Indirect effect	-0.057	0.006	-0.053	0.006

Note: Model type = Probit; predictor: loneliness(log_{10}); mediator = sense of duty to vote; Control variables same as in Table 2.2.; all values are rounded to the third decimal place

In substantial terms, the analysis shows that loneliness is associated with reduced log odds of voting by −0.263 (p = 0.017). Controlling for the proposed mediation of sense of duty to vote reduces the log odds to 0.206 and pushed the remaining direct effect above the 5 percent significance threshold into statistical insignificance (p = 0.063). This leaves a significant indirect effect of −0.057 (p = 0.006) and provides two insights. First, there is an empirical, indirect relationship between loneliness and voting behaviour mediated by sense of duty. However, the share of sense of duty of the overall relationship is approximately 22 percent, indicating that the relationship between loneliness and voting behaviour is subject to more mediation mechanisms than sense of duty.

Repeating this analysis with the LISS data confirms the pattern. Loneliness is associated with reduced log odds of voting by 0.254 (p = 0.024). The mediation reduces the log odds of the direct relationship to −0.193 (p = 0.087). Once more, this leaves a significant indirect relationship of loneliness mediated by sense of duty that constitutes about 23.8 percent of the direct effect (p = 0.006). The similar magnitude of the indirect effect in both samples is reassuring. Overall, the mediation analysis should be interpreted with caution due the cross-sectional nature of the data. However, assuming that the proposed direction of the effect is correct, it indicates that sense of duty indeed plays a substantial role in the relationship between loneliness and voting behaviour. Also, the direct effect remains fairly close to the 5 percent

threshold under control of sense of duty. Considering the few non-voters (ALLBUS: 214 of 1641 participants; LISS: 133 of 1431), this may indicate that loneliness relates to voting behaviour through other mechanisms not considered here and that the effect may retain its statistical significance in larger sample sizes.

4.5.4. Robustness tests

As briefly mentioned in the operationalisation, the results are robust for several ways of treating the sense of duty variable in the German case. As an additional robustness test, a dummy variable was considered for whether a person feels adherent to a party as a proxy for outcome preference. Alongside sense of duty, Blais and Achen propose outcome preference as one of the most important predictors for turnout (Blais & Achen, 2019). They argue that citizens see voting as an expressive act. If individuals lack a strong outcome preference and do not view casting their vote as a valuable expressive act, some may participate because of a feeling of moral obligation. If loneliness simply causes a depressed mood and a general indifference about the election outcome instead of alienation and decreased moral obligation, the relationship should turn insignificant after controlling for outcome preference. Including adherence to the model results in an additional 725 missing cases out of 1431 observations in the Dutch sample, which prohibits a reliable test of the model. However, testing this with the ALLBUS is less problematic (16 additional missing cases) and the results are robust under control of feeling adherent to a party in the German case. Furthermore, a series of placebo tests reveals that there is possibly nothing unique about loneliness as a predictor for sense of duty or reported turnout. Instead, loneliness may, for some reason, simply relate to every variable related to political engagement. This is not the case, however. The relationship between loneliness and (1) feeling adherent to a party and

(2) being politically interested is statistically insignificant under the same model specifications. Corresponding regression tables can be found in the Appendix.

4.6. Limitations and conclusion

This paper argues that loneliness is a potent, yet so far overlooked predictor for individuals' motivation to participate in the electoral process. The proposed driving mechanism is its impact on the individuals' social belonging and the perceived obligations to society. Consequentially, this study tests the hypotheses that loneliness should be negatively associated with sense of duty to vote and reported voting behaviour. The regression and mediation analysis support this idea. Furthermore, the decomposition of the relationship reveals that the participants' sense of duty accounts for roughly 20 percent of the relationship of loneliness and voting behaviour. That the controls do not account for about 80 percent of the relationship indicate that other relevant mechanisms contribute to the relationship between loneliness and political participation. At this point, those mechanisms are subject to speculation and should be examined closer in future studies. To ascertain the validity and reliability of the proposed relationships, this study adheres to the common strategy of using nationally representative samples to ensure external validity, replicating results in additional independent samples to avoid overspecification, and applying a variety of robustness tests. The results exemplify that the impact of loneliness on socially relevant outcomes, such as political participation, is an interesting new field of research. These findings relate to a core debate in political science around the theoretical relevance of perceived and objective social relationships for political action, encapsulated by prominent theoretical approaches such as the political mobilisation models and social capital theory, as well as the literature concerned with social wellbeing and political action. This study posits that while

having social interactions and social capital are undoubtedly important, simply having them is not enough—individuals must feel them as well.

Although two independent datasets exhibit this pattern and the results are robust for several model specifications, this analysis offers a first step toward answering the question and the results have limitations. First and foremost, correlation does not imply causation and the study cannot rule out the influence of unobserved confounders. Given that prolonged loneliness is notoriously difficult to manipulate, better longitudinal data are needed to account for self-selection and time-constant confounding. Although longitudinal data would increase the reliability of the analysis, to the best of my knowledge, no longitudinal, national representative surveys capture a validated loneliness scale as well as sense of duty. Such data would improve the mediation analysis as well and allow stronger empirical basis for causal inference. Furthermore, in light of the cross-sectional data, questions about the issue of reverse causality or bi-directionality of the effect may arise. Several arguments speak against those concerns. First, randomised experiments designed to induce loneliness with vignettes and hypnosis show that manipulating loneliness increases anxiety, feelings of insecurity, and fear of negative evaluation (J. T. Cacioppo et al., 2006; Rotenberg et al., 2010). This speaks in favor of the theorised direction of the relationship. Furthermore, the LISS data measured loneliness prior to the voting behaviour, making the reverse relationship between loneliness and voting unreasonable. On the theoretical level, this study focuses on one specific political action. To what extent this negative association can be generalised to other forms of political participation is up for debate. As social connection is a central motive in human decision making (Qualter et al., 2015; Spithoven et al., 2017), it is possible that lonely individuals become more likely to participate in collective political actions while remain absent from individualistic actions such as voting.

Despite these limitations, the findings are promising and point toward several interesting questions for upcoming studies. On a theoretical level, further studies should investigate how subdimensions of loneliness influence political participation differently. The differentiation between social and emotional loneliness offers a promising framework for such investigations (Weiss, 1973). Furthermore, future research should validate the results in other samples and with alternative operationalisation. Furthermore, while this study argues that loneliness must be considered distinct from objective social embeddedness, upcoming studies should investigate the interplay between both constructs. Other mediation variables might offer another promising field of investigation. Finally, the question of whether and how loneliness relates to other forms of political participation such as demonstrations or signing petitions is open for investigation as well.

4.7. Supporting Information & replication material

Replication material available at:

https://osf.io/7v5as/

4.7. Bibliography of Chapter 4

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4.8. Appendix of Chapter 4

Table A.4.1: Loneliness scales (Appendix)

wording	range	mean
ALLBUS 2018: UCLA loneliness scale		
How often in the past 4 weeks have you felt that…		
… you lack companionship?	1-5	1.631
… you are isolated from others?	1-5	1.515
… you are left out?	1-5	1.336
LISS 2010: Gierveld loneliness scale		
Can you indicate for each statement to what degree it applies to you, based on how you are feeling at present?		
I have a sense of emptiness around me	1-3	1.237
There are enough people I can count on in case of a misfortune	1-3	1.297
I know a lot of people that I can fully rely on	1-3	1.537
There are enough people to whom I feel closely connected	1-3	1.381
I miss having people around me	1-3	1.331
I often feel deserted	1-3	1.165

Crombach Alpha (ALLBUS =0.82; LISS = 0.81)

Table A.4.2: item cross-correlation (LISS Data) (Appendix)

	Did vote	Sense of duty	Loneliness	Age	Frequency meeting friends
Did vote	1				
Sense of duty	0.2494	1			
Loneliness	-0.0993	-0.0776	1		
Age	0.0787	0.0896	0.0292	1	
Frequency meeting friends	0.0647	0.0358	-0.2612	-0.2403	1
Group membership	0.1167	0.0454	-0.1306	0.0391	0.1012
Being female	0.0106	0.0574	0.0164	-0.1100	0.0287
Education	0.1011	0.0303	-0.0904	-0.0021	0.0580
General health	0.0513	-0.0403	-0.1883	-0.2087	0.1169
Household size	-0.0316	-0.0192	-0.0661	-0.3652	-0.0168

Table A.4.2. item cross-correlation (LISS Data) (Continued)

	Group membership	Being female	Education	General health	Household size
Group membership	1				
Being female	-0.0562	1			
Education	0.1717	-0.0842	1		
General health	0.0992	-0.0804	0.1454	1	
Household size	-0.0084	0.0323	0.0013	0.1149	1

Table A.4.3. item cross-correlation (Allbus Data) (Appendix)

	Did vote	Sense of duty	Loneliness	Age	Frequency meeting friends
Did vote	1				
Sense of duty	0.2465	1			
Loneliness	-0.139	-0.103	1		
Age	0.162	0.065	-0.145	1	
Frequency meeting friends	0.001	-0.029	0.041	0.292	1
Group membership	0.128	0.089	-0.049	-0.041	-0.197
Being female	0.009	-0.004	0.069	0.002	0.009
Education	0.069	0.069	0.015	-0.306	-0.140
General health	0.027	0.027	-0.206	-0.301	-0.164
Household size	-0.019	-0.012	-0.105	-0.352	-0.047
New States	-0.008	-0.108	-0.009	0.076	0.111

Table A.4.3. item cross-correlation (Continued) (Appendix)

	Group membership	Being female	Education	General health	Household size
Group membership	1				
Being female	-0.023	1			
Education	0.182	-0.024	1		
General health	0.116	-0.034	0.276	1	
Household size	0.051	0.004	0.111	0.183	1
New States	-0.072	0.009	0.002	-0.051	-0.095

Table A.4.4 Robustness tests (Appendix)

	ALLBUS (N=1641)	ALLBUS (N=1632)	ALLBUS (N=1632)
	Model 1	Model 2	Model 3
Key variables of interest			
Loneliness(log10)	-0.246**	-0.141**	-0.163**
Adherent	--	.0384***	0.628***
Control Variables			
Age	-0.049*	-0.0226*	-0.01*
Age^2	0.0001***	0.0003**	0.0002
Being Female	0.22	0.031	0.069
Frequency meeting friends	-0.035	-0.024	-0.047
General health	0.148*	0.071	0.019
Household Size	0.146**	0.074*	0.014
Membership in Clubs	0.323**	0.122	0.304***
Educational degree			
Primary level or less	--		
Intermediate level	0.454**	0.246*	0.32**
College or university degree	0.762***	0.413***	0.337**
New Federal States	-0.629***	-0.273***	-0.008

*p>=0.05 ** p>0.01 ***p>=0.001

Model 1: test whether results vary if sense of duty is treated as ordinal variable (ordered logit regression)

Model 2: Probit model - effect on sense of duty under controls for party adherence

Model 3: Probit model - effect on voting behaviour under control for party adherence

Table A.4.4. Robustness tests (continued)

