

Filter Bubbles, Echo Chambers, and Epistemic Bubbles in English Young People

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Declaration

I, Scott Downham, hereby declare that this thesis and the work presented in it is entirely my own. Where I have consulted the work of others, this is always clearly stated.

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Abstract

Particularly since the shock popularity and victories of Brexit and Donald Trump, there has been increased concern that citizens exist in democratically dysfunctional ideological bubbles, where they only hear likeminded perspectives. Researchers examined the extent of these bubbles - particularly through analysis of digital platforms such as search engines and social media. Our understanding of this 'embubblement' and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). The study explores embubblement in this marginal, perhaps high-risk group, who get more news online and are considered more impressionable. This mixed-methods digital ethnography contains a 10-wave cohort study, diary study hybrid. One day a month for 10 months, English participants aged 16-18 (n=20) captured any political communication they encountered across all mediums - online and in-person. Descriptive statistics using regression analysis suggest strength of partisanship positively correlates with embubblement, though no participants were strongly embubbled (even strong partisans). No statistically significant correlations emerged between embubblement and increased embubblement over time or political polarisation. However, embubblement positively correlated with degree of political engagement. Ethnography explored what causes embubblement. Embubblement occurred rarely, influenced by structural factors: 'socialising agents', including family, peers, education, media, and events. This thesis makes a new contribution, a typology of factors shaping embubblement, incorporating an agent-centred approach. Main factors were agreeable news sites, apps and hyperpartisan social media communities. The research addresses questions of agency – for example, a user making a new TikTok account, to reset personalisation algorithms after realising the existing ones were radicalising her. Implications for schools and policy-makers are addressed through recommendations on how to encourage political engagement without embubbling citizens.

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Chapter 1 Introduction: The Filter Bubble Narrative

Core Argument

Particularly since the shock popularity and victories of Brexit and Donald Trump, there has been increased concern that citizens, en masse, exist in democratically dysfunctional ideological bubbles, where they only hear likeminded perspectives (Kagarlitsky, 2017). However, researchers have recently deemphasised the extent of these bubbles, which supposedly occur particularly online, via the personalisation algorithms of digital platforms such as search engines and social media (Fletcher & Nielsen, 2018). This study therefore explores specific causes and effects of ‘embublement’ in one marginal and perhaps high-risk group, young people, who are considered more impressionable and get more of their news online (Hooghe, 2004; Ofcom, 2022).

This thesis’ core argument is that our understanding of embublement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is ‘good’). Amid the ‘populist wave’ of the Brexit and Donald Trump victories, there has been concern about rising political polarisation and hostility (Banaji & Bhat, 2022; Duffy, Hewlett & McCrae, 2019). Concerns have famously centred upon online ‘filter bubbles.’ Filter bubbles supposedly occur when corporations’ computer algorithms tailor content to the user, primarily social media feeds and search results (Pariser, 2011). They supposedly block out other perspectives, polarising pre-existing beliefs. Some suggest opposing partisans could effectively be living in different realities with many democratically dysfunctional consequences (Nelson & Webster, 2017; Garret, 2009a).

The core argument involves the selective exposure literature, on partisans’ underlying preference for opinion reinforcing information (Berelson and Steiner, 1964). The filter bubble narrative overlooks a key moderator variable, strength of partisanship. Note that

in this thesis, having an opinion on an issue makes one a partisan. This definition has nothing to do with political parties. Around 47 percent of UK citizens are not even interested in politics, let alone strong partisans (Ofcom, 2017). Hence much of the population are unlikely to be invested enough in politics to partisanly curate their news sources and newsfeeds to cultivate a bubble. Moreover, the selective exposure literature is too narrow and limited to draw conclusions about whether selectivity translates into actual embubblement.

This necessitates a new holistic methodology, and synthesis with two other literatures. The thesis therefore adds to the political socialisation literature, because the thesis provides the necessary broader context of many agential and structural factors that influence citizens' information exposure. This is beyond partisanship, for agential factors, and tech companies for structural factors. This political socialisation literature contributes its dominant age, period, and cohort (APC) analysis (Neundorf & Smets, 2017). It examines changes in citizens' attitudes and behaviour, operationalised longitudinally across: age (years since birth), period (the year), and cohort (year of birth). These changes occur though structural factors beyond tech companies, mainly 'socialising agents' such as family, education, peers, media, and events (Smets, 2017).

The thesis also adds to the young people's politics literature, arguing that a main agential factor, participant ideology, must be better operationalised, to avoid error variance found in current measures of selectivity that are subjective and reductive. It is more complicated than whether 'liberals' consume 'liberal' sources and 'conservatives' consume 'conservative' sources. The young people's politics literature identifies more granular 'political tribes' and cleavages around materialist and post-materialist values, for example (Sanders & Twyman, 2016; Inglehart, 2005). Embubblement may be beneficial for democracy if it correlates with increased political engagement. That said, the literature correlating selective exposure and political engagement has been very inconclusive (Matthes, Knoll, Valenzuela, Hopmann & Sikorski, 2019). The thesis instead calls for narrower concerns with specific mediums and affordances, such as TikTok's 'For You' feed, which contribute to a significant degree of embubblement and radicalisation of some individual citizens.

It is feasible that the filter bubble narrative is more a cultivation theory effect; people thinking reality aligns with what they see in (their news and social) media, the more they use it (Morgan, Shanahan, Signorielli, Morgan & Shanahan, 2014). This is so for members of news media and the politically engaged; some commentators, politicians, journalists, academics, university students and activists. There will be a disproportionate number of strong partisans here, who might actually spend too much time in their media filters, obsessing over the hostilities *among themselves* day in, day out. Political interest positively correlates with education (Neundorf & Smets, 2017). Therefore, these highly educated citizens are most likely to be strong partisans in bubbles. Meanwhile, almost half the UK population, who lack strong political beliefs needing such affirmation, are not in bubbles. Arguably this contradicts the commonplace notion that it is the, less well-off, Brexit and Trump supporters who are the ones embubbled. However, again, it is progressive minded elites perpetuating this, based on their encounters with other elites (vocal, prominent, strong partisans for Brexit and Donald Trump).

Research Question

As justified above, the research question addresses the core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This novel qualitative-led approach could establish the basis for a new research agenda for others to follow. Given the small, unrepresentative sample in the end, this is merely an exploratory study, exploring the 'black box' and textures of filter bubbles, which the present quantitative-only studies cannot, and aiding the novel theoretical development. Therefore, the claims below are not formal hypotheses. They merely guide the descriptive statistics, that contextualise the qualitative analysis of this particular sample, so are context specific and cannot be generalised beyond that.

Strength of partisanship positively correlates with young people's embublement.

Those with low partisanship are unlikely to be invested enough politically to curate their information environments and therefore cultivate bubbles.

Young people's embublement positively correlates with time.

This explores one of embublement's possible implications for democracy – that those in bubbles fall further into bubbles over time, going down a 'rabbit hole' of more and more opinion reinforcing content.

Young people's embublement positively correlates with polarisation.

This explores another of embublement's implications for democracy, whether being in a bubble leads to political views strengthening over time.

Young people's embublement positively correlates with political engagement.

Embublement may instead have a benefit for democracy if being in bubbles of opinion reinforcement has a mobilising effect on citizens.

RQ₁: What contributes to young people's embublement?

The qualitative, second half of the analysis links to the quantitative first half, by exploring broader contributors to embublement across 'socialising agents'; family, media, peers, education, and events, to better define the citizens who may become embubbled.

Methodology

The methodology is covered in chapters four and five. The study offers a corrective normative function in contesting the filter bubble narrative. This mixed-methods digital ethnography contains a 10-wave cohort study, diary study hybrid. One day a month for 10 months, participants aged 16-18 (n=20) captured any political communication they encountered or did, across all mediums online and in-person. They primarily made phone screen recordings, but also used photo, video, sound recordings and writing. Embubblement is operationalised not just as the extent to which participants encounter disagreement; avoiding 'echo chambers' and, online, 'filter bubbles', but whether citizens are actually open-minded to the opposing perspectives encountered – otherwise they are still trapped in an 'epistemic bubble', a concept borrowed from social epistemology in philosophy and defined and explored through the thesis.

Findings

Findings are covered in chapters six to eight. Regression analysis suggests that while strength of partisanship does positively correlate with embubblement, no participants were particularly embubbled, even all the strong partisans. There were only non-statistically significant positive correlations between embubblement, and increased embubblement over time, also political polarisation. There is an advantage to embubblement in positively correlating with political engagement. Digital ethnography explores what is causing embubblement. Substantial embubblement was observed only in a couple of instances, influenced by specific structural factors, 'socialising agents' such as family, peers, education, media, and events. A typology is constructed, of factors in embubblement that are structural - mainly agreeable news sites and apps, plus some hyperpartisan social media communities, and agential - notably a user making a new TikTok account, to reset personalisation algorithms after realising those were radicalising her. Recommendations follow on how to encourage political

engagement but without citizens falling into ideological bubbles. This can inform schools, political literacy and engagement NGOs, tech companies, and policymakers.

Justifications

On justifications for the study, it can have impact outside and in academia. Outside academia, these issues remain prominent post the 2016 EU referendum and US election. Some already consider the concerns to be overblown, typified by the *Wired* headline, 'Your filter bubble is destroying democracy' (El-Bermawy, 2016; Haim, Graefe & Brosius, 2018). Effects must be better defined, to limit fearmongering come the next surprising political outcome. On policy impact, there is a push to improve political literacy, for instance in schools, given the threat of misinformation; 'fake news', 'post-truth politics', 'alternative facts' and Russian bots influencing western democracies, all problems amplified by embublement. This research can inform political literacy initiatives including with NGOs, how citizenship is taught in the UK, government policy in this area, plus help to boost young people's political literacy, engagement, and turnout in elections. This is potential long-lasting impact, after the project ends. Once encouraged, political engagement tends to become habitual (Hooghe, 2004). Young people can also go on to encourage engagement in adults, as 'trickle up' or reciprocal political socialisation (Stoker & Bass, 2011).

For academic outcomes: this interdisciplinary research speaks to literature from several fields. This includes political: communication, philosophy, psychology, socialisation, plus young people's politics, sociology, social epistemology, and journalism studies. Impact includes yielding rich data for further studies. One aim is to reform selective exposure methodology, which has some of the same limitations as 70 years ago (Garret, 2009a). The literature is almost entirely quantitative and US-centric. UK-based research is timely and crucial to determine generalisability. Causing media concern recently is an emergent literature claiming YouTube radicalises young people; from following conservative and libertarian commentators, to joining 'Alt-Right' white nationalist bubbles (Lewis, 2018; Tufekci, 2018). This study can seek currently scarce empirical

evidence. Meanwhile, hybrid media system literature gains a rich, agent-centric perspective (Chadwick, 2013).

The thesis contributes to the young people's politics literature by offering a holistic, micro-level account of young people's exposure and engagement. The current overreliance on quantitative, macro level survey and polling data may obscure much detail and context (Vromen, 2003). The thesis should be able to better diagnose exactly what in young people's information environment inhibits or enables their political engagement. On political engagement, also explored is a 'democratic dilemma' of political engagement possibly increasing with embublement. Theoretically, it would follow that they are positively correlated (Huckfeldt, Mendez & Osborn, 2014). It may be difficult for one to simultaneously maintain both democratic ideals of diverse exposure and participating. When citizenship educators advocate these, cross-cutting exposure to other perspectives can bring uncertainty and hostility, which may discourage interest and engagement. Meanwhile, isolating into warring tribes should encourage political engagement, but those engaged might then be the least roundly informed, not to mention least civil. Empirical evidence though has been extremely mixed (Matthes et al, 2019). What this thesis contributes to the political socialisation literature is a holistic political socialisation perspective on the filter bubble narrative, which is absent so far. Its age, period, and cohort (APC) analysis and socialising agents are considered.

Further justifications for the study include investigating whether young people get adequate political information to act as citizens. That is an important first step towards healthy, active citizenship, enabling political participation (Dennis, 2016). Democracy relies on an informed electorate exposed to a plurality of views (Bartels, 1996; Union, 1997). This builds political tolerance, including towards undesired outcomes (Mutz, 2001; Garret, 2009a). Hence why one of the UK's foremost political theorists Bernard Crick (2000) advocated the need for political literacy, pluralism, and tolerance as part of the secondary school curriculum. The importance of open communication goes back further to Enlightenment philosopher John Stuart Mill's (1859) *On Liberty*. It should offer society a common cultural forum, national identity, sense of purpose and bedrock of agreed facts (Webster, 2010; Stroud, 2007). Outside of media, people may forego

hearing differing perspectives due to residential balkanisation; people living around and befriending others similar to them, plus the spiral of silence, wherein people withhold perceived unpopular opinions (Huckfeldt & Sprague, 1995; Noelle-Neumann, 1974). Only reinforcing political views fuels polarisation, weakening social cohesion (Pettigrew, 1998). It risks radicalisation then terrorism (Geeraerts, 2012). Selective exposure may hinder journalism's 'fourth estate role' of holding power accountable if partisans consistently block out criticism of political actors on their side (Lewis, Williams & Franklin, 2008).