	ALLBUS (N=1634)	ALLBUS (N=1634)
	Model 4	Model 5
Key variables of interest		
Loneliness(log10)	-0.139**	-0.124*
Control Variables		
Age	-0.026	0.317*
Age^2	0.004**	-0.0001
Being Female	0.048	0.845
Frequency meeting friends	-0.023	-0.375
General health	0.088*	0.518
relationship status		
Married, Cohabiting	--	--
Married, Living Apart	-0.225	-0.534
Widowed	-0.189	-0.321
Divorced	-0.263*	-0.335*
Never Married	-0.065	-0.116
Membership in Clubs	0.163*	0.352***
Educational degree		
Primary level or less	--	
Intermediate level	0.264**	0.32**
College or university degree	0.441***	0.398**
New Federal States	-0.335***	-0.097

*p>=0.05 ** p>0.01 ***p>=0.001

Model 4: tests effect on sense of duty with relationship status included instead of household sized

Model 5: tests effect on voting behaviour with relationship status included instead of household sized

Table A.4.4. Robustness tests (continued 2)

	ALLBUS (N=1634)
	Model 6
Key variables of interest	
Loneliness(log10)	-0.117*
Control Variables	
Age	-0.013
Age^2	0.0002
Being Female	0.156*
Frequency meeting friends	0.027
General health	-0.0768
relationship status	
single no child	
(un)married cohabitation, no child	0.112
(un)married cohabitation, with child	0.098
single, with child	-0.089
Membership in Clubs	0.095
Educational degree	
Primary level or less	--
Intermediate level	0.069
College or university degree	0.079

*p>=0.05 ** p>0.01 ***p>=0.001

Model 6: tests effect on sense of duty with relationship status included instead of household sized

Table A.4.5. Placebo tests

	ALLBUS (N=1641)	ALLBUS (N=1632)	LISS(N=1431)	LISS(N=706)
	Model 7	Model 8	Model 9	Model 10
Key variables of interest				
Loneliness(log10)	-0.089	-0.04	-0.478	-0.129
Control Variables				
Age	0.034	0.006	-0.007	-0.02
Age^2	-0.0001	0.0001	0.0001	0.0002
Being Female	-1.017***	0.04	-0.505***	-0.071
Frequency meeting friends	-0.038	-0.022	0.052	0.046
General health	0.016**	0.061	0.051	-0.038
Household Size	-0.047	0.051	-0.066*	-0.067
Membership in Clubs		0.027***	0.061	0.156
Educational degree				
Primary level or less	--	--	--	--
Intermediate level	0.658***	0.228*	0.567***	0.373*
College or university degree	1.533***	0.401***	1.041***	0.642**
New Federal States	-0.059	-0.414***	--	--

*p>=0.05 ** p>0.01 ***p>=0.001

Model 7: ordered logistic regression; political interest as outcome

Model 8: probit model - effect on feeling adherent

Model 9: linear regression; political interest as outcome

Model 10: probit model: feeling adherent as outcome

5. Populism and Layers of Social Belonging: Support of Populist Parties in Europe.

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Abstract: *Although scholars hypothesized early on that social belonging is an important predictor for voting behaviour, its role for populist voting remains empirically ambiguous and underexplored. This contribution investigates how different aspects of social belonging, that is, quality, quantity, and perception of one's own social relationships, relate to electoral abstention and to populist voting on the left and right. Employing multilevel regression models using data from four waves of the European Social Survey, this study finds that all measures of social belonging foster turnout, but they exert an incoherent influence on populist voting depending on the party's ideological leaning. While social belonging plays a subordinate role for left populist support, strong social belonging reduces the probability to support populist parties on the right. With that, the study analysis offers a nuanced view on how different dimensions of social belonging relate to electoral behaviour. By doing so, this study sheds light on what aspects of social belonging encourage, or inhibit, which form of 'protest at the ballot box'.*

5.1. Introduction

Not every crisis appears suddenly. For decades, sociodemographic trends such as rising individualism, ageing societies, shrinking social networks, and widespread loneliness led experts to warn that social belonging will become a growing issue for Western democracies (Buecker et al., 2021; Cacioppo & Cacioppo, 2018b; Olds & Schwartz, 2009). Media reports picked up these warnings and framed it as an emerging "epidemic of loneliness" and first governments put the issue on their official agenda (Easton, 2018). Alongside concerns about consequences for wellbeing and public health, some authors drew the connection between this creeping crisis of social belonging and the rise of populism, stating that lonely individuals are a vulnerable target group for extremist and populist parties (Buechler, 2013; Hertz, 2021).

However, despite the uncontested view that social relationships play an important role in voter mobilisation and political decision-making, a person's social belonging is only rarely considered in empirical models explaining populist party preference (Stockemer et al., 2018). If considered, authors operationalise it with classic measures of social capital, i.e. group membership and generalised trust, and investigate its association with electoral right-wing support (Berning & Ziller, 2017; Zhirkov, 2014).

This operationalisation faces two major limitations. First, it ignores other important dimensions of social belonging such as the quality of these relationships or the perceived relative social activity compared to similar others. Secondly, the question of whether different dimensions of social belonging exert a uniform or heterogeneous influence on populist party support on the left and right end of the political spectrum remains underexplored.

Despite an ambivalent empirical picture, it is commonly assumed that social capital, social ties, and emotional belonging foster electoral turnout and exert a homogeneous (shielding)

effect against populism, independent of the party's ideological position (Rydgren, 2011). However, it is far from obvious that these dimensions of social belonging exert a uniform influence on populist parties on the left and the right. Our argument is based on the premise that the right- and left-populist narratives correspond to a different degree with the affective needs of individuals with weak social belonging, which leads to a heterogeneous relationship between belonging and support for populist parties depending on their ideological standing.

By investigating to what extent different dimensions of social belonging are associated with right-populist support, left-populist support, or nonvoting, this study aims to fill this gap in the literature. Seen as voice and exit strategies for political discontent (Wingrove & Hirschman, 1971), the analysis offers a nuanced view on how subjective and objective dimensions of relationships relate to electoral behaviour. By doing so, the study sheds light on what aspects of social belonging encourage, or inhibit, which form of "protest at the ballot box".

To that end, we first review the concept of populism and discuss commonalities and differences between left- and right-wing populist parties. Second, we review why social belonging is commonly expected to shield from nonvoting and populist party support in general. Third, we extend this prevailing view by arguing why social belonging is expected to exert an inconsistent effect on populist parties on the left and right. Finally, we put our argument to an empirical test by utilising four waves (6-9) of the European Social Survey.

5.2. Populism and host ideologies: Commonalities and differences

Multiple electoral successes of populist parties and corresponding growing media coverage led to substantial growth in research concerned with populist voting (Bernhard & Kriesi, 2019; Rooduijn, 2019). In Europe, political populism is most often associated with the radical right and, consequentially, most studies focus on right-leaning populist parties (Mudde, 2007).

However, the successes of populist parties on the left side of the political spectrum raise questions about whether insights about right-wing populism can be generalised to the populist left (Damiani, 2020).

Although populism is a contested concept (Hunger & Paxton, 2021), most studies define populism as a thin ideology with a conceptual core that can be linked to various host ideologies (Mudde & Kaltwasser, 2017). This study follows this ideational approach of populism as it provides a useful framework to conceptualise the shared core of populist parties as well as the ideological differences between parties on the left and right, which in turn explain potential differences in the relationship between weak social belonging and populist party support.

With respect to the conceptual core, populist parties and leaders typically utilise dividing rhetoric stating that society consists of two antagonistic groups. On the one side the righteous people, on the other side the misguided and corrupt elites (Ivaldi et al., 2017; Mudde, 2004). This narrative encapsulates three central ideas. First, an anti-pluralistic view of civil society with a homogeneous and cohesive population. Second, a universally shared "will of the people". Third, a small and corrupted elite that opposes the will of the people.

The conceptual core of populist parties explains empirical findings that the electoral base of populist parties on the left and right have a similar socio-economic profile with respect to lower education, weaker socioeconomic position, and economic or political discontent (Kaltwasser & Van Hauwaert, 2020; Rooduijn, 2018; Rooduijn et al., 2017). In line with that, prominent explanations for populist voting are the "losers of modernization" and "cultural backlash" perspectives (Gidron & Mijs, 2019; Norris & Inglehart, 2019).

Going beyond the conceptual core, populism can be coupled with various political 'host ideologies' on the left and right whose worldviews and political goals are largely diametrically opposed. Depending on this host ideology, parties can vary in their concept of who belongs to "the people", who belongs to the opposing elite, and how society should be organized based on

the general will of the people (Ivaldi et al., 2017; Mudde & Kaltwasser, 2017). Therefore, due to the varying host ideologies, populist parties differ in their socio-psychological messaging and vision of how society should develop in the future. Following this reasoning, populist parties can be differentiated in aspects that are associated with their historical ideological roots and their stance on social change.

The opposing ideological view on social change and corresponding communicated messages are of particular importance for this study. As will be argued in more detail later on, we theorize that the opposing ideological narratives correspond to different degrees with the affective needs of individuals with weak social belonging. Left- and right-populist parties differ in their envisioned direction the society should develop. Societal pessimism, law and order narratives, and a nostalgia for the past are important characteristics of right-wing messaging (Steenvoorden & Harteveld, 2018). In line with that, right-wing populist parties represent authoritarian, conservative and protectionist values (Göpffarth, 2021; Mudde, 2007). With that, right-wing populism typically promotes social change in the sense of preservation and reconstitution of old values from "better times of the past", while taking a stance against progressive social change pursued by liberal elites.

In contrast, left-populist parties promote progressive social change, tend to reject the current capitalist, socio-economic structure, and envision alternative economic and social systems (Damiani, 2020; March, 2012). With that, they represent social change in terms of a new social order, financial redistribution, and cultural pluralism (Ivaldi et al., 2017). This corresponds with their appeal for people experiencing perceived economic hardship (Gidron & Mijs, 2019; Kurer, 2020). Likewise, studies investigating the association between values and left-right ideological positioning confirm that political orientation and basic human values are interlinked, suggesting that right- and left-wing voters differ in their personal values and needs (Norris & Inglehart, 2019; Schwartz et al., 2010).

These differences become apparent in studies comparing party manifestos of populist parties (March, 2017). For instance, in the British case, populist parties on the left and right alike present themselves as popular identities in juxtaposition to antagonistic elites. However, the party manifestos also indicate that right wing populist parties are characterised by a strong people-centrism and anti-immigrant stance. In contrast, left wing parties focus on more traditional social divides such as social class and inequality. Furthermore, "left-wing populists are even more inclined to devote attention to particular constituencies whose interests diverge from those of the people as a whole, such as the unemployed (both parties); women, the disabled and LGBT groups (especially the SSP); and immigrants and religious (especially Muslim) minorities (Respect)." (March, 2017). Many of these findings are mirrored by studies analysing populist parties in other countries as well (Bernhard & Kriesi, 2019; Castanho, 2017; Rooduijn & Akkerman, 2017).

These reviewed similarities and differences between populist parties raise two questions this contribution aims to investigate. First, how social belonging relates to voting behaviour, i.e. nonvoting and populist voting in general. Second, how social belonging corresponds with the varying messaging of populist parties on the left and right. While the next section focuses on the first question and links the consequences of weak social belonging to the conceptual core of populism, the subsequent section elaborates on the latter by linking the affective needs of poorly included individuals to the ideological narratives of left- and right-wing populist parties.

5.2.1. Social belonging, electoral abstention and populist party support

Considering the first question, sociological and psychological perspectives help to explain why social belonging, or perceived lack thereof, causes a lower probability to vote and is expected to cause an increased propensity to vote for populist parties in general. As reviewed by Rydgren

(2011), scholars in the tradition of mass society theory argue that modern democracies are characterised by an increasing atomisation of society. This causes a structural erosion of social networks and social capital which leads, in consequence, to two central outcomes. First, citizens lose their social support network that provides important resources vital for political participation. Second, on an emotional level, they lose their sense of community, security and belonging. While the first outcome offers an explanation for why weak social embeddedness might be associated with political demobilisation, the latter highlights the role of social belonging for electoral support of populist and radical parties.

The resource-based perspective builds on the premise that turnout can be understood as a function of motivation to vote, ability to vote, and costs of voting (Harder & Krosnick, 2008). While scholars have found countless predictors for voter turnout (Smets & van Ham, 2013), social ties and social networks play a prominent role as they provide important resources such as economic support, information, and social control via reinforcing social norms which foster motivation and ability to participate (Bhandari & Yasunobu, 2009; Bhatti et al., 2020).

The second link is based on socio-psychological mechanisms. Social belonging is a fundamental human desire (Baumeister & Leary, 1995) and a weak sense of community and belonging motivates individuals to seek out interpersonal relationships and groups that provide meaning, belonging, and shared identity (Jost et al., 2003; Qualter et al., 2015; Spithoven et al., 2017). Given that populist parties promote the concept of a unified, homogeneous society and provide an ideological identity, poorly integrated individuals are likely to respond to this narrative.

Furthermore, authors in the tradition of social capital theory state that a strong sense of belonging and inclusion in communal networks or organisations foster social trust, civic virtues, and tolerance (Olson, 1972; Putnam, 2000), which reduces receptiveness to the friend-or-foe paradigm of populist parties and promotes electoral turnout as a civic duty in democratic

societies (Blais & Achen, 2019). Therefore, belonging can be expected to increase both the propensity to turn out as well as the probability to turn out for a party that does not draw on populist strategies.

Linking the summarised arguments together, weak social belonging can be expected to generate a stronger affinity to populist parties as well as a higher probability to abstain from elections. In line with that reasoning, recent studies highlighted that both social ties and perceived loneliness are relevant predictors of abstention/participation (Bhatti et al., 2020; Langenkamp, 2021).

H1: Weak social belonging is positively related to populist party support.

H2: Weak social belonging is positively related to nonvoting.

5.2.2. Psychological consequences of belonging and ideological narratives

After deriving the argument why weak social belonging should foster populist voting and reduce electoral turnout, this section extends this view and derives why the affective needs of individuals with weak belonging likely correspond to a different degree with the preservation-progress distinction of populist left- and right-wing parties. This question can be answered by linking the psychological consequences of weak social belonging to the ideological narratives of the right- and left-wing populist parties reviewed before.

From an evolutionary psychological perspective (Cacioppo & Cacioppo, 2018a; Spithoven et al., 2017), being included in a social group provides resources such as food, security, and support that are essential for survival. As humans are inherently social beings, losing this social support structure was life threatening for most of human history. Loneliness is the emotional response to the perception that one's social support network is qualitatively or quantitatively

insufficient and serves to motivate people to re-affiliate with others (Qualter et al., 2015). As such, loneliness is not a mere product of the quantity of social contact but rather depends on an interplay of norms, social comparisons with relevant others, and the desired quantity and quality of social ties (Gierveld et al., 2018).

Being unresolved, loneliness is associated with numerous emotional and psychological outcomes. Among others, lonely individuals are more likely to desire for shared identity, community, and re-affiliation (Qualter et al., 2015), while they also tend to suffer from increased social anxiousness, more negative expectations of future events, increased fear of being negatively perceived by others, and lower social trust (Cacioppo et al., 2006; Rotenberg et al., 2010). Likewise, loneliness is associated with prevention-oriented goals instead of promotion-oriented goals (Spithoven et al., 2017).

As illustrated earlier, populist parties of the left and right build on the same conceptual core (i.e. corrupt elites who betray the "common will" of the people), while at the same time coupling this thin ideology with different host ideologies. Correspondingly, populist parties differ in their messaging how they aim to solve social issues and which vision they have for society depending on their ideological roots. The right-wing populist narrative typically builds on a traditionalist worldview that aims for the preservation of the old and reduction of uncertainty (Jost et al., 2003), which likely corresponds with the affective reactions to loneliness. In line with that reasoning, studies were able to show that lonely individuals tend to endorse politically conservative values and that citizens living in societies with low social cohesion are more likely to hold racist beliefs (Caller & Gorodzeisky, 2021; Floyd, 2017). Likewise, given that individuals with weak social belonging desire community and security, these desires are likely to correspond with the strong people-centric (nativist) rhetoric of right-wing populist parties in particular (March, 2017).

If this holds true, weak social belonging should be positively associated with right-wing populism, as it answers directly to the affective need of lonely individuals to protect themselves and avoid insecurity. In contrast, the narrative of the populist left contains goals of progressive, transformative policies that are unlikely to correspond with the anxious and security seeking affective reaction of lonely individuals. Likewise, their focus on progressive social groups, social diversity and minorities might not correspond with the mentioned tendency towards conservatism of individuals with weak social belonging.

This proposition is in line with recent research showing that, while populist voters are very similar in terms of life satisfaction, discontent, and frustration (about the political system and the economic situation), it is the combination of these emotions and generalised social trust that sets populist left and right voters apart (Yann et al., 2019). Whereas those who vote for the populist left have high levels of trust, populist right voters and absentees are particularly distrusting. According to Yann et al., this subjective-emotional dimension has become a decisive factor in whether one casts a vote for the left or right because it structures a person's outlook on the world and, consequently, political values and orientations (especially concerning anti-immigrant sentiment and questions of redistribution). Since weak social belonging and loneliness foster distrust and anxiety (Cacioppo et al., 2006; Rotenberg et al., 2010) these arguments further support the notion of heterogeneous effects of social belonging on populist voting.

H3: Weak social belonging at the individual level is positively associated with right-wing populism, but not with left-wing populism.

To summarise, our theoretical argument starts from the presumption that a lack of social belonging elicits anxiousness, distrust and insecurity. Simultaneously, it fosters a strong desire for social unity, group identity, and security. These psychological dispositions and emotional needs, in turn, correspond in particular with typical narratives of right-wing populist parties. By

focusing on the concept of social belonging, we integrate an important, yet often overlooked socio-psychological predictor of political attitude formation into our explanatory model of populist voting behavior. By considering quantitative, qualitative, and relative aspects of social belonging, the study uses a broad spectrum of measures that constitute social belonging and therefore extends on works in the tradition of social capital theory that focus on generalised trust and formal group membership.

5.3. Data and Methods

Individual-level data come from the European Social Survey (ESS). We pool rounds 6 to 9 of the ESS to maximize the sample of populist voters. The four waves cover an observation period from 2012 to 2018.

The dependent variable is based on two retrospective vote variables. Respondents were asked whether they voted in the last national election and, if that is answered in the affirmative, which party they voted for. We use this information to distinguish persons who did not vote (including Blanco and non-valid votes) and persons who voted for either any populist party, a populist left party, a populist right party, or a mainstream party. The populist party classification is based on The PopuList 2.0 (Rooduijn et al., 2019), a dataset resulting from the collaborative efforts of journalists and academic experts. There, parties classify as populist when they fit the following definition: "Parties that endorse the set of ideas that society is ultimately separated into two homogeneous and antagonistic groups, "the pure people" versus "the corrupt elite," and which argues that politics should be an expression of the volonté générale (general will) of the people (Mudde 2004)." We use the PopuList's record of parties' host ideologies to distinguish between parties that are populist far-left and populist far-right. Far left and far right non-populist parties are excluded from all analyses. We treat as mainstream parties those that

are not populist. Parties that are populist but without a clear host ideology, so-called 'valence populism' (Zulianello, 2020), are included in our first analysis concerned with populist voting independent of underlying ideology (H1 and H2), but are not part of our analysis of populist party support differentiated by ideology (H3). A list of populist parties included in our analysis is provided in Table 5 in the Online Appendix.

As for indicators for social belonging at the individual level, we include contact frequency, perceived relative social activity, and relationship quality. Contact frequency is measured by the following question: "[…] How often do you meet socially with friends, relatives, or work colleagues?" Respondents then indicate on a seven-point scale whether they meet never, less than once a month, several times a month, once a week, several times a week, or every day. Relative social activity measures on a five-point scale whether respondents take part in social activities "much less than most", up to "much more than most" other people of their age. The quality of social relationships is measured with a seven-point scale asking the participants "How many people, if any, are there with whom you can discuss intimate and personal matters?" With that, we capture the frequentist dimension, the mental relative representation of one's social relationships compared to the larger social environment, and the availability of qualitatively important social relationships. Given the importance of formal group networks for identity formation, social capital, and local integration, we further include formal group membership as fourth indicator for social belonging. We measure group membership with a dummy for respondents who are currently in a trade union, an organisation or association other than parties and activist groups, or in a religious community. The latter is a dummy variable for persons who attend religious services at least once a month, indicating a certain degree of integration in religious communities.

To investigate the relationship between belonging and voting behaviour, we considered several additional covariates. Most importantly, we control for the respondent's age, gender, education, and income as these sociodemographic characteristics are well-established confounders in the literature (Rooduijn, 2018). We recode the income measure to quintiles of the country's income distribution and add an additional category to retain cases with missing income information. Educational level is measured by the International Standard Classification of Education, distinguishing those with none or primary education (ISCED 0-1), lower secondary (ISCED 2), upper secondary and higher non-tertiary education (ISCED 3-4), or tertiary education (ISCED 5-6). Because a migration background has previously been found to be related to both civic participation and voting behaviour (Strijbis, 2014), we also include a dummy indicating whether respondents or any of their parents were not born in the country of residence. In addition, we control for household size (top-coded at 10 persons), unemployment, and political orientation measured by the 11-point left-right scale. Descriptive statistics for all variables are provided in Table 1.

We fit linear probability models with country and wave (i.e. "two-way"-) fixed effects and heteroscedasticity-robust standard errors. We do so for each type of electoral behaviour contrasted against voting for a mainstream party. In the first part of the analysis, we model the effects of social belonging on undifferentiated populist voting and nonvoting. In the second part, we differentiate between the ideological positions of populist parties.