This thesis integrates into the literature the 'epistemic bubble', a third, lesser-known filter from social epistemology (Nguyen, 2018). Studies traditionally combat the filter bubble narrative by showing partisans do get 'crosscutting exposure', often on Twitter. However, strong partisans arguing on Twitter may still be in an epistemic bubble; a filter in the mind that has partisans automatically dismiss, distrust, uncharitably interpret or mock any opposition. This can be influenced by cognitive biases protecting deeply held beliefs and demonising the out-group. Crosscutting exposure may then just reinforce their beliefs, called the backfire effect (Nyhan & Reifler, 2010). Still, the argument here is that most people are not strong partisans. They do not have their perspective of reality constantly warped and reinforced in line with an ideology. Strong partisans do, through daily exposure and engagement with other partisan actors and information sources, either friendly or hostile, thanks to their epistemic bubbles. There are three types of filters a citizen can be in at once. They have not been well defined and operationalised, nor considered together in one study. To operationalise embubbliment holistically, this thesis coins the 'triple filter model' of embubbliment, detailed in chapter three, the theoretical framework.

Lastly, studying young people is valuable to political scientists interested in these themes because it provides an understanding of how gen Z behave, as natives of the digital media ecology. Alongside embubbliment, this research can inform another very topical issue in political science, 'fake news' or disinformation. Disinformation is rooted in how widespread niche ideological bubbles are, since these bubbles harbour and amplify the disinformation (Zimmer, Scheibe, Stock & Stock, 2019). Ultimately, we

continue to see embublement's deadly public health and terrorism threats, in cases such as anti-vax, far-right, Qanon, incel, and Islamist ideological bubbles online (Ebner, 2021). Embublement and political engagement may positively correlate (Matthes, Knoll, Valenzuela, Hopmann & Sikorski, 2019). Hence, one aim is to provide recommendations on how to encourage engagement, but without citizens falling into ideological bubbles. This can inform policymakers, tech companies, political literacy and engagement NGOs, schools, and citizens.

Limitations of Previous Literature

The literature review is in chapter two. This study makes broader theoretical contributions that address limitations of, and bridge, three main literatures that do not always speak to each other. These are: political communication, political socialisation, and young people's politics.

Political Communication

As noted by Stroud (2018), a prominent figure in the subfield, selective exposure is a cornerstone of political communication research. If we do not understand when and why people select information, we will have an incomplete understanding of communication effects. Therefore, the theoretical contribution to political communication literature is to better define the boundary conditions of the selective exposure hypothesis and its effects. In this thesis, that is in the context of the rapidly evolving media ecology, rather than just in the lab or single mediums. Selective exposure theory is informed by samples of adult partisans. This study can speak to the 'impressionable years' hypothesis in the political socialisation literature (Hooghe, 2004). This suggests young people are most open to opinion and behaviour formation based on the politics around them (Neundorf & Smets, 2017). Thus, it is theoretically important to understand whether this protects them from embublement.

The extent citizens grow up in ideological bubbles is not known. Neither are the implications for democracy. This is also because of our current theorisation of selective exposure. It is understood simply as whether participants seek out 'pro-attitudinal' or 'counter-attitudinal' information. A key lesson from this thesis' pilot study was that citizens *do* sometimes seek out counter-attitudinal exposure, for instance for mockery or to express outrage (Downham, 2018). This effectively becomes pro-attitudinal exposure. An example is progressives sharing around a *Sun* article, to mock it. Despite this being counter-attitudinal exposure, it likely reinforces their pre-existing beliefs, called the backfire effect (Nyhan & Reifler, 2010). This is because they do not trust *The Sun* or take it seriously. Yet, existing studies would mislabel that as healthy cross-cutting exposure.

Political Socialisation

From the political socialisation literature, a lot is known about the influences of age, period and cohort, plus socialising agents such as family, education, peers, media and events, as covered in the literature review (Neundorf & Smets, 2017). However, their influence on embubbling has thus far been out of this literature's purview. Bridging these literatures can contribute an understanding of how citizens are socialised, but in the current media environment. Existing studies overwhelmingly concern single mediums, mainly online news, single services, mainly Twitter, and a single unit of analysis, mainly tweets or news articles. This ignores how citizens consume diverse older, renewed, and newer media within the hybrid media system (Chadwick, 2013). Indeed, particular concern about young people's embubbling is emerging due to the proliferation of hyperpartisan sources online. Examples include BuzzFeed and Vice, targeting left wing young people, and YouTube commentators leading young people to far-right bubbles (Dennis & Sampaio-Dias, 2017; Lewis, 2018; Tufekci, 2018).

Young People's Politics

Now let us examine the young people's politics and political engagement literature. Here, increasing engagement, especially young people's, is conceptualised as only a good thing (Sloam & Henn, 2018; Xenos, Vromen & Loader, 2013). Little attention is paid to drawbacks which should be identified and tackled. Consider the aforementioned 'democratic dilemma' on openness to seeing other perspectives and engagement possibly being inversely correlated. To illustrate: it is great that a young people's politics organisation such as Turning Point UK motivates students to get politically active. However, engagement often comes with in-group, out group hostility.



Figure 1: Meme from conservative activist organisation, Turning Point UK (2020).

Engagement may shift young people into echo chambers, filter bubbles and epistemic bubbles, away from – what is to them – their horrid political opposition. This also likely shifts them away from chances of civil democratic deliberation or understanding between and across the sides, and if necessary, changing one’s politics. Consequently, the literature’s conception of increasing young people’s engagement as only a good thing could be more nuanced. That is, if the theoretical model here finds engagement

positively correlating with embubblement, hence also polarisation. Ways will be theorised of maintaining engagement without falling into ideological bubbles, as practical recommendations for policymakers, young people's political literacy and engagement NGOs, schools, and citizens. Such political literacy is especially needed for the young people who might be socialised by such hyperpartisan sources in the newer media ecology 24/7.

The young people's politics and engagement literature also host the recurring debate around lowering the voting age, from 18 to 16 in the UK (Pickard, 2019). There is a lot of theory about whether young people are informed and engaged enough to vote. Embubblement is likely a factor. It is suggested that embubblement prevents some citizens being roundly informed. Young people in bubbles being hostile or antagonistic towards their political opposition may increase their engagement. Yet, embubblement is a factor that falls outside the usual, simpler predictors of engagement included in models, such as standard demographic traits and political variables. Thus, the models below will speak to whether 16-18-year-olds can have the political literacy to be engaged, without falling into ideological bubbles detrimental to being roundly informed.

Thesis Structure

Chapter one introduced the thesis. Chapter two, the literature review, examines the literature primarily on selective exposure: partisans' underlying preference for opinion-reinforcing information (Berelson and Steiner, 1964). It argues that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). Chapter three, the theoretical framework, instead argues for a nuanced 'triple filter' model of embubblement.

Chapter four, methodology, proposes holistic data collection methods for generating data which, after the theoretical framework is applied, can be used to test for, and

explain, embubblement. The methodology that the chapter proposes is a mixed methods approach to the subjects of filter bubbles, political polarisation and the consumption and sharing of political news. The chapter contains the research question, and the ontology and epistemology used in this research. Covered next are sampling, recruitment, the digital ethnography, a cohort study, a diary study hybrid, a survey, an ethnographic chart, and interview hybrid. Chapter five, a second methodology chapter, proposes data analysis methods argued to be more holistic than current ones. The chapter is structured by the order of methods used, regression analysis, then ethnography's thick description, exploring RQ1, before discussing limitations and concluding.

Chapter six, the quantitative findings, provide a rigorous top-level overview of the data, descriptive statistics not to generalise to a wider population, but merely to contextualise the qualitative work. It puts into practice the argument for avoiding the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This flows into chapter seven, qualitative findings, which looks into the detail behind the numbers to explore what broader factors contribute to embubblement on social media. Chapter eight, another qualitative chapter, explores the other factors across the socialising agents, family, media, peers, education, and events. The main argument there is that concerns should shift to specific platforms and affordances, primarily TikTok's 'For You' feed. Chapter nine, the conclusion, summarises and relates findings back to the literature. It argues the case for some recommendations based on the findings, notably calling for improved political literacy provision in the UK, particularly around avoiding some citizens going too far in the other direction to apathy, becoming hyperpartisans trapped in bubbles.

Chapter 2 Literature Review: Limitations that Hinder our Understanding of Embubblement and its Implications for Democracy

Now chapter one has introduced the thesis, this chapter can begin to build the thesis' core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This chapter specifically does that by arguing that the literature has many limitations, suggesting that the extent of embubblement, and its negative implications for democracy, are unclear. The literature review investigates what is known and not known about the extent to which citizens grow up in bubbles. Next are the implications for democracy: in terms of citizens becoming polarised, and whether there are positive implications for democracy via increased political engagement. The three literatures covered, as discussed in the introduction are: selective exposure, political socialisation then young people's politics.

Selective Exposure Literature Review

Embubblement is operationalised via selective exposure; the extent citizens get only agreeable, opinion-reinforcing information (Berelson and Steiner, 1964). The argument here is that due to limitations of the literature, the exact extent of citizens' selective exposure, moderated by strength of partisanship, is not known. This literature review has four parts. Section one contextualises this research and introduces selective exposure. Section two outlines and evaluates the selective exposure tradition. This is structured into the four main methodologies defined by Clay, Barber & Shook (2013); retrospective reports, behavioural intentions, observed behaviour and aggregate behaviour. Example studies illustrate further critiques, which will inform this thesis' new methodology. Section three investigates broader contributors to embubblement. Finally,

section four rates the four approaches in terms of internal and external validity, before concluding.

The selective exposure hypothesis suggests individuals seek information that reinforces their beliefs, and avoid dissent (Cookson, Engelberg & Mullins, 2023). It is not unique to politics or a particular medium, but manifests in political communication when partisans seek sources they align with ideologically. The construct validity of this 'partisan selective exposure' is still contested, and methodologies remain limited despite research spanning over 70 years now (Iyengar, Hahn, Krosnick & Walker, 2008; Nelson & Webster, 2017; Stroud, 2007; Murphy & Westbury, 2013; Garret, 2009a). Hence the need for a new methodology. This section therefore takes a more methodological, less thematic approach. There are too many limited and conflicting studies simply looking for selective exposure, and not enough formulating a nuanced and holistic methodology to do so.

Selective exposure's definition is noncontroversial, defined as above in every study found. It comes from social psychology, particularly Festinger's (1957) cognitive consistency theory (Simon & Hollyoak, 2002). This suggests people require consistency in their beliefs and behaviours. A contradiction causes dissonance; psychological discomfort, as per cognitive dissonance theory (Festinger, 1957). For example, a pro-refugee activist may experience discomfort from seeing a *Daily Mail* article about refugees. There arises a contradiction in the mind between their beliefs and the *Mail's*. The individual then has three main options for dissonance reduction. Either they change their behaviour and stop reading, they change their beliefs and become less pro-refugee, or they try to downplay that inconsistency, perhaps by belittling the *Daily Mail*. Hence, even this crosscutting exposure can reinforce pre-existing beliefs, thanks to a strong partisans' epistemic bubble causing a backfire effect. Either way, cognitive equilibrium should be achieved. This is where one's current schemata (cognitive frameworks) are consistent and sufficient to explain reality as one understands it (Salkind, 2005). The first route, simply avoiding counter-attitudinal information, is easiest. Hence selective exposure arises.

Selective exposure arises especially around politics, for which Stroud (2007) attributes two factors. First, because politics is part of one's interests and self-identity, so 'chronically accessible' (Donsbach 1991). This means that such integral constructs are most readily available in the memory to inform actions (Price & Tewksbury, 1997). Another factor from mood management theory suggests people try to maintain a desired emotional state (Stroud, 2007). Partisans therefore often shun counter-attitudinal 'hostile' news media (Goldman & Mutz, 2011) which produces negative affect (gut feeling), for pro-attitudinal 'friendly' news media producing positive affect.

Another explanation for preferring friendly news media is that people instinctively trust it more. This is likely because friendly media is part of, and acts in the interests of one's in-group, whilst hostile media, one's out-group (Ariyanto, Hornsey & Gallois, 2007). Such in-group trust, out-group distrust has been beneficial for survival from an evolutionary perspective (Rotter, 1967). Overall, these explanations involving protecting deeply held beliefs, plus in-group, out-group mentalities suggest why stronger partisans are the ones most likely to be embubbled. The selective exposure studies below either show a positive correlation with strength of partisanship or reject selective exposure's existence outright.