Table 5.1. Descriptive statistics

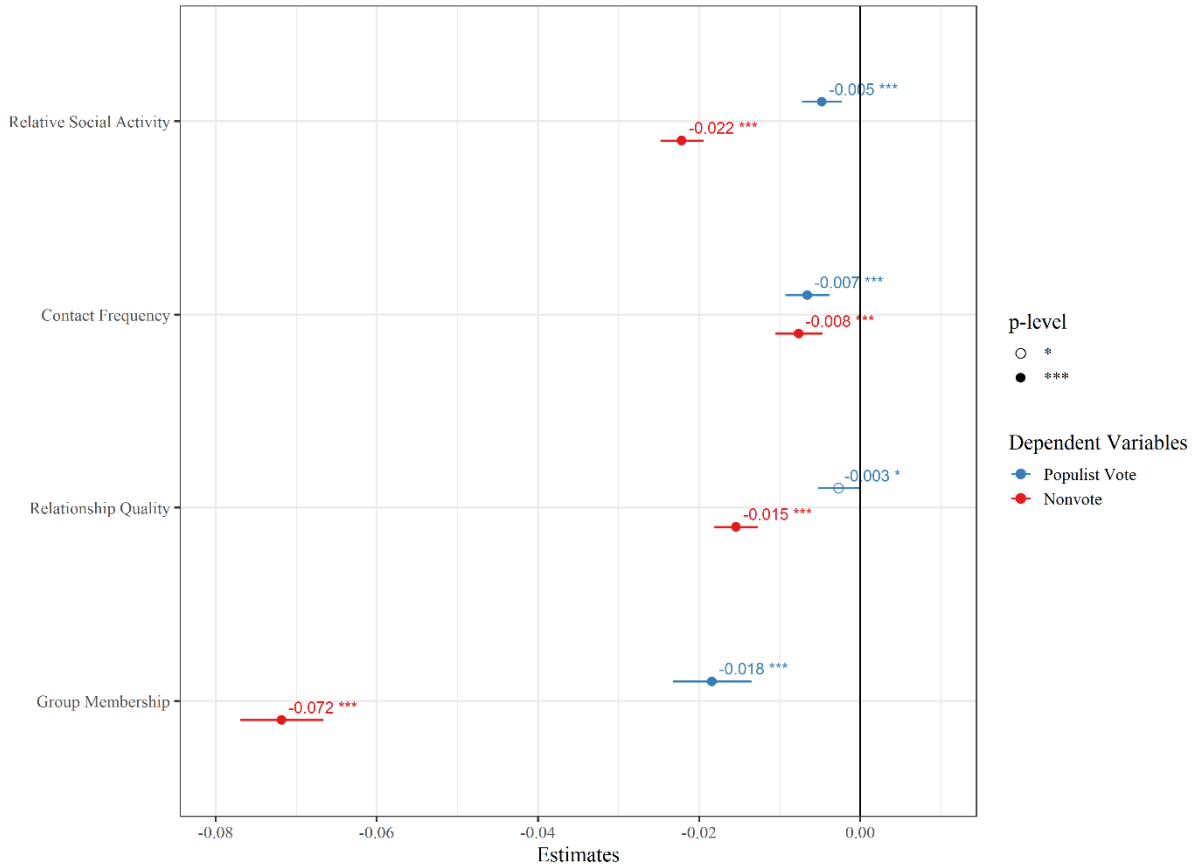
	Min	Max	Mean	Std.Dev	Median	N.Valid	%Valid
Populist vs. Mainstream	0	1	0.179	0.384	0	95866	81.260
Left vs. Mainstream	0	1	0.030	0.171	0	81144	68.781
Right vs. Mainstream	0	1	0.110	0.313	0	88430	74.957
Nonvoter vs. Mainstream	0	1	0.219	0.414	0	100795	85.438
Relative Social Activity	0	4	1.735	0.919	2	117974	100.000
Contact Frequency	0	6	3.784	1.522	4	117974	100.000
Relationship Quality	0	6	2.874	1.427	3	117974	100.000
Group Membership	0	1	0.492	0.500	0	117974	100.000
Age	18	101	51.716	17.343	52	117974	100.000
Gender	1	2	1.521	0.500	2	117974	100.000
Education	1	5	3.443	1.273	3	117974	100.000
Income	1	6	3.411	1.653	3	117974	100.000
Unemployed	0	1	0.047	0.212	0	117974	100.000
Migration background	0	1	0.124	0.329	0	117974	100.000
HH Size	1	10	2.514	1.296	2	117974	100.000
Political Orientation	0	10	5.176	2.179	5	117974	100.000
ESS Round	1	4	2.549	1.145	3	117974	100.000

After excluding respondents who were not eligible to vote in the reference election as well as those with missing information on any of the variables in the analysis, we retain a sample of 25 countries and 100,795 respondents in the analyses of non-voters and 95,866 respondents in 25 countries in the models for general populism. The analysis of the populist left is based on 7 countries (N = 32,881), that for the populist right on 22 countries (N = 80,904, see also Table 7 in the Online Appendix). The number of populist left voters ranges from 20 in the United Kingdom to 683 in Germany. For the populist right, this ranges from seven in Lithuania to 2,330 in Hungary.

5.4 Results

We begin our analysis by investigating the relationship between social belonging and electoral protest by keeping the populist voting variable undifferentiated. Since we are interested in the effects of social belonging on the probability to vote for a populist party or to abstain from voting, we do not discuss the control variables in further detail but show complete results in Table 3 in the Appendix. Figure 5.1. displays the standardized parameter estimates of the final linear probability models concerned with Hypotheses 1 and 2.

Fig. 5.1. Populist vote or Nonvoting vs. Mainstream Party: Fixed effects Linear Probability Models



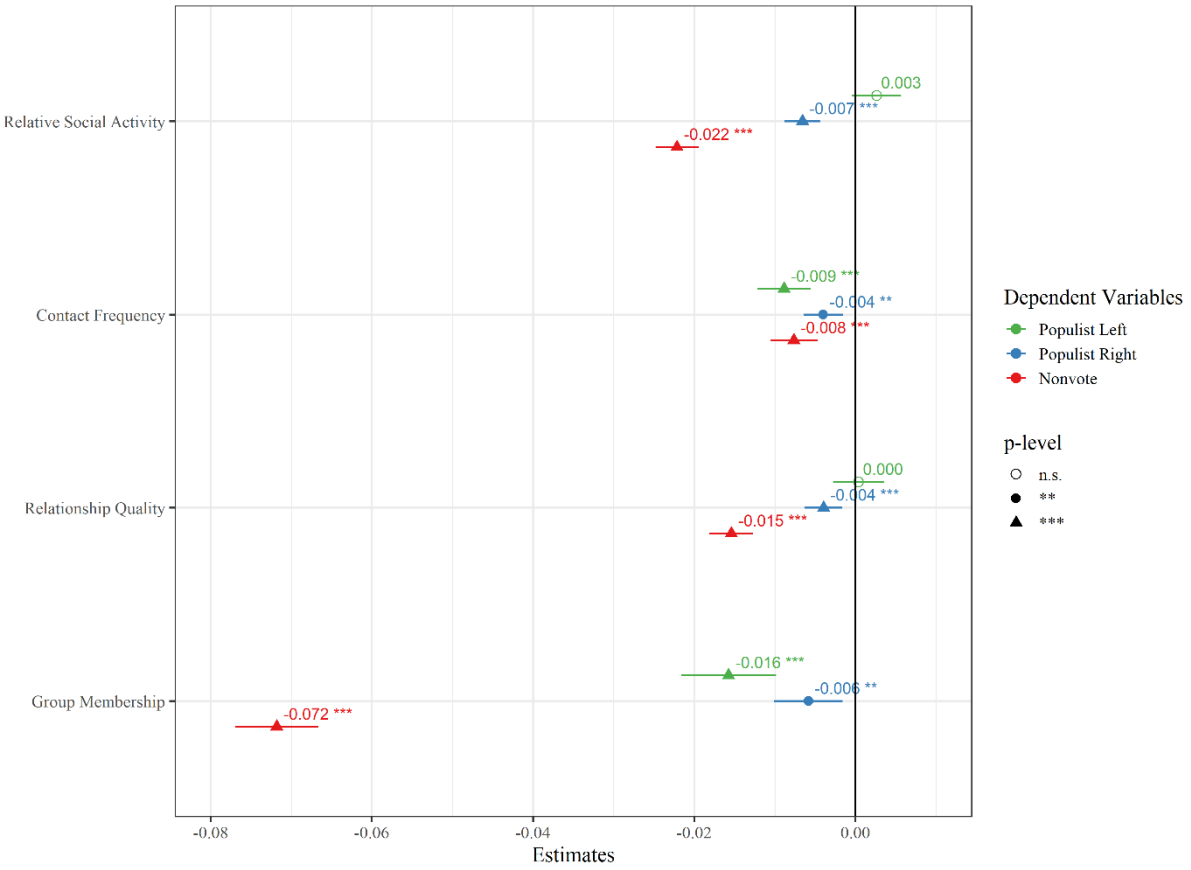
Note: Linear Probability Models (ESS 6-9), N of Models: Populist Vote = 95,866; Nonvote = 100,795. Controls: Age, Gender, Education, HH Income, Unemployment, Migration Background, Political Orientation. Includes Country and Year Fixed Effects with Heteroskedasticity-robust Standard Errors.

The results show a clear effect of social belonging on nonvoting. Relative social activity (β = -0.022, SE = 0.001, p <.001), contact frequency (β = -0.008, SE = 0.001, p <.001), relationship quality (β = -0.015, SE = 0.001, p <.001) and formal group involvement (β = -0.072, SE = 0.003, p <.001) all significantly increase the probability to vote. Formal group involvement exerts a strong effect on turnout, as group members are roughly 7.2 percent points more likely to vote compared to non-members. In comparison, every standard deviation increase in perceived relative social activity increases the probability for turnout by 2.2 percent points, accumulating to a maximum effect of 9.64 percent points over the whole scale. Overall, all four measures exert a substantial effect on turnout, even under the control of one another.

In the model contrasting populist voters and mainstream voters, the results show a uniformly negative effect. All social belonging indicators reduce the probability to vote for a populist party, although the effect sizes are smaller compared to their influence on turnout. The separate indicators for interpersonal relationships decrease the probability to vote for a populist party by 0.3 to 0.7 percent points per standard deviation. The predicted difference in the probability to vote for a populist party instead of a centre party between individuals with the lowest and highest standardized relative social activity scores is 2.07 percent points, ceteris paribus. For contact frequency, this is 2.59, and for relationship quality 1.13. Being a member of a religious community, trade union or another voluntary organisation reduces the probability to vote for a populist party by 1.84 percent points. As the absolute values of the effect sizes do not appear large at first, it is important to put them into perspective by comparing them with other well-established predictors as a benchmark. For instance, the accumulated effect of relative social activity is about half as strong as unemployment (β = 0.042, SE = 0.007, p <.001) or education (where having a university degree compared to none or primary education decreases the probability to vote for a populist party by 4.8 percent points).

Our analysis so far supports the general notion that social belonging fosters voter turnout and, to slightly lesser degree, shields from casting a vote for populist parties. As we have argued, social inclusion might have disparate effects on populist voting depending on party ideology. The subsequent analysis aims for a more differentiated view on the consequences of social belonging for electoral behaviour. To test Hypothesis 3, we fit separate models for left- and right-wing populism. Figure 5.2. shows the relevant standardized parameter estimates of the final models for the three types of electoral protest (for the complete results, see Table 4 in the Appendix). Note that the model for nonvoting is unchanged and is included for reference only.

Fig. 5.2. Differentiated Populist and Social Inclusion: Fixed Effects Linear Probability Models



Note: Linear Probability Models (ESS 6-9), N of Models: Populist Left = 32,881; Populist Right = 80,904; Nonvote = 100,795. Controls: Age, Gender, Education, HH Income, Unemployment, Migration Background, Political Orientation. Includes Country and Year Fixed Effects with Heteroskedasticity-robust Standard Errors.

The central insight of the differentiated analysis is the heterogeneous effect of social belonging for populist parties on the left and the right. In line with the previous results reported in Figure 5.1., Figure 5.2. shows that social belonging is negatively and significantly related to voting for a populist right party, irrespective of the specific indicator. Contact frequency and relationship quality decrease the probability to vote for a populist right vs. a mainstream party by 0.4 percent points per unit increase. The effect of relative social activity is slightly larger (β=-0.007, SE=0.001, p<.001).

However, the results for left-wing populist voting deviate from the findings reported in Figure 5.1. Among the indicators for interpersonal relationships, the results indicate that only contact frequency (β = -0.009, SE = 0.002, p < .001) reduces the probability to vote for a populist left party, whereas the other indicators have null effects. Interestingly, while perceived relative social activity is statistically non-significant, it is the only predictor suggesting a positive effect on left-populist voting (β = 0.003, SE = 0.002, p = .094). While non-significant effects should not be overinterpreted, it illustrates the deviating pattern for left populist voting.

Likewise, formal group membership is associated with a reduced probability to vote for right- as well as left-wing populist parties alike. The results indicate a small negative effect on right-wing populist voting (β = -0.006, SE = 0.002, p = .007) and a slightly stronger effect on left-wing populist voting (β = -0.016, SE = 0.003, p < .001). Group membership, therefore, has a smaller effect on right-wing populist voting than on left-wing populist voting. This is, however, most likely due to the indicator capturing membership in a religious community, which negatively correlates with left-wing voting but has, in some Central and Eastern European countries such as Poland and Hungary, a positive correlation with support for the populist right.

Taken together, we find that, on average, group membership reduces the probability to vote for a populist party on the left and right. However, more research is needed to differentiate under what circumstances which kind of group membership may actually be detrimental to democratic support. In light of research concerned with mobilisation networks of radical groups, it is likely that social groups can potentially mobilize populist voters under certain circumstances and hence should be considered negative social capital (Caiani, 2017; Klandermans & Mayer, 2005). To summarise, the second part of our analysis shows that, whereas social belonging is beneficial for turnout per se, it depends when it comes to voting for populist parties. There are some indicators of belonging, such as group membership and contact frequency, which reduce the probability to vote for populist parties independent of ideology. Other dimensions, however, such as relative social activity and relationship quality, are more differentiated between populist right and populist left parties. Overall, our analyses suggest that social belonging plays an important role in voter mobilisation and right-wing populist support, while it is of lesser importance for left-wing populist party support. Considering that we find these results under control of a range of covariates, as well as the interrelationships between the separate indicators of social belonging, this is a clear indication that social belonging affects populist voting and that it does so in different ways, depending on the host ideology.

5.5. Robustness Checks

When using alternative specifications, most of the estimates were highly robust and differed, if at all, only minimally from our main models. Omitting the control for political orientation did not alter any of the models substantially. When we included a social trust index composed of respondents' assessment of people's fairness, helpfulness, and trustworthiness ($\alpha = 0.77$), the coefficient for relationship quality in both the model of undifferentiated populism and right-

wing populism turned non-significant. The other social belonging effects also became slightly smaller but remained significant. While this indicates that social trust might function as a mediator, these results show that social belonging has an independent effect on (right-wing) populism. Controlling for an index of immigration attitudes ($\alpha = 0.86$), composed of questions capturing respondent`s assessment of immigration's effect on the economy, the cultural life and general living conditions, relationship quality and group membership became non-significant in the model for right-wing populism. Relationship quality also turned non-significant in the model for undifferentiated populism. The other estimates remained robust in this specification. However, given that the stance on immigration is one of the most salient differences between right- and left-wing populist parties, it is of little surprise that some coefficients in the models drop out of significance. Moreover, since conservative values and racist beliefs are related to feelings of loneliness and social cohesion (Caller & Gorodzeisky, 2021; Floyd, 2017), immigration attitudes may be regarded as mediating the relationship between social belonging and populist voting.

Furthermore, we refit the main models while additionally controlling for the place of residence (urban vs. rural), for a respondent's religion (Christian vs. other), and for social class instead of income (operationalised following Oesch 2006). In the model for populist voting, this led the relationship quality indicator to become non-significant. This specification also reduced the effect of group membership on all types of populist voting, turning it non-significant in the model for right wing populism. Most likely, this is because the Christianity indicator takes over the effect of being in a religious community. The corresponding tables A.5.6.-A.5.9. are in the online appendix.[36] These changes do, however, not lead us to modify our substantive conclusions.

[36] The robustness tests are available online at https://onlinelibrary.wiley.com/doi/10.1111/pops.12827

We further re-estimated each of the final models while excluding one country at a time ('jackknifing') in order to make sure that the results were not overly influenced by a single country (see Table 10-13 in the online Appendix). The results are generally robust, except for the coefficient for relationship quality in the model of populism, which remains negative but does not reach significance in 8 out of 26 specifications. For the same model, we find that the group membership coefficient turns non-significant when Austria, Switzerland, Germany, or the Netherlands are excluded. We do not regard these results as a refutation of our theory since the other coefficients remain highly robust and removing a large number of cases from any statistical analysis naturally reduces its power.

5.6. Discussion

Developments such as shrinking household sizes, dwindling membership in social organisations, eroding social networks, and widespread loneliness have led experts to warn of an emerging crisis of social belonging (Cacioppo & Cacioppo, 2018b; Holt-Lunstad, 2017). While consequences for health and wellbeing are well-established, our results suggest that these developments relate to voter turnout and support of populist parties as well.

Overall, our analysis indicates that strong social belonging does indeed foster voter turnout and is associated with reduced support for right wing parties. However, our findings highlight that social belonging does not shield from populism per se and that generalizing insights across variants of populism is of limited use for our understanding of political behaviour. While social belonging on the individual level is just weakly and inconsistently associated with support for the populist left, it plays an important and homogeneous role in voting populist parties on the right. This highlights once more the importance of considering the host ideology of populist parties.

That being said, formal group membership plays a special role in this dynamic, as it seems to mobilize voters and reduce support for populist parties independent of the underlying ideology. This is in line with the expectations of social capital theory. However, this also highlights that the other considered indicators of social belonging are not interchangeable, but exert an independent effect on voting behaviour.

With that, our study adds to the literature in multiple ways. First, the results qualify earlier studies based on survey data from the early 2000s that did not find a relationship between social inclusion and populism (Rydgren, 2009). As more populist parties have emerged since then, our analysis of more recent data suggests that social belonging as a predictor for populist attitudes should not be discarded. On the contrary, our finding that weak social belonging is associated with electoral demobilisation, as well as polarisation, suggests an interesting dynamic between belonging and voice and exit strategies for political discontent (Wingrove & Hirschman, 1971). With that, this study is in line with other recent accounts from the social marginalisation literature that show that perceived social marginalisation, i.e. lack of strong attachment to norms and social engagement, fosters political alienation and support for radical parties (Gidron & Hall, 2020). This also aligns with studies showing that negative emotions that likely emanate from loneliness and isolation, such as disillusionment, can lead to extreme political beliefs (Maher et al., 2018).

Second, the results highlight that conclusions about right-wing populism cannot easily be generalised to left-populist parties. While certain similarities are present due to the shared populist ideology, the vastly different host ideologies make effect heterogeneity in respect of mobilising factors very likely. Ideology serves as an interpretation scheme of the world and our results support the idea that the affective needs of lonely individuals have a closer fit with the epistemic, existential and relational functions served by right wing political ideology (Jost et al., 2009). As we argued, right-wing populism is particularly fitting for anxious, insecure

individuals, as it exploits typical motives of the conservative host ideology (Jost et al., 2003; Thorisdottir et al., 2007). While this current paper did not explicitly test the underlying causal mechanisms leading from social belonging to populist voting, our results confirm the notion that the psychological dispositions of lonely individuals leave them receptive to right-wing populist parties in particular.

Third, we demonstrated that disentangling different dimensions of social belonging can bring potential benefits in comparison to bundling measures into rough scales for reasons of simplicity and statistical power.

That being said, our analysis and conclusions should be interpreted in light of several limitations. First, as we used multiple waves of cross-sectional data, the analysis is based on statistical associations and cannot empirically test causality. While we believe that these results are informative as they point to new fields of investigation, we believe it is important to recognise this issue in order to interpret the findings appropriately.

Secondly, the concept of populism is still debated and the decision of which party should be labelled as left or right populist is difficult (Hunger & Paxton, 2021). Our operationalisation relied on a widely used and well-established dataset and we are confident that this is the most feasible procedure with respect to reliability and comparability across studies. Still, we acknowledge this issue.

Third, this study puts emphasis on demonstrating that the relationship between belonging and populist voting (in particular on the right side of the political spectrum) is theoretically sound, empirically robust and substantial in size. However, the analysis does not directly investigate the question of why this relationship is heterogeneous for left- and right-wing populist parties and should therefore be seen as starting point for future research.

Fourth, the effect sizes found in our analysis appear small at first sight. Also, statistically significant effects do not necessarily suggest substantively meaningful relationships (Bernardi et al. 2017). However, we believe that our findings are indeed meaningful, as the size of an effect can be judged best in the context of a given model. As discussed in the result section, the effect sizes of the social belonging indicators are comparable to other established predictors of voting behaviours, such as unemployment or education. Furthermore, it is worth mentioning that our indicators of social belonging are intercorrelated with one another and the joint effect of individual indicators is larger than the individual effects suggest. Taken together, both arguments speak in favour of the idea that social belonging has a substantial influence on populist voting.

While implications for greater societal developments have to be drawn with caution, we believe that our results speak to the general debate on how sociodemographic trends influence elections in the long run. Socio-demographic developments and a corresponding eroding sense of belonging and widespread loneliness might not only reduce voter turnout but also benefit right-wing populism in particular.