Lazarsfeld, Berelson & Gaudet (1948) is the seminal study. In the 1940 US election, they researched voters from Erie County. Democrats were more likely to encounter Democratic campaigning, and vice versa (Garret, 2009a). Reviews such as Sears and Freedman's (1967) strongly disputed the selective exposure hypothesis (Stroud, 2007). However, the early studies they evaluated rarely centred upon political stimuli. They involved non-political situations such as mock jury trials, where participants are expected to critically examine both sides. They often recruited students, taught throughout education to do the same. Such criticism nonetheless dissuaded research around the 1970s to 90s (Garret, 2009a; Stroud, 2007). Frey's study (1986) eventually incorporated updates of Festinger's dissonance theory. It specified that selective exposure manifests mainly in beliefs one has chosen oneself and is committed to, especially politics (Stroud, 2007).

Scholars also established a distinction between favouring pro-attitudinal content (selective exposure) and avoiding counter-attitudinal content (selective avoidance). Selective avoidance constitutes a much weaker effect than selective exposure (Garret, 2009a). Counter-attitudinal information appeared desirable mainly if useful for future decisions. Interest in selective exposure re-emerged amid such refinements, and concerns about the internet easing access to disparate hyperpartisan sources (Murphy & Westbury, 2013; Clay et al, 2013). This peaked in 2016 with the shock Brexit and Trump victories. Scholars now doubt that selective exposure and ideological bubbles are as widespread as first feared at least in the population generally (Arguedas, Robertson, Fletcher & Nielsen, 2022; Dubois & Blank, 2018; Vaccari, 2018).

On to the limitations of the literature, and therefore our theorisation of selective exposure. Since many criticisms apply to almost all the studies, the criticisms are discussed here first. The first criticism concerns ideology, which should be defined. Newton and Van Deth (2020), in their contemporary introductory politics textbook, introduce ideology as a mental framework of ideas, allowing understanding, interpretation and judgement of politics. Newton and Van Deth note that a main variation in definition is the extent to which ideology requires a tightknit, coherent set of beliefs, like partisans often have, or merely loose-knit beliefs, like someone who is not interested in politics might have. A classic definition from Freedman (1996) notes that ideology is not a fixed belief system, but a set of concepts whose meaning tends to evolve over time, as associated with characteristic political perspectives.

This thesis uses the term ideology in alignment with these definitions, except for the high threshold of the beliefs needing to be tightknit and coherent. This might not accurately describe research participants who could be less politically interested and knowledgeable, especially with generation z and their focus deemed to be more issue-based (Vromen, 2003). The rest of the definitions fit. The notion of ideology changing over time is especially fitting here, given young peoples' relative malleability (Hooghe, 2004). This is in addition to the longitudinal design of the study, which measures ideology, just for context, every month throughout the 10-month long fieldwork, to capture that nuance.

In terms of relating these debates to the conceptual framework being used, it should be emphasised again that the concept of ideology is not transparent or a synonym for political orientation or views. Hence, when it comes to the proposed 'triple filter' model of embubblement, the model does not have a direct relationship to ideology. As in, the triple filter model does not primarily relate to one's ideology, but one's political perspective, on any given topic. The survey asks participants to rate each of their news sources' agreeableness on a scale. Hence, political perspectives are the focus of the conceptual framework. A citizen might have an ideology that informs and sits behind their political perspectives, but it is political perspectives that are operationalised in the analysis. The justification is that past studies simply correlated 'liberals' consuming 'liberal content', then 'conservatives', 'conservative content', when these false dichotomies are too simplistic and subjective (Murphy & Westbury, 2013).

Previous studies only tend to survey partisans' news consumption like this, using logistic regression analysis. Studies dictate and dichotomise ideology. Handling liberals and conservatives assuming they all have the same political stances would underestimate selectivity. For example, pro-Brexit liberals may actually consume *The Sun* for its pro-Brexit content. Despite one being liberal and one conservative, this still suggests selective exposure. Source ideology gets dichotomised too, and subjectively assessed by researchers. That risks researchers' bias (Donsbach, 2004) or limits sources to those easily classifiable, often the clearly right-wing Fox News. The alternative is to have participants rate the agreeableness of exposure themselves via surveys.

Practically all studies are US-centric, so the UK situation is unclear. This lack of research across cultures does little to assert selective exposure's construct validity. Existing studies overwhelmingly concern single mediums, mainly online news. Single services too, mainly Twitter, and a single unit of analysis, mainly tweets or news articles. That limits external validity. It ignores how people consume diverse older, renewed, and newer media within the hybrid media system, not to mention other political communication, much of which is face-to-face and not online (Chadwick, 2013; Wright, 2012). Past study respondents were not always anonymous to the researchers, therefore more prone to self-presentation concerns (Spears & Lea, 1994). For instance,

a participant could hide that they consume far-right content. No qualitative approaches were seen, to offer context and detail behind the numbers. There is little concerning how selectivity differs the specific information consumed. The lack of samples with young people is another big limitation.

Retrospective Reports

This is the first of four methods that the thesis argues has severe limitations, necessitating this study. Retrospective reports survey respondents' consumption from memory (Clay et al, 2013). Requiring minimal researcher involvement, they can quickly generate representative samples. They exude ecological validity by centring real stories people will already have opinions on. Also, the consumption occurs before respondents are approached for the study. Internal validity is limited though. There are errors and biases surrounding respondents trying to recall and formulate answers. These include 'selective attention' and 'selective retention'; focusing on and then remembering pro-attitudinal information better (Clay et al, 2013). There is also the hostile media effect, a tendency for partisans to view news coverage as being less favourable to 'their side' than it really is (Hansen & Kim, 2011). Other risks are self-presentation concerns and social desirability biases (McBurney & White, 1994). Respondents might be reluctant to admit they are in a bubble. Responses are unverifiable too.

An example study is that of Rodriguez, Moskowitz, Salem, and Ditto (2017). It is noteworthy for its sampling: eight nationally representative surveys taken from 2000-2012. About 3,000 Americans were telephone surveyed each time. Confirmatory factor analyses revealed significant selectivity. Strong conservatives favoured conservative media, scoring .569, down to strong liberals avoiding it at -.377. This supports a clear positive correlation between selective exposure and strength of partisanship (1). Unconditional growth models show, between 2000-12, selectivity surging dramatically, though slightly slower over time ($b = .075$, $p = .001$). A limitation was that media outlets were classified using other studies' content analyses, one from as far back as 2005. Using content analyses ignores that what constitutes pro or counter-attitudinal

information for a participant is entirely their subjective assessment, *their* biases and all. Plus, source ideology can vary by topic. Neglecting these risks error variance, limiting internal validity.

Another example is Vaccari's (2018) online surveys in France, Germany, and the UK, after their 2017 elections. Questionnaires representative of internet users found that, with social media and mainstream media, populations actually 'often' encountered more disagreement than agreement. It was offline conversation facilitating the reverse. On social media, French participants are the most likely to see disagreement, German participants are the most likely to see agreement,. Most participants reported seeing a balance of both. Vaccari estimated that only one in five, to one in eight social media users were in echo chambers or filter bubbles. These findings reject the selective exposure hypothesis outright.

This comparative politics perspective excels at testing selective exposure construct validity cross-culturally, and outside the US. It is probably the most expensive method though, putting it out of reach for newer researchers. The range of mediums considered is better than usual: social media, mainstream media, and offline conversation. However, the data is not quite representative of populations' entire information exposure. Only television and newspapers were categorised within mass media, ignoring radio and online. The internet beyond social media went unconsidered. The specification of 'offline' conversations arbitrarily ignores conversation within forums, comment sections, and video and voice chats. Only focusing on the UK's internet-using adult population neglects those under 18, as do almost all studies. Plus, it ignores those who only use older media or none, limiting generalisability. This narrow quantitative-only study is insensitive to whether any disagreement reported is actually substantial. This may lead to understating selective exposure. Meanwhile, fieldwork occurred around heated election times. That could have inflated selectivity, making findings unrepresentative of most of the time.

Behavioural Intentions

Behavioural Intention methodologies measure content participants would like to consume, typically in lab conditions (Clay et al). These have more internal validity as intentions predict action well (Sheppard, Hartwick & Warshaw, 1988). Instead, external validity is limited. Information choices are abstract and artificial. In reality, people read the content rather than only selecting headlines. Limited, nonspontaneous choices are unrepresentative of how people normally select or ignore information. People 'tune out' messages rather than explicitly rejecting them (Brock & Nalloun, 1967). Also, intentions get diluted by one's access to information. A partisan may favour pro-attitudinal content in a vacuum. But, if they only watch the relatively balanced BBC News, they will get a mix of pro and counter-attitudinal information regardless thanks to the traditional point-counterpoint format. Hence, intentions do not guarantee selectivity in practice.

Iyengar and Hahn's (2009) online experiment involved a representative sample of 1,023 US voters, recruited by an opinion research firm. Partisans could pick news articles from the MSNBC daily news feed. The feed listed headlines sourced from Fox News, NPR, CNN, and the BBC. Matched pairs of near identical participants formed a control group of 251 and a treatment group of 772. The control group had all brand labels removed whilst the treatment group had them randomised. Hence, any variation between groups would stem from partisan selectivity towards perceived friendly media. Liberals slightly favoured CNN and NPR whilst conservatives strongly favoured Fox News. None favoured the more neutral BBC. This effect increased with stronger partisans, and hard news. Traces remained even in soft news including sports and travel. Thus, this is more support for selective exposure and strength of partisanship positively correlating.

There is some ecological validity since the study was done online from respondents' own homes. It used current, real news from the MSNBC news feed too. One concern involves the randomisation of brand labels. There is a risk of participants noticing that, for example, a Fox news logo had been slapped on a CNN headline. Outlets' headlines surely have distinct writing styles and slants. This could make participants pick articles based on their headlines rather than the misleading brand label. It muddles what even

constitutes partisan selectivity if a source appears half conservative, half liberal. Randomisation then may have decreased selectivity. It should have sufficed to keep labels removed in the control group, and on but unrandomized in the treatment group.

Garret (2009b) sampled 727 readers of US news sites AlterNet and WorldNetDaily. These lean left and right respectively. Participants were sent links to a site where they could pick from three pertinent topics at that moment: gay marriage, social security reform or civil liberties. Next, users were presented with a diverse range of article synopses about that topic, via Google News. Respondents could pick any to read. Before reading, respondents indicated how much they expected their chosen articles to be pro-attitudinal. Logistic regression (Hosmer Jr, Lemeshow & Sturdivant, 2013) found that this selective exposure effect was strong. Avoiding counter-attitudinal content was a much lesser effect again. However, strength of partisanship went unaddressed.

Having respondents label content as pro or counter-attitudinal is innovative. It captures how individuals subjectively assess sources' politics in reality, this is not objectively, and not necessarily as assessed by a researcher, boosting internal validity. However, asking respondents so directly, practically how much of an echo chamber they inhabit, risks social desirability plus self-presentation concerns and experiment demands/demand characteristics (McBurney & White, 1994; Intons-Peterson, 1983). These compromise reliability. The question should be phrased more covertly and less negatively. External validity is limited by featuring three political issues, plus using convenience samples of readers from two niche sites.

Observed Behaviour

Observed behaviour methods tend to be lab experiments centring on one source. Usually this is a mock website offering a balance of opposing content (Clay et al, 2013). This avoids relying on dubious self-reports or abstract intentions, boosting construct validity. The conditions lack ecological validity though, being artificial and restricting

choice. Centring one such source forbids pursuit of neutral or unrelated content, likely inflating selectivity (Druckman & Kam, 2011).

Iyengar et al (2008) investigated selectivity and an alternative explanation, the 'issue publics' hypothesis. It holds that people prefer content about personally important issues, regardless of whether it supports their ideology. They tested both during the 2000 US presidential election, by posting CDs to a nationally representative sample of 220 partisans. CDs ran an interactive app detailing candidates George Bush and Al Gore's policy positions. By tracking CD use, they validated the issue public hypothesis. Participants overwhelmingly visited pages about issues they were expected to prioritise. For example, elderly users favoured healthcare pages. The other hypothesis, partisan selectivity, only manifested in conservatives, strongly towards Bush. Generally, though, neither side preferred issues 'their' candidate specialised in. This meant that conservatives did not even favour veteran and abortion topics to align with their leader, which was unexpected. No issue publics skewed liberal or conservative either.

Overall, these findings outright reject the selective exposure hypothesis. Instead, people encounter cross-cutting communications across political lines on personally important issues. Individuals' partisanship may have subdued owing to the app's balanced format and its guise of being an 'educational initiative.' These could have nudged participants into considering both sides more than usual. Authors claimed there was 'little reason' to blame such experiment demand/demand characteristics but did not justify why. Another limitation was participants having two weeks with the CD, which gave them excess time to review information originally ignored. News moves so fast now this probably would not happen in everyday news consumption. The authors downplayed this, citing that even one-time CD users lacked partisan selectivity. However, since low CD use correlated with disinterest in politics, these people are probably just the least partisan. The criticism therefore remains.