5.5. Data Accessibility Statement, replication material and online appendix

The R code and Data used for the analysis is available at: https://osf.io/mqg7p/

Please note that due to the amount of robustness tests (especially the jackknife estimations) the appendix only contains the most relevant additional tables. The robustness tests are available online at https://onlinelibrary.wiley.com/doi/10.1111/pops.12827

5.6. Bibliography of Chapter 5

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5.7. Appendix of Chapter 5

Table A.5.1. Analytical samples by Country *(Appendix)*

Country	Left vs. Main	Left Votes	Right vs. Main	Right Votes	Populists vs. Main	Valence Votes	Nonvoter vs. Main	Nonvotes	Total
AT			4384	673	4410	26	4388	677	5087
BE			5155	171	5165	10	5461	477	5642
BG			1323	94	2201	878	1751	522	2723
CH			2948	546	2965	17	3619	1217	4182
CZ			2949	139	3978	1029	5249	2439	6417
DE	7834	683	7406	255	8089	0	8438	1287	9376
DK			3037	369	3037	0	2846	178	3215
EE			4312	153	4312	0	5460	1301	5613
ES	3716	341	3467	92	3808	0	4202	827	4635
FI			5997	690	5997	0	6267	960	6957
FR	4030	73	4436	479	4509	0	5767	1810	6319
GB	5101	20	5305	224	5325	0	6483	1402	6727
HR			954	14	1095	141	1299	359	1454
HU			3993	2330	3993	0	2748	1085	5078
IE	6002	624			6002	0	6582	1204	7206
IS					1861	109	1945	193	2054
IT			2244	398	3241	997	2395	549	3790
LT			2753	7	3505	752	4196	1450	4955
LV					429	33	529	133	562
NL	4782	461	4696	375	5157	0	5283	962	6119
NO			4224	479	4228	4	4189	444	4672
PL			3614	1407	3614	0	3385	1178	4792
SE			5184	350	5184	0	5123	289	5473
SI	1416	255	1566	405	1934	113	1747	586	2520
SK			957	93	1827	870	1443	579	2406
Total N	32881	2457	80904	9743	95866	4979	100795	22108	117974
Total Country	7		22		25		25		25

Note: Column 'Left vs. Main' contains the analytical sample used for the model contrasting left-wing populist voters against mainstream voters. 'Left Votes' contains the number of actual votes for the populist left.

Table A.5.2. Linear Probability Models of Populist vote or Nonvoting vs. Mainstream Party *(Appendix)*

	Populist vs. Main		Nonvoter vs. Main	
	M 1	M 2	M 3	M 4
Intercept	0.148 ***	0.180 ***	0.219 ***	0.302 ***
	(0.006)	(0.008)	(0.006)	(0.009)
Relative Social Activity	-0.007 ***	-0.005 ***	-0.033 ***	-0.022 ***
	(0.001)	(0.001)	(0.001)	(0.001)
Contact Frequency	-0.004 **	-0.007 ***	0.008 ***	-0.008 ***
	(0.001)	(0.001)	(0.002)	(0.001)
Relationship Quality	-0.008 ***	-0.003 *	-0.018 ***	-0.015 ***
	(0.001)	(0.001)	(0.001)	(0.001)
Group Membership Index	-0.025 ***	-0.018 ***	-0.101 ***	-0.072 ***
	(0.003)	(0.002)	(0.003)	(0.003)
HH Size		-0.000		-0.014 ***
		(0.001)		(0.001)
Age		-0.021 ***		-0.089 ***
		(0.001)		(0.001)
Female		-0.028 ***		-0.003
		(0.002)		(0.002)
Education (Ref: ISCED 1)				
ISCED 2		0.026 ***		-0.008
		(0.005)		(0.006)
ISCED 3		0.008		-0.069 ***
		(0.005)		(0.006)
ISCED 4		-0.019 **		-0.118 ***
		(0.006)		(0.007)
ISCED 5-6		-0.048 ***		-0.155 ***
		(0.005)		(0.006)
Income (Ref: 1st Quintile)				
2nd Quintile		-0.004		-0.037 ***
		(0.004)		(0.005)
3rd Quintile		-0.010 *		-0.051 ***
		(0.004)		(0.005)

	Populist vs. Main		Nonvoter vs. Main	
	M 1	M 2	M 3	M 4
4th Quintile		-0.024 ***		-0.078 ***
		(0.004)		(0.005)
5th Quintile		-0.052 ***		-0.091 ***
		(0.005)		(0.005)
Missing Income		-0.047 ***		-0.045 ***
		(0.005)		(0.005)
Unemployed		0.042 ***		0.075 ***
		(0.007)		(0.007)
Migration Background		-0.006		0.049 ***
		(0.003)		(0.004)
Pol. Orientation		0.044 ***		0.001
		(0.001)		(0.001)
R^2	0.151	0.177	0.093	0.152
Adj. R^2	0.151	0.176	0.093	0.152
Num. obs.	95866	95866	100795	100795

*Note: *p<.05; **p<.01; ***p<.001; Linear Probability Models with Country and Year Fixed Effects. Continuous variables were standardized.*

Table A.5.3. Linear Probability Models of Populism, Differentiated *(Appendix)*

	Left Populist vs. Main		Right Populist vs. Main	
	M 5	M 6	M 7	M 8
Intercept	0.090 ***	0.099 ***	0.127 ***	0.172 ***
	(0.004)	(0.007)	(0.006)	(0.008)
Relative Social Activity	-0.000	0.003	-0.008 ***	-0.007 ***
	(0.002)	(0.002)	(0.001)	(0.001)
Contact Frequency	-0.008 ***	-0.009 ***	-0.002	-0.004 **
	(0.002)	(0.002)	(0.001)	(0.001)
Relationship Quality	0.001	0.000	-0.010 ***	-0.004 ***
	(0.002)	(0.002)	(0.001)	(0.001)
Group Membership Index	-0.025 ***	-0.016 ***	-0.012 ***	-0.006 **
	(0.003)	(0.003)	(0.002)	(0.002)
HH Size		-0.001		-0.001
		(0.002)		(0.001)
Age		-0.008 ***		-0.016 ***
		(0.002)		(0.001)
Female		-0.014 ***		-0.026 ***
		(0.003)		(0.002)
Education (Ref: ISCED 1)				
ISCED 2		0.015 **		0.018 ***
		(0.006)		(0.005)
ISCED 3		0.006		-0.005
		(0.005)		(0.005)
ISCED 4		0.005		-0.035 ***
		(0.008)		(0.006)
ISCED 5-6		-0.000		-0.060 ***
		(0.005)		(0.005)
Income (Ref: 1st Quintile)				
2nd Quintile		-0.015 **		-0.002
		(0.005)		(0.004)

	Left Populist vs. Main		Right Populist vs. Main	
	M 5	M 6	M 7	M 8
3rd Quintile		-0.024 ***		-0.008 *
		(0.005)		(0.004)
4th Quintile		-0.039 ***		-0.017 ***
		(0.005)		(0.004)
5th Quintile		-0.051 ***		-0.038 ***
		(0.005)		(0.004)
Missing Income		-0.043 ***		-0.034 ***
		(0.005)		(0.004)
Unemployed		0.058 ***		0.016 **
		(0.010)		(0.006)
Migration Background		-0.000		-0.011 ***
		(0.004)		(0.003)
Pol. Orientation		-0.055 ***		0.067 ***
		(0.002)		(0.001)
R^2	0.032	0.083	0.175	0.231
Adj. R^2	0.032	0.083	0.174	0.231
Num. obs.	32881	32881	80904	80904

*Note: *p<.05; **p<.01; ***p<.001; Linear Probability Models with Country and Year Fixed Effects. Continuous variables were standardized.*

6.1. Summary, implications and concluding remarks

This Chapter aims to provide a comprehensive overview of the cumulative dissertation. Throughout Chapter 6, I briefly review the general argument of the thesis, summarise the main takeaways of the empirical findings, and derive implications for the theory and political practice. Furthermore, I reflect on the limitations of my work and review some follow up research questions that I consider fruitful avenues of investigation for upcoming studies.

6.1.1. Summary and contextualisation

As reviewed in the introduction, Alexis de Tocqueville observed already in the 1830s that the citizens' civil and political involvement are essential means of democracy. Since then, scholars argue that democratic systems are typically characterised by a strong degree of liberalism and present participation as a right rather than a duty (Rhoden 2015). In line with Abraham Lincolns` famous quote "of the people, by the people and for the people" (Rhoden, 2015 p.563), it seems evident that democracies rest upon an active and constructive civil society by design. Some authors went so far as to call civil participation the most important foundation of democracies (Kaase 2008). This includes engaged and interested citizens, their constructive social and political participation, and a mutual understanding that the society and its democratic institutions are legitimate (Langenkamp 2021; Marien and Hooghe 2011; Roßteutscher 2009).

Although countless theories and studies are debating how these conditions can be achieved and sustained, one of the most prominent approaches (that descend from Tocqueville's observations) is the social capital theory and the concept of social embeddedness (Bhandari and

Yasunobu 2009; Putnam 1995). [37] From this perspective, social organisations and social networks are 'training grounds' that foster shared norms, reciprocal trust and collective actions through which citizens can get involved in the democratic process. Likewise, these social structures provide resources such as information, support or social control that motivate and enable citizens to partake in social life.

I began Chapter one with a critique that while scholars did emphasis the social structure, they did not incorporate the subjective nature of social relationships in these frameworks (Coombs et al. 2013; Jackson 2019). I argued that individuals can feel lonely while being surrounded by others, but at the same time can be completely satisfied while being mostly on their own, a situation repeatedly found in empirical studies (compare Chapter 1.2.1). Hence, the objective social situation does not necessarily reflect the perceived reality and both dimensions, objective and subjective, are likely to play an important role in political decision making.

In light of recent findings that an increasing number of individuals feel lonely in an ever more interconnected world, we can suspect that this distinction between loneliness and isolation might be of growing importance for social scientists (Buecker et al. 2021; Cacioppo and Cacioppo 2018).

I further argued that the consequences of this oversight are simple but substantial: while social scientists focused on generalised trust and objective network characteristics such as network size, contact frequency, group membership or network position (Jackson 2020), we know little about the relationship of the subjective state of loneliness and how it relates to political behaviour (compare Figure 1 in Chapter 1.2.3).

[37] Interestingly Putnam himself saw the connection between his theory and Tocqueville's observations, of the function of civil associations for collective actions and democracy in particular (Putnam, 2000 p.338).

Building on this, the thesis aimed to answer the question of ***whether and how the perceived loneliness relates to political participation, with a focus on electoral behaviour in particular***. This x-centred research design is necessarily broad: on the one hand, it is exploratory in the sense that it aims to identify new connections between the x-variable (loneliness) and a variety of outcomes (hence various y-variables) that can be considered expressions of political participation. On the other hand, it aims to narrow down the mutually shared mechanisms linking the predictor to the various outcomes to develop a coherent theoretical framework.

On a theoretical level, I reasoned that loneliness can be expected to have a bidirectional effect on citizens. First, loneliness causes a sense of social disconnectedness and distrust that, in turn, can lower the citizens' motivation to get involved in democratic processes. The perception to be no incremental part of society, the sense of detachment from society, and the conviction that others cannot be relied upon, might lead citizens to political apathy. In other words, I expected individuals suffering from loneliness to be more likely to choose the 'exit' option of discontent and stop being involved in the political process at all (Wingrove and Hirschman 1971).