Those who actually used the CD were more educated and wealthier. Yet the possibility of de-facto selectivity went unaddressed, that is, patterns by chance, or non-political reasons, such as an outlet simply appealing to a specific demographic. Another criticism concerns the narrow definitions used to determine issue public membership. For

example, the education issue public was operationalised as mothers of children aged 8-18. This meant they were counted rather than fathers and students, somehow presumed to be less interested in education. Fixing those false negatives would make the issue publics effect even stronger.

Another key study is Flaxman, Goel & Rao's (2016). They recorded the online news consumption of 50,383 US citizens using Bing toolbars. Their analysis involved four consumption channels: aggregator, direct, web search and social media. It found partisans almost exclusively visited politically-aligned outlets, particularly when reached through social media and search engines, rather than visiting directly. However, social media and search engines also offered greater exposure to opposing sources. This study suggests the expected correlation is not so strong. A limitation of this study regards its large sample size. With so many anonymous data, researchers could only estimate the politics of outlets and participants, for example, by using local voting data. Regarding generalisability, remaining Bing users are older than most online news consumers (Ofcom, 2017).

In recent years there have been more passive web tracking studies, such as Guess (2021), which have many of the same limitations pointed out elsewhere in this literature review. Guess examines the browser histories, via passive metering service Wakoopa, and survey responses of a US representative sample in 2015 and 2016. The finding is that that most Americans do not view news and politics websites, and those that do use relatively moderate mainstream sources. It is only a minority of hyperpartisans that frequent ideologically aligned media.

Cardenal, Aguilar-Paredes, Galais & Pérez-Montoro (2019) examined a representative Spanish sample, using a questionnaire and internet use tracking for three months in 2015. They found that direct navigation to a site increases selective exposure by 3% whereas referral-based navigation via Facebook has no effect, and Google search decreases selective exposure by 9%. Likewise, Stier, Mangold, Scharkow and Breuer (2022) used surveys and web tracking on representative samples in six western democracies: France, Germany, Italy, Spain, the UK and US, for three months in 2019. Contrary to the filter bubble narrative, Stier et al found that social media and search

engines exposed users to news content they would not otherwise see or click on, and more ideologically-diverse news content. Usual limitations include the use of objective measures for source ideology, and data being obtained only from computers, and not mobile or in-person communications.

Aggregate Behaviour

These are usually social media network analyses, examining audience overlap by outlet (Webster & Ksiazek, 2012). This method provides macro-level analysis (Clay et al, 2013). These studies usually cover longer timeframes, finding society-wide trends where other methods can miss such a broader picture. Another importance of this methodology is that it is focused upon how users enable engagement with each other in an active lean-forward medium, rather than lean-back, passive news consumption. This thesis can explore intensity of engagement, as partisans might seek disagreement when getting in debates with other social media users. Source ideology gets determined by the politics of the users who share its content. This operationalisation of selective exposure is circular. Plus, suppose a *Sun* article circulates amongst liberals, mocking it. That pushes *The Sun* towards being labelled liberal.

Nelson and Webster (2017) examined one million US internet users during their 2014 election. They combined phone surveys and web tracking software from a web analytic firm. Findings suggested that liberals and conservatives visited 72 top news sites at very similar rates and durations, regardless of a site's political affiliation. Also, most sites were frequented mainly by moderates, people who did not self-identify with a partisan affiliation. Using network analysis, particularly audience duplication analyses, they showed almost all outlets shared audience members with all the others. This was a bold refutation of selective exposure outright, declared a "powerful myth" (Nelson & Webster, 2017, p.8). Limitations include the study not tracking consumption through mobile devices. Given their dominance, this limits external validity. Had weak and strong partisans been compared, selectivity should have at least emerged in stronger partisans. The study features 72 top news sites, constituting 90 percent of traffic

recorded. However, the discarded 10 percent is surely the most important to investigate for selectivity because one would expect those fringe sites to have the most niche, insular audiences.

Bakshy et al's (2015) study is important because it was conducted by Facebook, utilising special access to their data. Over six months, they observed how 10.1 million US partisans limit their exposure to cross-cutting news on Facebook. On average, only 20 percent of their friendships crossed political lines, as in between liberals and conservatives. Furthermore, of the hard news shared by liberals' friends, 24 percent was cross-cutting, compared with 35 percent for conservatives. The likelihood of them reading any was only 6 percent for liberals, 17 percent for conservatives. Researchers concluded that users' selectivity was still the key factor. Algorithms only reduced the odds of seeing cross-cutting content by 5-8 percent.

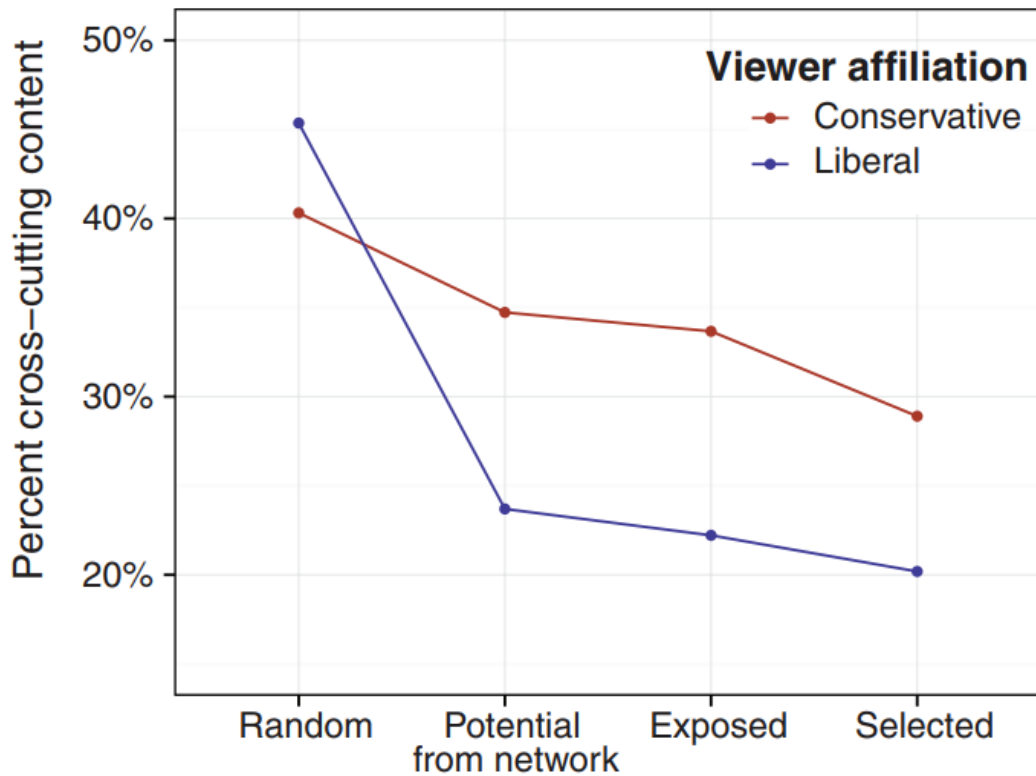


Figure 2: Selective exposure on Facebook.

Their chart indicates that a user's friendship choices limit cross-cutting exposure the most (see on the x-axis: 'random' to 'potential from network.'). Next, whether they actually click on cross-cutting content ('exposed' to 'selected') is a slighter bigger factor than what algorithms expose them to ('potential from network-exposed.'). Since users' choices are far more influential than algorithms, exposure on Facebook is selective, though strength of partisanship was untested. This is only one site though, hindering external validity. Only users who declared their political affiliation in their biography were included. This excludes a lot of people who are probably too moderate to declare that, possibly inflating selectivity. One should also be wary that Facebook has a clear interest in refuting that social media is harmful.

In summary, across all four methodologies, many studies support selective exposure's existence, positively correlating with strength of partisanship (for example, Garret, 2009a; Rodriguez, Moskowitz, Salem & Ditto, 2017; Iyengar & Hahn, 2009; Garret, 2009b; Flaxman, Goel & Rao, 2016; Downham, 2018; Bakshy, Messing & Adamic, 2015). However, some dispute selective exposure's existence outright (for example Iyengar, Hahn, Krosnick & Walker, 2008; Dennis, 2016; Nelson & Webster, 2017, p.8) the latter even declaring it a "powerful myth." The exact extent of citizens' selective exposure then, moderated by strength of partisanship, is not known. Therefore, their exact extent of embubblement is not known. Overall, given the rough indication from current selective exposure literature, the first research question and focus of the quantitative analysis are as follows:

RQ₁: What contributes to young people's embubblement?

Strength of partisanship positively correlates with young people's embubblement.

Next is whether embubblement positively correlates with polarisation (3). Polarisation is when citizens' beliefs grow stronger, towards the extremes (Johnson, 2020). It is a negative implication for democracy if citizens get polarised so cannot constructively deliberate. There are different definitions for polarisation, which should be

acknowledged. Arguedas et al's (2022) recent literature review of echo chambers, filter bubbles, and polarisation, found three main definitions. There is issue polarisation; divergence based on issues, affective polarisation; divergence based on negative affect towards opposition, and audience polarisation: divergence based on media consumed. The definition used in this thesis is issue polarisation; divergence based on issues. This fits the theoretical framework (the triple filter model) because one area of inquiry is about whether being in a bubble correlates with increased strength of partisanship, on particular issues.

Deliberation amongst homogeneous groups is long known to cause polarisation (Postmes, Haslam & Swaab, 2005). However, the extent polarisation happens in the real-world media ecology is still surprisingly uncertain, as citizens are exposed to so much information with different effects. Scholars supporting the correlation include Stroud (2010), Zahid, & Saeed, (2019), Dahlgren Shehata, & Strömbäck (2019) and Dahlgren, Shehata, & Strömbäck (2019). Those against include Johnson et al (2020), Metzger, Hartsell & Flanagan (2020), Peterson, Goel & Iyengar (2019). These suggest a more nuanced conception of polarisation could be used. This study operationalises polarisation in two ways: increasing embubblement over time, as in citizens going down 'rabbit holes' of more and more polarising content, and also increasing strength of partisanship over time. The quantitative analysis of this thesis focuses on two claims:

Young people's embubblement positively correlates with time.

Young people's embubblement positively correlates with polarisation.

To finish, with the very latest filter bubble research: Dahlgren's (2021) critical review of filter bubbles and selective exposure critiques the common conceptualisation that citizens have agency when they select content, but then switch to being conceptualised as passive receivers when it comes to consuming that agreeable information recommended to them. Another criticism is that the filter bubble literature makes claims about how technology such as algorithms work, which may be substantiated, but then

with those it makes broader claims about algorithms having negative implications for democracy, without substantiating this, when they are two separate claims. This thesis therefore investigates both claims, using evidence, and this thesis does not use any existence of filter bubbles as proof of negative implications for democracy, such as any resulting spread of misinformation and disinformation, except for a one-off case where empirical evidence is found for it. Dahlgren's other critiques are already echoed throughout this thesis.

Arguedas et al's (2022) literature review distinguishes claims across current research as claims that either have broad evidence, weaker evidence, or no evidence. Firstly, the broadly evidenced claims are that online partisan news echo chambers are very small. Automated serendipity and incidental exposure via search engines and social media increase exposure to disagreement. Partisanship and political interest play significant roles. Country specific factors determine changes in polarisation rather than the singular emergence of the internet.

Claims with weaker evidence are the following. audience polarisation is higher with online news in some countries, though not all. Engagement with partisan news and media can increase polarisation. Disagreement may also increase polarisation among partisans. Hyperpartisans lead online debates which the vast majority of internet users do not see. Claims without evidence include that embubblement functions in the same way for scientific issues. There is also whether findings are less-studied but potentially significant platforms, such as messaging applications, video sites, and emerging social media platforms.

While the media ecology has sped up communication, it should be noted that echo chambers and misinformation are nothing new. Each communications technology has brought with it a wave of such utopian and dystopian narratives (Adams, Osman, Bechlivanidis, & Meder 2023). As with any issue, defining the problem, and solutions, cannot simply be generalised to the global south. For example, some areas in the global south are less likely to have reliable news sources, and have a higher risk of misinformation leading to violence (Badrinathan & Chauchard, 2023).

Conclusion on Selective Exposure - Critiques & Responses

Critiques offered might best be summarised in terms of internal and external validity.

The methods are either passable in only one or the other:

Method	Internal validity	External validity
Retrospective reports: surveying participants' consumption from memory.	Low: respondents must recall all their news consumption, which risks bias.	High: exposure occurs naturally, before participants are even aware of the study.
Behavioural intentions: surveying what participants want to consume	High: beliefs do predict action well.	Low: choices are abstract, artificial, and inconsequential.
Observed behaviour: observing consumption as it happens	High: consumption is recorded objectively.	Low: they tend to use artificial lab conditions and mock websites.
Aggregate behaviour: Observing macro-level consumption.	Low: they poorly assess outlets' politics by averaging the politics of users who share its content.	High: users are unaware of being observed.

Table 1: A summary of existing methods.

Table 1 suggests that behavioural intentions and observed behaviour methods have high internal validity, while retrospective reports and aggregate behaviour methods have high external validity. The current lack of nuance across the four approaches studied in this chapter necessitates a new holistic methodology, and synthesis with two other literatures. The study will address the literature gap regarding actual information consumed.

Political Socialisation Literature Review

Given the lack of literature on the extent citizens grow up in ideological bubbles, the closest literature to draw on is political socialisation. A lot is known about how attitudes

and behaviours form, especially via the field's age, period and cohort analysis, and socialising agents (Neundorf & Smets, 2017). Their influence on embublement, as alternative explanations, will be explored in the qualitative analysis in this thesis. This literature shows when and how political beliefs and partisanship manifest, as the key independent variable here moderating selective exposure and therefore young people's embublement. There is also background on all the other relevant variables, as pertaining to young people. These are the demographic variables age, gender, socioeconomic status, race, and education, plus the political variables political knowledge and political interest.

Introduction

For a holistic account, embublement should be considered in the wider context of political socialisation. Consider for example, a progressive being raised in a progressive household. Never mind current short observation periods, young people may have spent their entire life in an echo chamber, effectively pigeonholed into their political leanings via parents. This 'parental transmission' could occur without the individual properly scrutinising evidence for those leanings. Thus, political socialisation is worth synthesising with the selective exposure literature. Both phenomena can combine to stop citizens from developing well informed political stances that democracy requires (Bartels, 1996).

On to introducing the literature and its trajectory. Political socialisation also has a non-controversial definition. It is the process through which political attitudes and behaviours are passed down the generations, via various socialising agents (Blanc et al, 2013). Early research emerged from the 1950-1960s (Hess & Easton, 1960, Easton, 1957). It was concerned with ensuring the stability of societies, notably the new democracies post-war. This was through education and parental transmission of existing attitudes and behaviours (Hooghe, 2004). Children were conceptualised as passive, their political affiliations stemming from parental-like attachments to and trust in political figures (Flanagan & Sherrod, 1998).

Focus shifted to uncovering the modernisation of attitudes and behaviours that socialisation actually produces, and through several more socialising agents. The 1960-1970s brought social movements defying the status quo: civil rights, anti-war, free speech, and women's movements. They shifted scholars' focus from childhood to the late adolescents and young adults predominantly involved. It was found that young adults were most open to such attitude and behaviour formation. Those era-specific movements established the importance of social context for political socialisation, leading to shifts in public opinion over time.

This leads into age, period, and cohort (APC) analysis central to the field (Neundorf & Smets 2017). These three APC effects contribute differences in citizens' attitudes and behaviour, operationalised longitudinally across: age (years since birth), period (the year), and cohort (year of birth). Note, cohorts can also be drawn along other lines, for instance racial, regional, gender or economic. The temporal, macro-level focus demands quantitative and longitudinal studies. These survey nationally-representative samples over long periods of time, ideally decades. APC effects are somewhat interrelated hence difficult to parse, the so-called 'identification problem' (Wass & Nemčok, 2019).

First of all, age effects are changes with age (alternatively called life-cycle effects). People are influenced by events in the life cycle called 'shocks' (Neundorf & Smets, 2017). 'Weights' moderate how much the influences are internalised at different ages (ibid.). Age effects on attitudes and behaviours stem from two hypotheses. Firstly, the impressionable years hypothesis. This suggests that, given one's initial lack of political attitudes and behaviours, socialising agents in early life disproportionately shape those (Neundorf & Smets, 2017). Even by early adulthood young people tend to have weakly held, poorly integrated politics based on fragmentary knowledge (Sears, 1983). The impressionable years are estimated to start from at least as early as five, ending as late as twenty-four. The exact parameters vary. This is especially so in the early 21st century, with the extended transition to adulthood through the teenage years, later school leaving age, and its scattering via increased university enrolment (Inglehart, 2015).

Young adults are venturing out into the world and not yet settled down in their roles. Hence, they are best placed to experiment, critique society, and seek changes (Mannheim, 1952). Shedding dependence on parents, they will want to create their own identity, goals, and roles, including as citizens (Stoker & Bass, 2011). Moving out can limit voting due to having to re-register, marriage can deprioritise politics, but both bring new socialisation agents: new community and family. The second hypothesis defining age effects is the persistence hypotheses. It states that those early attitudes and behaviours largely persist over life, or the life-cycle. The extent of persistence was eventually revised down, acknowledging that individuals make tweaks based on events, so-called 'rational updating.' Such de-emphasis on political socialisation halted research from the 1970s to 1990s. It re-emerged in the early 2000s as a toolkit to investigate the growing young people disengagement and distrust in western democracies (Hooghe, 2004).

Neundorf and Smets (2017) summarised age effects using the helpful analogy of an empty bookshelf. At first one can easily add new books: political attitudes and behaviours. Soon enough though the bookshelf gets full, and it becomes difficult to add new ones. Indeed, once acquired, the behaviours of voting or abstaining become habitual. One either breaks through the heightened opportunity costs and challenge of first-time voting, easing future participation, or one does not. Either behaviour chosen is likely to persist (Hooghe, 2004). Attitudes are likewise maintained, such as through biases including selective exposure and cognitive dissonance. Adulthood meanwhile brings greater political knowledge, party identification, and more consistent ideologies. Adults are generally more confident in their beliefs and knowledge, less likely to change their mind from crosscutting exposure or alternative views.

The main age effect on political interest is as follows: interest can arise as early as childhood, it steadily increases before stabilising at 25 (Neundorf, Smets, & Garcia-Albacete, 2013). Children from politicised families can get politically interested via parental transmission. Barring that, early adulthood becomes most influential for developing political interest. Another example is electoral participation. Young people are thought to be too busy with education, finding partners and building careers. Voting

peaks in middle age, as people settle down and realise the relevance of politics, such as with taxes. The elderly meanwhile can withdraw from social life and be pre-occupied with health issues.

Second in the APC model are period effects. These are macro-level political contexts producing 'shocks' that imprint the entire population. Examples include war, economic downturn, and technological advancement. Climate change may be a period effect, having shot up the agenda owing to environmental activists Extinction Rebellion and Greta Thunberg. Young people are most engaged though, especially with the 'Fridays for future' school strikes (Gardner & Wordley, 2019). There is also Jeremy Corbyn's Labour party, which has mobilised young people after two decades of declining young people turnout (Sloam, 2014).

Thirdly and finally are cohort effects (also called generational effects). These involve lesser events or 'shocks' that disproportionately influence specific groups. This is typically the youngest age cohort in their impressionable years, given their less developed attitudes and behaviours. Thus, a constant shift in overall public opinion occurs with that young cohort's 'colouring' by current events, and the oldest cohort passing, their persuasions largely rooted in a previous era. This also means young people are the main drivers of social change (Hooghe, 2004). The clearest evidence of this 'generational replacement' is the liberalising of public opinion towards racial and sexual minorities (Neundorf & Smets, 2017.14).

A cohort that is markedly different from the previous one, that is, one about five to ten years earlier, constitutes a new political generation. This 'generation production' has accelerated, down from generations of about fifteen to thirty years apart. That is because of the stark social and technological climates successive young people have experienced in recent decades (Wass & Nemčok, 2019). Main cohort effects have younger generations as more educated and ethnically diverse, but less likely to be married or religious. More will be children of immigrants, have a working mother, and divorced parents. They are digital natives, not immigrants (Stoker & Bass, 2011).

Socialising Agents

This section dives further into five main socialising agents behind the APC effects introduced above. First of all, family can influence political ideology, party identification and political participation (Neundorf et al, 2013). These tend to transfer dependant on the extent politicised families provide constant signals for children to internalise and mimic. These are social learning processes (Jennings, Stoker & Bowers, 2009). Parents also directly pass down demographic traits, primarily socioeconomic status, seeding the associated attitudes and behaviours.

Flanagan and Tucker (1999) established some correlates central to the left/right ideological cleavage. Their questionnaire sampled American teenagers; average age 16. Those from low socioeconomic backgrounds described unemployment, poverty, and homelessness mostly as agent-based problems, only compounded by state welfare. They also had more materialist values. Thus, they appear predisposed to conservatism. Young people from higher economic backgrounds described those as structural problems, that society should solve through government support. These young people held post-materialist values. Therefore, they appear predisposed to progressivism.

This may be indirect 'status inheritance', in this case, of parents' socioeconomic status, rather than direct transmission through social learning processes from before. Young people politized so early though are more likely to change ideology upon discovering alternatives in early adulthood. Interestingly, young people themselves offer 'trickle up' or reciprocal political socialisation of their parents (Stoker & Bass, 2011). It occurs when they bring home new attitudes and behaviours from elsewhere, mainly school. This is particularly the case for first-generation immigrant parents, who are otherwise less initiated. They are at the intersection between an age effect of raising children, and a cohort effect of being immigrants.

It follows that the second main socialising agent is education. Education's influence was once deemed minimal but is now surprisingly uncertain (Neundorf & Smets, 2017). Education correlates strongly and positively with political knowledge, interest, and engagement. However, the causal mechanisms are social class, cognitive abilities, and

the specifics of any civic education. Indeed, civic education can level disparities in political engagement in those from non-politicised families (Neundorf, Niemi & Smets, 2013). However, its provision in the UK has become limited and of varying quality, as a likely cohort effect impacting today's young people. Still, the 16-18-year-old sample might be influenced most by family and education since these will occupy a lot of the young people's time, assuming they still live at home and are not in full-time employment. Thirdly, peers are socialising agents. They can encourage the practice of discussion, engagement, value development, plus democratic and economic principles, mainly the exchange of goods, services, and Information (Neundorf & Smets, 2017).

Fourth would be media; older, renewed, and newer media in the hybrid media system (Chadwick, 2013). Young people often get 'accidental exposure' to TV news simply because it is on in the home (Valeriani & Vaccari, 2016; Buckingham, 1999). Original studies suggest TV increases political knowledge, mutually reinforced with watch time. At early adulthood however newspaper use became a better predictor of political knowledge. Today, a main concern is media commercialisation, which would be a period effect on the entire population. Focus has shifted from informing to entertaining the public, leaving young people less interested and knowledgeable about politics. Embubblement is again another concern, especially with social media (Neundorf & Smets 2017). This is a cohort effect in light of young people being the main users.

The influence of all media might be growing with 2020's media-rich information environment. Whilst family and school dominate one's impressionable years, citizens can now consume media constantly (Ohme, 2019). This would be a period effect thanks to 21st century technology. There are efforts to improve political literacy through young people's media, for example the BBC's (2020) *My World* news programming. The fieldwork can see whether young people engage with these.

The fifth and final main socialisation agent would be events. As mentioned, they influence young cohorts most. The latest metanarrative of young people's politics in the early 21st century itself centres political events, causing cohort effects (Sloam & Henn, 2018; Norris, 2002). Politicised young people, their basic economic needs met, have been able to refocus on postmaterialist concerns such as identity politics, immigration,

and environmental issues. One event, the financial crash, set a precedent for widespread young people movements in response. These became enabled by another event, the onset of web 2.0 (interactive online mediums) allowing for fast, cheap, and expressive horizontal organising. This is based around specific issues over the prescribed grand ideologies of mainstream politics and traditional organisations (Vromen, 2003).

Indeed, children and young adults establish their identities partly through grappling with social issues of the time, with identities not stabilising until about age 30 (Flanagan & Sherrod, 1998). Hearing of and discussing elections and big political events therefore boosts political development (Stoker & Bass, 2011). Political events from early adulthood have been reported as most impactful on one's politics (Stoker & Jennings, 2008). Therefore, Brexit and Trump could be causing period effects, or cohort effects dependant on whether these do end up disproportionately effecting generation Z under investigation. In the UK, young people's political engagement did increase the year following the EU referendum (Enchikova, Neves, Beilmann, Banaji, Pavlopoulos, & Ferreira, 2021). Some additional themes that the fieldwork is expected to uncover then, and add to the literature, might regard; traditional rules of politics being ripped up, decreasing political etiquette, 'post-truth', anti-globalisation, the rise of the 'open' and 'closed' cultural cleavage, newer online media, 24/7 political hostility online, and polarisation.

Conclusion on Political Socialisation - Critiques & Responses

Now the political socialisation literature and its trajectory have been explored, this conclusion summarises the common limitations that were found and how this thesis attempts to address those limitations.