In contrast, I theorised that some citizens might choose a more active approach and express their dissatisfaction through political protest and voting in favour of parties that oppose the current system the individuals feel disconnected from. As public demonstrations are low-threshold opportunities to express discontent and offer a potential platform to find like-minded others, they are potentially attractive settings for lonely individuals to participate in (compare Chapter 2). In a similar fashion, populist narratives correspond with the affective needs of lonely individuals. As argued in Chapter five, the populist narratives can offer a sense of community and simultaneously a way of expressing their dissatisfaction with the society lonely individuals feel disconnected from.

The evidence I accumulated throughout the dissertation supports my reasoning. Chapter two utilised data from 34 countries and shows that loneliness is associated with a reduced probability to participate in a variety of political actions, namely voting, signing petitions, and contacting politicians. In contrast, this relationship is reversed for the probability to participate in demonstrations. However, this initial analysis remained fairly descriptive and the theorised underlying mechanisms are empirically not explored. Hence, Chapter two focuses on the "whether" part of the research question.

Accounting for this shortcoming, Chapter three zoomed in on the theorised underlying mechanisms and investigated the relationship between loneliness, distrust, and perceived disconnectedness directly. One inherent issue of investigating the consequences of loneliness is that especially *long-term* loneliness alters the individuals' attitudes toward others and one cannot manipulate chronic loneliness to assess causality. Therefore, long-term panel data are incremental. The panel analysis from Chapter three utilised data from the Netherlands collected over twelve years and confirmed the expected dynamic: the lonelier individuals become, the more they report being socially distrusting. Likewise, they are more likely to report feeling disconnected from others which I interpreted as an increasing sense of social alienation. Together, Chapter 3 indicates that lonely individuals are more likely to feel alien from their social surroundings.

This insight was extended in Chapter four. In light of the alienating effect of loneliness, I argued that loneliness likely reduces the citizens' moral obligation to be an active part of democratic progress. Simply put, if lonely people feel disconnected from their fellow citizens and do not consider themselves an incremental part of society, why would they feel morally obligated to participate? This implies that lonely citizens should be less likely to perceive voting as a civic duty.

As argued by Blais and Achen, the sense of duty to vote is one of the most potent predictors of turnout and stems from a perceived moral obligation to vote (Blais and Achen 2019). Therefore, I expected the relationship between loneliness and voter turnout to be strongly mediated through the perceived sense of duty to vote. The effect decomposition in two representative datasets from Germany and the Netherlands supports this hypothesis. Furthermore, as both datasets operationalised loneliness with the two most frequently applied loneliness scales (UCLA and Gierveld loneliness scale), the study replicates the finding from Chapter two that loneliness predicts voter turnout with a more reliable measurement across two nations. This speaks in favour of the robustness of the general finding and addresses the limitation of the measurement of loneliness in Chapter two directly.

While Chapter four directly builds on Chapter three, I further explored the bidirectional effect of loneliness on political participation in the context of electoral decision making in Chapter five. Here, I used once more multi-national data from the European Social Survey to show that various indicators of social belonging (i.e., contact frequency, availability of trusted contacts, relative perception of the own social contacts, and social group membership) are associated with a reduced turnout while being at the same time associated with a higher probability to vote populist parties instead of non-populist parties.[38]

Taken together, across a variety of regions and operationalisations, I showed that loneliness exerts a substantial influence on political behaviour. Loneliness has both: a demobilising effect that reduces the probability of participating in political actions across various types of political involvement (Chapters 2, 4, and 5), as well as a mobilising effect that fosters political protest and voting in favour of populist parties (Chapters 2 and 5).

[38] Recall that I used the variables as proxy variables for loneliness, compare chapter 1.5.3. for a more detailed elaboration on the subject.

These insights have to be interpreted in light of several limitations of course, which I will discuss in section 6.1.3 in detail. Before that, however, I want to discuss the possible implications for theory and practice and outline subsequent research questions upcoming studies might consider investigating.

6.1.2. Implications for social theory

On the most abstract level, the results of the dissertation have several implications for political and sociological theory. The first implication is fairly simple. As reviewed in the introduction, loneliness is undertheorised in the sociological and political literature and we need to discuss how loneliness can be incorporated into the existing models concerned with explaining political behaviour. While I spend a great deal of time differentiating loneliness from existing concepts (compare Chapters 1.2.1 to 1.2.3.), the empirical findings suggest that loneliness is directly related to a variety of prominent concepts that are used to predict political attitudes and behaviour (i.e. alienation, sense of duty to vote, and distrust). Hence, in the larger picture, this dissertation shows that loneliness is an underexplored, but potent predictor of political attitudes and behaviour that needs to be discussed (and potentially incorporated) in the context of existing frameworks. I believe this includes the two most important contemporary theories: 1) social capital and 2) alienation.

As reviewed in Chapter 1.2.3., social capital is most often operationalised with social network characteristics as well as generalised trust beliefs (Bhandari and Yasunobu 2009; Jackson 2020). Considering that lonely individuals (if the feeling is unresolved) are known to socially withdraw (Qualter et al. 2015; Spithoven et al. 2017), cluster with other lonely individuals in networks (Cacioppo et al. 2009), and be socially distrusting (Langenkamp 2021;

Rotenberg 1994; Rotenberg et al. 2010), we can expect loneliness to exert an erosive influence on social capital and social cohesion.

In most definitions, social capital is considered a collective asset and distinct from loneliness (compare section 1.2.2). However, considering that social capital is often operationalised on the individual level (for instance, with measures of network position, group membership, and the individual`s trust), it can be debated whether loneliness might even be part of a revised version of the concept itself. Considering that Putnam's take on social capital is the predominant one in the current political science literature, I argue that loneliness should be considered a negative predictor of social capital instead of a new dimension of it. The debate on how far loneliness and social capital are related, however, should be continued in an iterative process.

In respect of social alienation, I am convinced that the dissertation does show the potential of the framework for authors interested in loneliness. Feeling disconnected from the larger social surrounding is often included in the concept of collective or cultural loneliness in the loneliness research. I believe that both lines of literature, social alienation and loneliness, are logically linked with one another and authors should attempt to learn from both frameworks. In any case, it seems evident that the individuals` loneliness can cause a sense of societal disconnectedness and, vice versa, feeling alienated from society can cause a sense of loneliness.

In the larger picture, this dissertation contributes to the growing, but still comparatively small, literature concerned with the effect of emotions on political participation by adding loneliness as a new affective dimension to the literature (Demertzis, 2014, 2020; Weber, 2013).

Overall, the theoretical discussion and accumulated evidence suggest, at the very least, that loneliness is a valid explanatory variable for political participation that needs further exploration in upcoming studies.

6.1.3. Implications for public policies

In the past, scholars pushed the idea that widespread chronic loneliness is a substantial public health risk that causes considerable damage in respect of wellbeing, life expectancy, and cost for the health care sector (Holt-Lunstad 2017; Holt-Lunstad et al. 2017).

However, this dissertation indicates that we should not simply think about loneliness as a subject for clinicians, insurance companies, and health-related policies alone. Rather, it is a interdisciplinary phenomenon relevant for politicians, social workers, and scientists from all fields of social sciences as well. As loneliness affects political participation, social trust and social cohesion, we can broaden the scope of the issue and think about loneliness as a threat to health *as well as* democratic systems.

Putting aside the normative argument that democracies supposed to be inclusive; Democracies are built on a strong civil society and citizens` involvement. In contrast, weak social cohesion and wide spread social and political distrust are destabilising social forces that put democratic systems under pressure. Understanding loneliness as an erosive influence on these vital societal resources suggests that we should take the phenomenon even more seriously than "just" as an issue of public health.

In recent years some countries started to implement first (limited) actions against loneliness. For instance, Germany and Great Britain started to develop national strategies against loneliness, realising the need for structural programs to tackle the issue (BMFSFJ 2022; Yeginsu 2018). Still, these programs are, so to speak, in their infancy and under threat to fade out as soon as the COVID-19 pandemic is overcome and other topics push on the political agenda. Furthermore, the empirical evidence of what kind of interventions directly targeting loneliness are effective is limited and need more evaluation studies are needed so that

policymakers can make informed decisions (Eccles and Qualter 2021; Mann et al. 2017; Masi et al. 2011).

On the positive side, while Interventions aiming at loneliness directly are certainly important, we know that many interventions can alleviate loneliness indirectly, which provides further arguments in favour of those policies. For instance, scholars accumulated evidence that redesigning urban areas has a variety of positive effects. Among others, more planted urban areas and close recreation areas reduce loneliness and foster wellbeing and perceived quality of life in the region (Astell-Burt et al., 2022; Bell et al., 2014). A recent panel analysis investigating residential green space and cumulative incidence of loneliness over four years confirms that increasing green urban planning can alleviate loneliness for the residents substantially (Astell-Burt et al., 2022).

Likewise, the creation of so-called social places (this involves, among others, parks, car-free city centres, community buildings, and public transportation) can foster community, social interaction and citizen involvement. Consequentially, they promote social cohesion, civil society and pro-social behaviour (Kersten et al., 2022).

As these types of interventions are also known to reduce loneliness, we can think about these political interventions as means of democracy promotion, radicalization prevention, and improvement of quality of life overall. For instance, studies found that tree planning is associated with regional increase in turnout, a mechanism probably mediated through increased social cohesion and reduced loneliness (Donovan et al., 2022).

Furthermore, I concluded in Chapter 1.5.3 that some social strata are at greater risk of being affected by loneliness. We can link this to the insights gained from this dissertation. Given that already disadvantaged social groups are more likely to suffer from loneliness, we can expect that loneliness further weakens the social position of these groups and contributes to their tendency to be politically inactive and polarized.

To conclude, this dissertation provides evidence that supports the idea that policymakers makers should consider preventing and reducing loneliness. Not only because of its role in public health but also because it influences social life and democracy.

6.1.4. New avenues of investigation – limitations and suggestions for further research

This dissertation aimed to explore the potential political outcomes of loneliness and the underlying driving mechanism. However, given the latent nature of loneliness and the plurality of ways to be politically active, answering these questions is neither trivial nor easy. The most important reason for this is that both, loneliness and political participation, can be operationalised in various ways. To account for these issues, I employed multiple operationalisations of both in the empirical parts of the dissertation. However, none of these approaches is perfect and the results should be interpreted in light of some limitations.

First, all empirical studies are based on survey data collecting self-reports of loneliness and political behaviour. In both cases, social desirability bias is an inherent issue and is difficult to assess. While the loneliness scales used in Chapters three and four are designed with this issue in mind and measure loneliness with indirect questions, the potential inconsistencies between reports and behaviour in voting cannot be fully accounted for in empirical parts of the dissertation.