The first limitation is epistemic. Existing studies are overwhelmingly quantitative, positivist, deductive and large-N. This is good for reliability and generalisability. However, pre-selecting abstract and narrow variables forbids researchers from

discovering other relevant factors, as qualitative methods can. Qualitative methods can be more small-N, holistic and inductive, offering rich micro-level detail and context. This is particularly important in light of the current paradigm of APC effects. The macro-level focus on age, period, and cohort obscures that citizens are individuals. They undergo unique micro-level socialisation processes, aside from their demographic. Examples might include someone who gets a health problem and then values the NHS more. One might happen upon a notion such as 'the paradox of voting', conclude that voting is pointless, and not vote. These might override APC effects.

Next, data availability is limited by the need for years long cohort studies. Researchers have to hope that a survey with relevant questions was set up ideally decades ago. Otherwise, such methods are unavailable or expensive. Cohort studies also have issues with internal validity, particularly construct validity. The self-reports are unverifiable and bias-prone. They can yield biased responses due to effects of participating in the multiple waves, called panel conditioning (Sturgis, Allum & Brunton-Smith, 2009). Longer studies also mean longer for participants to drop out, a problem of panel attrition. The only criticism that this thesis might not be able to remedy concerns biology. Distinguishing genetic influences from socialisation has been lacking in this field. More studies have tried to in recent decades (Stoker & Bass, 2011). However, going that far back in a causal chain to find these ultimate rather than proximate explanations is outside the scope of this political communication thesis. It should be acknowledged though that socialisation is at least in part, or ultimately biological (see Stoker & Bass, 2011).

On to how this thesis and its methodology can alleviate the other methodological critiques and synthesise the two literatures. This thesis overcomes those limitations largely by being mixed-methods. Combining quantitative and qualitative approaches mitigates limitations of each, called methodological triangulation (Heesen, Bright, & Zucker, 2019). The study uses a relatively short time period, within a year. That makes the method more easily available while mitigating expense, panel conditioning and panel attrition. The methodology is fit to explore political socialisation too. This would be the first study to consider exposure holistically, across all mediums and main socialising

agents; family, school, peers, media, and events, as influenced by age, period and cohort effects. It does so insofar as these effect exposure to different political information, inculcating different attitudes and behaviours.

The observation periods can reveal different socialising agents' ongoing contributions to embublement. This design captures political discussion with participants' family, peers, in media, at school - including any civic education embedded within the curriculum - and amid political events. Meanwhile, the interviews and the ethnographic chart (in [appendices](#)) ask participants about how these socialising agents may have influenced exposure when they were younger as well. For example, some parents might have had broadcast news on every night. Perhaps its traditional point-counterpoint format offered early exposure to, and appreciation of multiple perspectives. Such mediums could pierce the echo chamber of a politically homogeneous household. Given the limitations of a single person's self-reports, parents could look over the charts or complete them too, to independently verify the participant's chart. Especially worth examining is civic education. It is often proposed as the solution to much-talked-about democratic dysfunctions including ideological bubbles. The charts could hint at civil education's role. Overall, the qualitative analysis can explore to what extent each socialising agent may or may not be to blame for participants' embublement.

Young people's politics Literature Review

This literature covers what is known and not known about young people, plus their partisanship and political engagement, as key variables here. There are three parts. Section one introduces young people's politics, offers a definition, and justifies its synthesis with the previous literature on selective exposure. The field's literature and trajectory are briefly overviewed. Section two can then look into political engagement specifically, with reference to 'citizen roles' at the heart of this field (Bennett, Wells & Freelon, 2011). With the literature explored, section three evaluates common limitations found. It concludes with how this thesis and its methodology alleviate said methodological critiques, plus, synthesise and advance both literatures.

Introduction

First of all, young people's politics in the early 21st century might best be defined in reference to citizen roles (Bennett et al, 2011). This literature starts with the traditional conception of citizenship as duty-based (Dalton, 2008). Indeed, by way of contrast, older generations are said to mostly embody 'dutiful citizens' (or 'duty citizens'). As a cohort effect, they were socialised in times when older state-centric participation, mainly voting, was seen as a duty. The mid-nineteenth and early twentieth centuries brought expansion of the franchise, and with it the traditional methods of mobilisation.

These included voting, newspapers, and political organizations such as organized labour, civic associations, religious and voluntary groups (Norris, 2002). Such duties became habitual and still maintain traditional political structures today. Older generations have more materialist political attitudes, because their basic economic needs were met to a lesser degree. These attitudes largely aligned with those mainstream political organisations, parties and unions. Such hierarchical organisations privileged top-down mobilisation via one-way communication. Also more salient were other structural factors, religion and social class, pre-determining the political cleavage one belonged to. The decline of religion plus a more fluid job market has limited that (Sloam, 2014).

Inglehart's (2005) postmaterialist thesis has long held that older generations developed those materialist values because pre-adult socialisation occurred in times lacking in economic and physical security. Under different cohort effects, today's politicized young people have therefore developed postmaterialist values instead; those beyond basic survival. The literature now concerns this 'postmaterialist' form of citizenship (Dalton, 2008). In contrast to older generations' dutiful citizen role, young people nowadays are argued to be 'self-actualising citizens' (or 'engaged citizens'; Sloam & Henn, 2018; Norris, 2002). With basic economic needs widely met, young people focus on higher order, less immediate postmaterialist concerns. These include identity politics, immigration, and environmental issues.

The financial crisis and austerity have dampened this only somewhat. A young person might now have to put short term materialist interest before their long-term postmaterialist values. For example, they must secure a job in a high-carbon economy despite their climate concerns. There is also the high child poverty, tuition fees, young people's unemployment, and stricter unemployment benefits, more immediately (Sloam, 2014). This is a recent complication for Inglehart's longstanding postmaterialist thesis that should be explored now, and more in-depth using qualitative methods.

Other cohort effects on young people today include the financial crash, which set a precedent for widespread young people's movements in response. They were enabled by the onset of web 2.0, another cohort effect disproportionately effecting young people. Interactive online mediums allowed fast, cheap, and expressive horizontal, or non-hierarchical, organising. This 'participatory culture' blurs media producers and consumers (Jenkins, 2006). Life has become increasingly individualised with rising job insecurity plus the staggering of transitions to adulthood. Completing education, employment, moving out, marriage and having children are all being delayed to varying degrees (Sloam, 2014). Similarly individualised issues are therefore getting young people engaged, through a 'logic of connective action.'

That encompasses using personalised user-generated content (UGC) outside servicing the grand ideologies of mainstream politics, and traditional political and civic organisations of parties, unions, and churches (Vromen, 2003; Sloam, 2014). Their decline was famously highlighted in Robert Putman's (2000) *Bowling Alone*. Sloam (2014) stressed supply-side, not only demand-side factors of young people's electoral disengagement. Politicians are disincentivised to serve young people as they are a small demographic. especially within aging populations. Young people vote less and are unlikely to be won over by non-left-wing parties. The first-past-the-post system puts smaller parties popular with young people, mainly the Greens, at severe disadvantage.

Youth engagement now occurs more within large, fluid networks, which Bennett and Segerberg (2012) call 'individual action frameworks.' Indeed, social media flattens disparities in political engagement among young people (Xenos, Vromen & Loader 2013). Social media use is a better predictor of engagement than even socioeconomic

status, according to their surveys. These sampled UK, US and Australian young people aged 16-29. However, this narrative can overfocus on online individual action frames. The 1960s began the latest wave of protest politics, normalising it in line with state-centric engagement that dominated early literature (Norris, 2002). The thesis will look out for collective action frames too then, where citizens still increasingly protest as part of a party, cohort, and community.

Protest politics, dominated by young people, encompasses demonstrations, boycotts, and signing petitions (Sloam, 2014). These have proliferated in recent decades across the US, UK, and Germany, in part because of the internet and social media making organising easier. Volunteering and charity work have been attracting young people in the UK especially. Sloam did warn however that these nonelectoral activities are concentrated amongst the highly educated. This is likely because these acts require more political interest and initiative than voting.

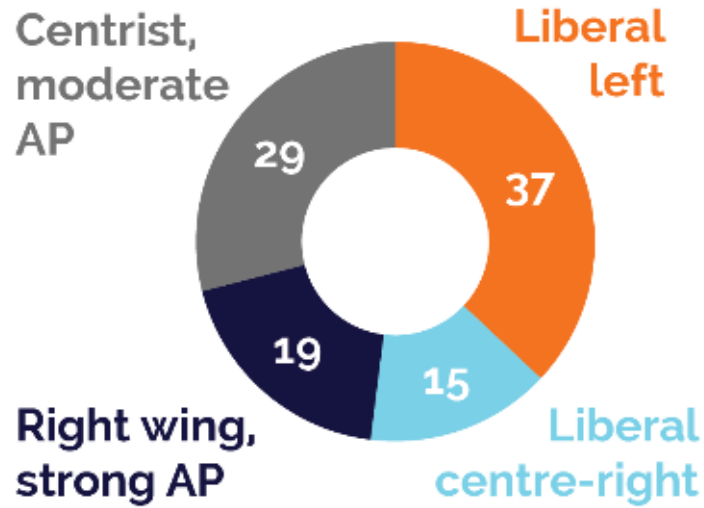
Loader et al (2014) name young people 'networked young citizens', based off more cohort effects. They are marked by a disaffection with mainstream representative democracy and its institutions. Their life-long familiarity with the internet, as digital natives, not immigrants, enables 'networked individualism.' Agents move beyond structurally prescribed networks of family, peers, and education, culminating in loosely tied 'digitally networked action' (Bennet & Segerberg, 2012; Sloam, 2014). That enables wider 'hybridised' engagement repertoires, that blend older and newer mediums within the hybrid media system (Chadwick, 2013). Examples include organising Brexit protests or the mass boycotting of companies through social media.

Likewise, a citizen could record pollution data and then petition local government to act. The latter is data activism, possibly dominated by technologically-savvy younger people, using 'data as repertoires', or 'modular tools for political struggle' (Beraldo & Milan, 2019). Aside from utilising data, citizens can also treat 'data as stakes', to fight for control over. For example, virtual private networks (VPNs) are used to bypass government censorship. VPNs mask data betraying that a device is in a given country.

Young people should be contextualised within the broader UK electorate. According to Sanders & Twyman's (2016) 'political tribes' typology (figure 3 below), where young

people are not simply more apolitical, they lean mostly liberal left at 24 percent. Then liberal right at 15 percent, then centrist, moderate 'authoritarian populist' at 9 percent, and right-wing, strong 'authoritarian populist' at 8 percent. These proportions flip come the eldest cohort. Studies focus on the liberal left, the youngest called 'young cosmopolitans', and 'authoritarian populists' (Sloam & Henn, 2018; Norris, 2019). They map nicely onto the main cleavage in current politics between 'open' and 'closed' cultural orientations (Sloam & Henn, 2018).

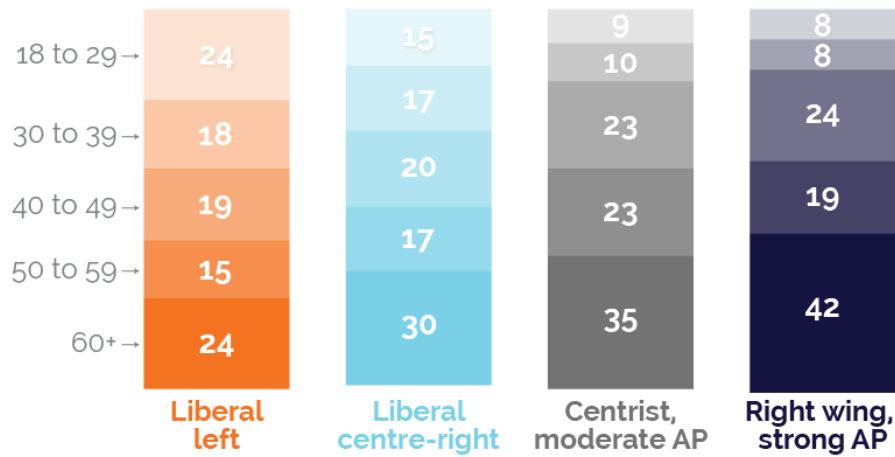
48% of British voters hold "authoritarian populist" (AP) views



YouGov | yougov.com

October 2016

Authoritarian populism (AP) in the UK: age breakdowns



YouGov | yougov.com

October 2016

Figure 3: Sanders & Twyman's (2016) political 'tribes' in the UK, overall (top) and by age group (bottom).

Sloam and Henn (2018) used nationally representative surveys plus polling data to build a profile of young cosmopolitans. In 2016, they accounted for 24 percent of UK 18-29-year-olds and 37 percent of adults (Sanders & Twyman, 2016). They are left leaning and internationalist, generally support the Labour party and want to remain in the European Union. They are mobilised by cohort effects of falling living standards since the financial crash, austerity, and the rise of authoritarian populism with Brexit and Donald Trump. It is even argued the 2017 UK General Election was a 'youthquake', due to a significant increase in this cohort's turnout and activism for the Labour party. Some materialist values remain: funding public services, also healthcare, housing, and education. They support the redistribution of state resources to address inequality.

Young cosmopolitans are pro-human rights, immigration and anti-war (Stoker & Bass, 2011). They are more likely to hold university degrees, be in education, urban, middle class, ethnic minority, and female (Sloam & Henn, 2018). Their rise may flow from recent cohort effects of increasing education levels, ethnic diversity, gender equality, and urban growth (Norris, 2019). These provide access to networks of diverse and politically engaged others, which lesser-off young people tend to lack. Another cohort effect could involve young people's greater uptake of social media and online news (Digital News Report. 2018). Newer media in the UK and US mostly leans left (Sloam & Henn, 2018). Examples targeting young cosmopolitans include BuzzFeed and Vice. Dennis and Sampaio-Dias (2017) reviewed how these do so, notably via an informal tone, memes, and mocking conservatives.

If young cosmopolitans are one breed of networked young citizens, another is authoritarian populists. Out of most young people lacking clear politics, who tend to be of lower education and socioeconomic status, 9 percent have gone on to become centrists with moderate populist authoritarian beliefs, (like 29 percent of the electorate overall), and 8 percent are authoritarian populists (19 percent of the electorate overall), again from figure 3 (Sanders & Twyman, 2016). They are low socio-economic status white males, disproportionately outsiders disapproving of increased immigration, diversity, European integration, the loss of manufacturing industries, and low skill jobs to developing countries (Sloam & Henn; Norris, 2019). These may be cohort effects

specifically biting young and working-class people. Authoritarian populists value social conformity, order, stability, and national sovereignty. Hence the support for right-wing, pro-Brexit parties such as the Conservatives, UKIP, or the Brexit Party.

As another cohort effect this group has its own online newer media, countering the likes of BuzzFeed and Vice. Whilst 72 percent of UK young people use YouTube, only 28 percent use it for news (eMarketer, 2018; Ofcom, 2018). An emergent literature and media narrative claims that the political side of YouTube radicalises young white males particularly, so it would be a cohort effect. They go from following libertarian and conservative commentators, to joining 'Alt-Right' white nationalist communities (Lewis, 2018; Tufekci, 2018). Scholars blame niche 'micro-celebrities' who promote each other, which creates echo chambers. Scholars also blame the algorithms for always suggesting more extreme content, forming filter bubbles. The YouTube influencers heavily criticise mainstream and left-wing media, and society broadly. That appears to put some young men in an epistemic bubble too, where they dislike and distrust everyone else (Nguyen, 2018). This triple filter would make it hard to even consider alternative perspectives. Although, the same could happen with too much hyperpartisan media from any ideology.

Political Engagement

With the field outlined, this section can look into political engagement specifically, referencing citizen roles at the heart of the literature (Bennett et al, 2011). For political engagement, the narrowest definition found was Brady's (1999). That is: any behaviour by ordinary citizens directed towards influencing some political outcome. Such definitions are narrow because non-'ordinary citizens', politicians for example, engage too. More to the point, engagement does not require influencing some political outcome. On the other end of the spectrum, Dennis' (2016) diary study of social media users points to perhaps the most nuanced definition. His 'continuum of participation' treats engagement as a process not an outcome. The argument being that so-called low

threshold forms of engagement such as reading or retweeting news herald more substantive engagement.

The continuum has four-steps, access, expression, connection, and action. Access is how citizens follow politics and engage cognitively with the issues. Expression is how this enables political communication between citizens. Connection is how people can then organise, to carry out goal-orientated action; the fourth and final step. This continuum of participation collates five citizen roles, as in the table 2 below. Each is associated with engagement repertoires of increasing intensity. These acts are not ranked rigorously and deductively by a researcher, as long criticised in this field (Vromen, 2003). For example, though, a lowly 'passive listener' mostly engages cognitively, seeking out political information. Intensity increases down the chart, through to the 'civic instigator.' They are associated with high-threshold engagement, possibly campaigning work, or even illegal protest activities. The continuum of participation was designed to classify primarily social media engagement (see table 2 below). Below definitions are generalised to fit this thesis' holistic approach.

Citizen role	Description	Indicators	Corresponding citizenship theory
Avoider	Avoids political exposure and engagement altogether.	They deliberately scroll past any political information and forego talking politics.	News resisters (Woodstock, 2004)
Passive Listener/ Active Listener	Seeks political exposure but does not engage beyond that. Seeks political exposure but mostly engages privately.	They read news, and may observe people talk politics. As above but will talk politics privately, ready to act when personally important issues arise.	Monitorial citizen (Schudson, 1999) Standby citizen (Amnå and Ekman, 2014)
Contributor	Seeks political exposure and engages publicly, but without much self-expression.	They might just post links on social media without comment, may talk politics often without giving much opinion, seeking mainly to inform or entertain others.	Digitally-enabled citizen (Papacharissi, 2011)
Civic Instigator	Seeks political exposure and engages publicly and expressively.	They talk politics regularly, refining their political identity. They participate in the most activism,	Actualising citizen (Bennett, 2008)

Table 2: Citizen roles, generalised for any medium.

Along with changes in agencies (collective organisations), and engagement repertoires explored elsewhere, a third main change Norris identified involves targets of political action (Norris, 2002). The targets have changed from traditional political actors, held accountable via votes, news media, and NGOs. Non-governmental targets are more relevant now, owing to globalisation and the shrinking of the state through privatisation, marketisation and de-regulation. This could be a period effect on engagement. Companies, NGOs, and transnational bodies including the European Union have been protested on issues such as global south exploitation in the case of Nike, and social media harassment or censorship in cases such as Facebook and Twitter.

The focus on engagement here is because, to provide some balance, increased engagement is one correlate of selective exposure that is unsettled and may actually be positive. It has been raised that embublement and any resulting polarisation may be beneficial for democracy, in increasing political engagement. Theoretically, people getting opinion reinforcement in bubbles, especially with the affective polarisation; increasing hostility towards opposition, could mobilise people to counteract that opposition (Duffy, Hewlett & McCrae, 2019). However, the empirical evidence has been very split on whether selective exposure at least increases, decreases, or has no effect on engagement.

That was shown in a recent meta-analysis (Matthes, Knoll, Valenzuela, Hopmann, and Sikorski, 2019). It sampled 48 studies, totalling 72,299 participants. There were notably no differences for age, gender, or location. It is equally supported (for example, Tench, 2018; Mutz, 2002) and rejected (for example Huckfeldt et al, 2014). Overall, this 'democratic dilemma' of one possibly needing to choose between maintaining either cross-cutting exposure, or engagement, should be examined further. It might speak to a tension between deliberative and participatory democracy, so it is worth exploring the following claim:

Young people's embublement positively correlates with political engagement.

Conclusion on Young People's Politics - Critiques & Responses

With the literature explored, this section evaluates common limitations found. It concludes with how this thesis and its methodology alleviate said methodological critiques, plus, synthesise and advance both literatures. First of all, studies on the correlation between selective exposure and engagement are limited epistemically. As with the political socialisation literature, studies are quantitative, positivist, deductive and large-N. The proposed mixed-methods design has holistic qualitative, interpretivist, small-N, and inductive elements, offsetting the same limitations outlined in the previous conclusion. Another limitation with the selective exposure studies considering engagement is that they sample the adult population by default. This thesis considers embublement and engagement across all mediums, when previous studies tend to focus on one.

Participant ideology must be better conceptualised, to avoid error variance found in current measures of selectivity that are subjective and reductive. Recognising the nuances explored above, this thesis will have participants themselves rate to what extent their exposure was pro or counter-attitudinal. That is, rather than categorising participants and their exposure reductively and subjectively as “liberals” or “conservatives.” Interviews and an ethnographic chart will enable further exploration of the themes discussed here.

This thesis' focus on young people engagement can contribute to the recurring debate around lowering the voting age, from 18 to 16 in the UK (Pickard, 2019). It could give an in-depth case study on some young people who are or are not roundly informed, engaged, plus politically and media literate. Some of the selective exposure and engagement studies have more nuanced measures of engagement than others. Here, engagement can be defined more broadly and more inductively similar to the continuum of participation. Regarding the citizen roles it collates, this thesis can explore roles across all mediums. Perhaps citizens embody different roles in different mediums, and over time. Dennis argued that people go through the continuum, but his diary study spanning a shorter timeframe did not focus on whether that happens. The young

people's politics literature over relies on quantitative survey data and polling data, also noted by Vromen (2003). They are narrow and unverifiable. This leaves room for the thesis' micro-level, holistic design. Lastly, on YouTube radicalisation the literature lacks concrete, micro-level evidence of it occurring. This small-N cohort study could capture that, also in any medium.

To finish, with the very latest research on young people and their participation in politics: first, it is important to situate misinformation and disinformation in relation to the most contemporary work in regard to news, political participation and young people, and with some international perspectives. Kapantai, Christopoulou, Berberidis & Peristeras' (2021) systemic literature review produced a disinformation typology outlining the following types: fabricated, clickbait, imposter, misleading connection, conspiracy theories, fake reviews, hoaxes, trolling, biased or one-sided, pseudoscience, and rumours. Classification is based on the following criteria: facticity – how factual it is, verifiability – whether it can be verified, and motivation – for example, politics, or profit.

Mejias and Banaji's (2019) content analysis suggested that young people are mostly framed negatively in UK national media coverage, during eight weeks in 2014-5. Young people's civic engagement is often represented negatively too, which risks limiting young people's engagement. Semi-structured interviews with 14 youth policy and practitioner experts suggested that, in opposition to the above representations, young people's issues are not that different to adults'. Young people face the same issues as everyone else, given the shared aspects of identity beyond age. Thematic analysis of ten government policy documents found conceptualisations of young people as vulnerable to radicalisation, such as by Islamic or far-right radicalisation online. These documents represent young people as passive objects of government efforts to protect them from radicals. These are argued to be problematic, simplistic conceptions. This thesis is therefore critical towards narratives of young people helplessly being radicalised online, instead exploring young people's agency in resisting embublement and any accompanying misinformation and disinformation.

Galarza-Molina (2023) interviewed Mexican college students about misinformation. A false image that Galarza-Molina offered students was reliably identified by the young

people whereas a false video less so. This was seen as concerning given the popularity of TikTok, a video platform, amongst young people. The young people were not aware of fact-checking sites either. Young people at least said that they would not share fake news and they associate it as more of a problem with older people. The young people favour social media but still follow trusted traditional media accounts. They are sceptical of all media, suggesting good political literacy. There was an interesting theme of the mere awareness of disinformation existing causing them political disaffection. For a few participants though it instead encouraged them to politically engage positively and guide others away from believing misinformation.

Suppers (2024) proposes a series of 'traditional' verses 'emerging' citizenship contexts. These are seven dichotomies about to what extent young people's civic engagement is still traditional (for example, offline) verses emerging (for example, now online). Does young people's participation skew offline or online, national or glocal, official or unofficial, collective or individual, system-based or issue-based, Personally-responsible/participatory (tackling symptoms) or justice orientated (systemic change), regular or sporadic? Suppers' survey of 115 German rural schoolchildren, and focus group of 21, found that the most common emerging citizenship contexts were glocal, unofficial, sporadic and issue-based. Many participants only engaged with unofficial citizenship contexts in school and their communities, rather than the official structures like student councils. Suppers calls for young people to be helped to develop participatory skills and to recognise the power they can have in both official and unofficial citizenship contexts.

Ferreira & Menezes' (2021) literature review contends that when it comes to civic participation, adults can learn from young people, via young people's non-electoral participation such as March for Our Lives in the United States, Fridays for Future from Europe, or the Hong Kong democracy movement. Such offline engagement often increases online and offline engagement in tandem. Ferreira et al also note the role of schools in promoting civic engagement via student councils, groups or clubs that foster debate and interest in social issues. Yet, teachers often avoid debate on topical issues,

fearing conflict, and schools are frequently unresponsive to students. All these socialising agents are to be explored in the qualitative analysis.

Literature Review Conclusion

This literature has begun to build the thesis' core argument that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This chapter specifically does so by arguing that the current literature has limitations that make embubblement levels and their negative implications for democracy unclear. Also, there is a literature gap on young people, where a political socialisation approach to embubblement is needed. The different types of bubbles have not been well defined and operationalised, nor considered together in one study. Embubblement should also be conceptualised holistically, across all mediums, Hence, informed by this review, this thesis will propose a holistic methodology to test for embubblement.