Likewise, it is difficult to pin down the strength of the relationship between loneliness and voting behaviour. While some Chapters indicate a fairly strong effect size between loneliness and voting turnout (compare Chapter four), other Chapters found weak correlations (compare Chapter five). This is likely due to the varying operationalisations of loneliness. As mentioned before, measuring loneliness with direct, self-reported questions that measure how often individuals feel lonely in a time period is likely biased by social desirability. Loneliness is a

stigmatised phenomenon and questions measuring loneliness directly are likely to result in much smaller effect sizes compared to indirect scales (Kerr & Stanley, 2021).

Despite this issue, I attempted to evaluate the effect strength with a comparative approach. By using other variables in the models as benchmarks that are known to be potent predictors of the outcome, I assessed whether loneliness is only a statistically significant or a substantial predictor (Bernardi et al., 2017).

Furthermore, given that we cannot manipulate (chronic or prolonged) perceived loneliness, it is difficult to observe the 'pure' effect of loneliness without confounding from objective social inclusion. As argued before, loneliness and social contacts are just moderately intercorrelated, but they still are to a certain degree. Although I accounted for some aspects of the objective situation with variables measuring group memberships or frequency of social contacts throughout the dissertation, it is difficult to rule out confounding from this source. Similarly, the issue of causality has to be considered. While all studies include several robustness tests and Chapter three is based on longitudinal data, issues such as unobserved confounding or reversed and bidirectional causality cannot be ruled out.

In light of the discussed limitations, upcoming studies should try to replicate and validate the findings of the dissertation. For instance, some countries such as the USA or Denmark use voting registers to measure actual voting behaviour instead of reported voting. Accumulating loneliness rates in a region and investigating their associations with turnout rates (i.e., actual behaviour) would allow gaining insights into the actual connection on the macro level. Likewise, as soon as more longitudinal data measuring loneliness become available, we can confirm the results based on comparisons between individuals with methods based on within-person variation over time. Such data also increase the chance to find naturally occurring events that can be used to design natural experiments and to get a better understanding of the causality of the relationship.

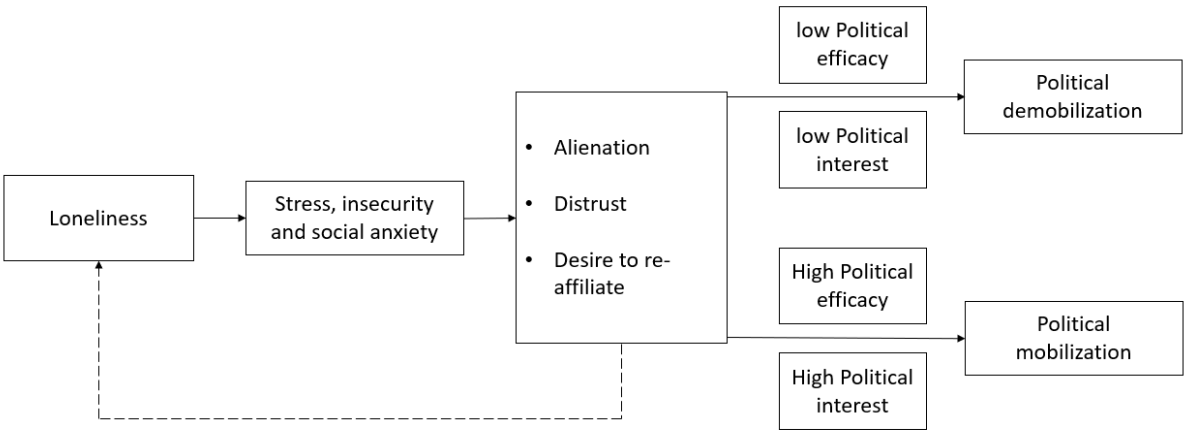
Besides validating and extending the results of this dissertation, there are new questions that arose during my project that upcoming studies might consider. To conclude this thesis, I want to briefly outline a couple of research questions that I believe to be especially fruitful for further developing this field of inquiry.

One immediate puzzle that came up during the dissertation is the question of conditionality. Namely, under which circumstances does loneliness lead to political mobilisation or demobilisation? The general model developed in this thesis suggests that lonely individuals are more likely to feel disconnected from society and to be less trusting. I argued that this either leads to political apathy or political polarisation. For instance, as we have seen in Chapter five, loneliness is associated with non-voting as well as right-wing populist voting. Likewise, Chapter two found a positive association between demonstrations and loneliness, but a negative one between voting and loneliness.

However, the dissertation is shy of an answer on which conditions determine either outcome. In respect of voting behaviour, we can ask when lonely citizens decide to abstain from elections and when they take part and support a radical or populist party. In more general terms, we can ask when loneliness leads to political disengagement (also in respect of other types of political action such as signing petitions) and when it leads to an increased motivation to change the political situation.

On a theoretical level, I expect two mechanisms to play a deciding role in the question of when loneliness leads to mobilisation or demobilisation: political self-efficacy and political interest.

Fig. 6.1. Conditionality of the link between loneliness and political participation



In respect of the first, lonely individuals with low political efficacy can be expected to abstain from participation. Recall the argument from Blais and Achen (Blais and Achen 2019) that the motivation to vote is highly dependent on the expected personal gain from the vote and the moral obligation to vote. Considering the distrust and alienation caused by loneliness, I argued that lonely individuals are characterised by a reduced sense of duty to vote. In combination with low efficacy, they are likely to perceive their vote as meaningless and abstain. In contrast, if lonely individuals with high efficacy feel alienated and distrusting, they might try to support parties that oppose the system they feel alienated from. As I argued in Chapter five, I expect the affective needs of lonely individuals to correspond with populist narratives. Investigating this match between affective needs and populist narratives directly is a fruitful research question as well.

A similar argument can be made for political interest. If lonely individuals are not interested in political questions and issues, they are not likely to consider political movements or ideologies as meaningful ways to alleviate their loneliness. Hence, they likely won't take part in collective movements or seek out ideological movements. In contrast, high political interest means a strong personal involvement with political topics and, consequentially, a higher probability to use political movements as a context for re-affiliation. This is not limited to

political groups but can extend to civic and social organisations. On a practical level, however, differentiating both moderating factors might be challenging as political interest and political efficacy tend to be highly inter-correlated (Balch 1974; Craig and Maggiotto 1982; Reichert 2016).

Furthermore, the dissertation identified alienation and distrust as main mediating variables linking loneliness to political participation. This list, however, is most likely incomplete and upcoming studies might consider investigating alternative moderators as well.

Finally, I did not investigate which social moderators influence this relationship. Considering that loneliness exerts its influence through alienation and distrust, we can expect societal forces that influence either to play a moderating part in the relationship between loneliness and participation. Extensive and available social infrastructure is one such example.

This list of potential follow-up question is not exhaustive by any means, but illustrates at least a couple of avenues upcoming social scientists might explore.

6.2. Concluding remarks

Every scientific contribution has to be understood in the context of the literature. I believe that this is of particular importance as no research project can account for all its` limitations and possible confounders. Likewise, even in the context of a dissertation, it is not feasible to consider all nuances of a research question at once. Luckily, this is not necessary as research does not happen in a vacuum, and studies complement each other as they replicate, extend, and revise previous findings. I outlined above how this thesis relates to the existing literature and how upcoming studies might build on this work. Going a bit further, I want to use the concluding remarks to elaborate on some additional points that found no proper place in the thesis before and which I believe to be helpful to set this thesis into context.

When I started my dissertation, I was interested in objective social networks that I believe to be a key predictor of political attitudes. After all, network homophily and social influence between peers are well-established phenomena in the literature. In fact, I still believe the social structure we are embedded in to be one of the most influential social forces forming our attitudes and actions.

However, although social theorists discussed the issue of subjectivity and alienation early on (thinking about Max Weber, Ervin Goffman, or Émile Durkheim), I noticed in my first weeks of literature research that I rarely found empirical, quantitative studies operationalising the subjective representation of social relationships and, if they did, they did so with superficial operationalisations. [39]

[39] Although often as alienation from the larger society instead of a sense of inadequate social ties. Compare chapter 1.2.2. and 1.2.3.

The predominance of objective network characteristics in sociological literature is of little surprise as they are prominent subjects of social theory, basically since sociology emerged as a field. However, *the extent* to which loneliness was overlooked was surprising. Hence, the whole dissertation originated from my curiosity whether my impression is accurate and why that might be.

In retrospect, I believe this to be due to disciplinary boundary work (Gieryn, 1983). Purposely upheld divisions between scientific fields have a long tradition in academia, and loneliness continues to be mostly the subject of psychological studies despite its value in explaining sociological phenomena. However, we know that innovation and process often stem from an organisational exchange, brokerage between fields, and individuals carrying perspectives and knowledge between organisational spheres (Obstfeld, 2005). This is why this thesis builds on literature from various fields (among others, neuro-science, psychology, sociology and political science). I believe there is much to gain from developing integrative theories.

Secondly, I like to highlight that our empirical models explaining attitudes and behaviour should include subjective and objective aspects of the individual's social relationships. As summarised by Smet and Van Ham, there are already countless predictors for political behaviour despite the lack of "a consensus within the research community on a 'core model' if turnout", and adding another one might seem counterproductive (Smets and van Ham 2013 p. 345). However, the authors leave little doubt that the individual's close social relationships must be part of such a 'core model'. Personally, I grew convinced that this should not end with operationalising objective social embeddedness, but should also include the mental representation of these relationships. In the end, while available social contacts are certainly important, much of their value is lost if I do believe them to be unavailable or not helpful.

Considering that I started almost every other Chapter of this thesis with a quote, I think it is fitting to end the final Chapter with one as well. I stumbled upon this one in one of the first sociological writings I ever read, and it relates nicely to the points I made above. Explaining political behaviour with social relationships is not enough. It's about the perception of these relationships as well.

"If men define situations as real, they are real in their consequences."

(Blanchard et al., 1929 p.572; as cited by Merton, 1948 p.193)

6.3. Bibliography of Chapter 6

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7. List of Tables

8. List of Figures

9. Declaration of originality for submitting a dissertation (Eigenständigkeitserklärung)

Hiermit erkläre ich, Alexander Langenkamp, dass ich die vorliegende Dissertation mit dem Titel **„The Issue of Loneliness for Democracies – Alienation, Demobilisation, Polarisation?“** selbständig, ohne fremde Hilfe und in eigenen Worten niedergeschrieben habe. Ich versichere insbesondere, dass ich alle wörtlichen und sinngemäßen übernahmen aus Quellen und anderen Werken als solche gekennzeichnet sowie vollständig aufgeführt habe.

Ich bestätige, dass meine vorliegende Arbeit nach den geltenden Prinzipien der guten wissenschaftlichen Praxis der Goethe Universität Frankfurt und der Deutschen Forschungsgemeinschaft verfasst ist.

_____

I, Alexander Langenkamp, hereby declare that I have written this dissertation entitled **„The Issue of Loneliness for Democracies – Alienation, Demobilisation, Polarisation?“** independently, without outside help and in my own words. In particular, I assure that I have marked all literal and analogous information from sources and other works as such and listed them completely.

I confirm that my present work has been written according to the applicable principles of good scientific practice of the Goethe University Frankfurt and the German Research Foundation.

_____

Ort/Datum/Unterschrift