Chapter 3 Theoretical Framework: Proposing a Nuanced ‘Triple Filter’ Model of Embubblement

This chapter contributes to the thesis’ core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is ‘good’).. This chapter specifically does so by arguing for a nuanced ‘triple filter’ model of embubblement. Section one of this chapter is the theory section. It introduces the main theoretical framework, drawing on Chadwick’s (2013) hybrid media system ontology and French sociologist Bourdieu’s (1993) field theory. It then justifies the framework with reference to limitations of the literature, building off the last chapter. It makes the case for integrating a third filter, an ‘epistemic bubble’, into the political communication literature, forming the triple filter model of embubblement. The chapter justifies breaking from the binary operationalisation of embubblement, which assumes that opinion-reinforcement can only come from exposure to agreement, not disagreement. The chapter then draws on political literacy theory to justify the model.

With the theory introduced, section two of this chapter can then detail how the theory is operationalised. The standard operationalisation of embubbled is illustrated, then contrasted with the new operationalisation. It is further justified by reference to the cognitive biases then normative expectations and democratic principles it is rooted in. Covered last are the maths behind the operationalisation, and a conclusion. Ultimately, this chapter sets up the methods chapter that follows because first understanding how the variable ‘embubblement’ is operationalised is important given it is central to the methodology. The methodology then applies the novel triple filter model to test for the extent of embubblement in participant diaries.

Theory

The overall analytical framework, a proposed 'triple filter model' would be situated within Chadwick's (2013) hybrid media system ontology. These help to avoid some limitations of past selective exposure studies. Firstly, studies have had a construct validity problem when they label any disparity in exposure as politically motivated partisan selective exposure. It could be chance 'accidental exposure' or de-facto selectivity (Valeriani & Vaccari, 2016; Gaddy, 1984). That is exposure based on non-political factors such as the demographics a text targets. The broader sociological approach here, of agential and structural factors under the term embubblement, is safer. Claiming to have found embubblement is just a descriptive claim whereas attribution to selective exposure is a more difficult causal claim. This wider focus on embubblement contrasts with many studies, especially the selective exposure literature. Studies overwhelmingly focuses only on single mediums and units of analysis, mainly tweets on twitter.

Chadwick's (2013) hybrid media system ontology solves this. It centres on the fact that the media system has always been hybridised. This means it contains multiple mediums that blend together. For example, even newer online 'alternative media' rely on older mainstream media, for example they often show the BBC's output when criticising it as biased. The hybrid media system ontology has roots in French sociologist Bourdieu's (1993) field theory. This is, primarily, in that the hybrid media system is a 'field.' A field is any domain in which agents compete, exerting what power they have to get to the top of that field.

With the use of the terms structure and agency, they should first be defined. In agreeance with Bourdieu (1993), this thesis considers structure to mean the systems and relations that shape actions within a field. It follows that agency is the capacity of individuals to make their own choices, to the extent they are not constrained by social structures. A main variation in definition within the theoretical literature is the prominence given to either structure or agency (Wilson, 2024). With fields, Bourdieu reconciles structure and agency, modelling how they are intertwined. These definitions

of structure and agency are favoured in this thesis because the focus here is equally on agents (young people) and structures, namely socialising agents (family, education, peers, media and events). Agents work to utilise their agency and power to get to the top of a certain field and stay there, shaping it reciprocally.

Chadwick's prominent ethnography already successfully employs these conceptualisations in the political communication field. His ethnography shows how political actors such as activists, politicians, journalists, and tech companies utilise hybrid media for attention, profit, influence, and legitimacy in their field. In the terms of this thesis, it could be argued that such socialising agents exert power, competing to 'embubble' citizens. They all want citizens to be exposed to their agreeable ideas, not the opposition's. Plus, they want citizens trusting their ideas, not others'. This exposure to and trust of the in-group, not the out group, is how activists and politicians try to win elections, how news sources retain audience share over competitors, and how tech companies keep users engaged, for ad revenue.

Selective exposure studies tend to only consider exposure; exposure forming echo chambers and filter bubbles. They do not tend to account for trust. It should first be noted that there are differences between scholarly and informal uses of the term trust. The layman's definition is simply the firm belief in the reliability, truth, or ability of someone or something (Google, 2024). A recent literature review of the term trust, as relates to news media, uncovered three key elements: willingness of a trustor to depend to a trustee, amid uncertainty, to in the future act as expected of them (Fawzi, Steindl, Obermaier, Prochazka, Arlt, Blöbaum and Ziegele, 2021). Therefore, that is the definition used in this thesis.

There are some similar definitions and terms that this study does not mean by trust, because they are used informally, or infrequently and sometimes interchangeably in the literature. A small minority of studies have argued that media cannot be 'trusted' because to trust in something is an active decision requiring reciprocity, so mere 'confidence' should be used instead. Meanwhile, credibility is used as the perceived

accuracy of information at the time, so lacks the future orientation of trust. There is specific trust, for a specific source, such as ITV News. That contrasts with generalised trust, such as for news media as a whole. This thesis concerns specific trust. Participants are asked to gauge their trust in each individual source they encounter, for greater specificity and therefore construct validity.

To account for trust, this analysis integrates into the literature the 'epistemic bubble', a third, lesser-known filter from social epistemology, in philosophy (Nguyen, 2018). Current studies combat the filter bubble narrative by showing that partisans do get disagreeable 'crosscutting exposure', often on Twitter. However, strong partisans arguing on Twitter are likely still in epistemic bubbles. This is a filter in the mind moderating in-group trust, out-group distrust. It can have partisans automatically distrust, dismiss, uncharitably interpret, or mock any opposition. This can be influenced by cognitive biases evolutionarily adapted to spur weariness of out-groups, plus to protect one's deeply held, identity-related beliefs, as part of the self.

Crosscutting exposure then can just reinforce partisans' pre-existing beliefs, called the backfire effect (Nyhan & Reifler, 2010). Therefore, even disagreeable exposure might not constitute civil democratic deliberation for strong partisans. This was a key finding of the pilot study. Still, most people are not strong partisans. They do not have a niche perspective of reality constantly warped and reinforced in line with an ideology. Unlike strong partisans do, through daily exposure and engagement with other partisan actors and information sources, whether friendly or hostile, thanks to their epistemic bubble. There are three types of filters a citizen can be in at once. They have not been well defined and operationalised, nor considered together in one study. To operationalise embubblement holistically, this thesis coins the 'triple filter model.'

Definitions	Operationalisations
<p>Echo chamber (Sunstein, 2009, p.44)</p> <p>Just being around or hearing from people similar to oneself, with similar perspectives.</p>	<p>An individual (or group) exhibits ideological segregation if they are in:</p> <p>An echo chamber; to the extent that the information they are exposed to is pro-attitudinal (from 0-100%).</p>
<p>Filter bubble (Pariser, 2011, p.10)</p> <p>Computer algorithms personalise one's search results and social media feeds, showing more of what is already liked or agreed with.</p>	<p>a filter bubble; to the extent that that pro-attitudinal information was from sources which use personalisation algorithms (from 0-100%).</p>
<p>Epistemic bubble (Nguyen, 2018, p.1)</p> <p>Even when one hears other perspectives, these can be automatically dismissed, distrusted, uncharitably interpreted or mocked.</p>	<p>an epistemic bubble; to the extent that the information they are exposed to lacks perceived neutral or counter-attitudinal information that they are actually trusting/open minded towards (from 0-100%).</p>

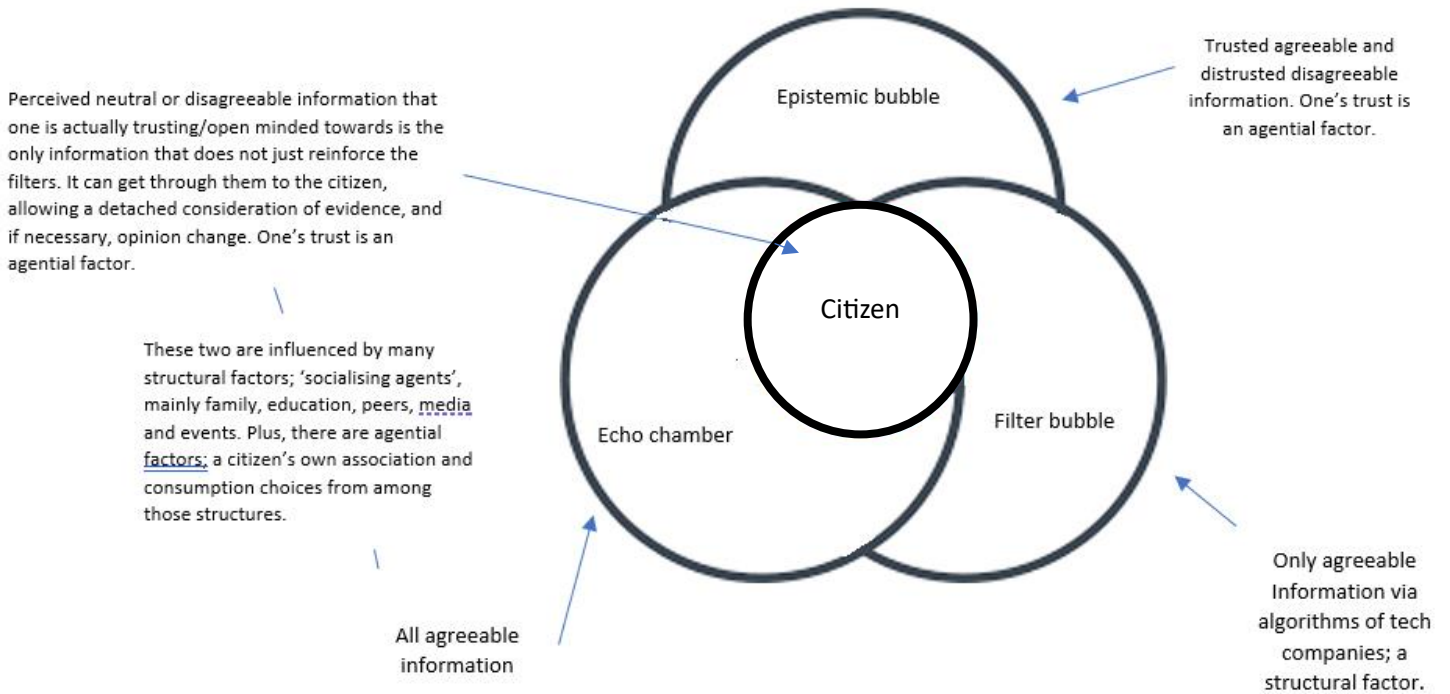


Figure 4: Proposed triple filter model.

Figure 4 shows what information contributes to each of this citizen's filters, and thus, to what extent the citizen exhibits embubblement (from 0-100 percent). This empirical operationalisation of the metaphorical bubbles allows for a nuanced and holistic measure of embubblement.¹

The epistemic bubble is an important addition, borrowed from philosophy, particularly social epistemology. It moves us beyond focusing on exposure. There is little use in getting exposure to other perspectives if one has no intention of being open to them and possibly having one's mind changed. If one is in a partisan community, it is likely that in fact plenty of the opposing opinions are seen - to discredit, mock or argue against. For example, Peucker, Fisher and Davey (2022) found that in far-right Facebook communities, the news articles shared were 57 percent from mainstream sources, over hyperpartisan sources, so relatively moderate. The third most common source was even a left-wing outlet, ABC News. Peucker et al highlight that such articles are simply reframed to deliver a far-right message. The (nominal) crosscutting exposure does not make partisan communities a bastion of open mindedness and democratic deliberation.

The problem is more that members of such a community are thereby made to be so inoculated against opposing opinions, that seeing them may only reinforce pre-existing beliefs and maintain the embubblement. For example, showing a 'climate denier' the science will probably only reinforce to them that the scientists are paid off. Stronger partisans can accrue a large stock of counterarguments with which to dismiss any challenge. This epistemic bubble concept may account for why strong partisans will seek out fierce disagreement, for example, when arguing on Twitter all day: it may still reinforce their pre-existing beliefs. To varying degrees, partisan communities are not unlike cults. New members are made to be alienated and cut off from outsiders and sometimes mainstream society, which are completely discredited and delegitimised, so that there is little chance, even desire, for escape (Melton, 2014). It becomes unlikely to encounter someone one disagrees with, but crucially, who is not automatically

¹ What has not been done is disaggregating the data between agreeable information encountered elsewhere, or via personalisation algorithms (this is the difference between sources contributing to echo chambers, or specifically online filter bubbles). This is not a priority, as there is already literature suggesting that homophily is more widespread offline than online. Furthermore, it turns out participants submitted very little offline content, so a comparison might not be that robust or interesting.

distrusted, such that one can be openminded to them and the idea that political opponents, and maybe society generally, might not be quite as bad as foretold.

This operationalisation is rooted in a political literacy perspective. The more agreeable a source is, the more one should question it, to offset one's biases, especially confirmation bias (Kappes, Harvey, Lohrenz, Montague & Sharot, 2020). Conversely, the more disagreeable a source, the more one should attempt trust and taking them seriously, as intellectual charity, also to offset one's biases. Confirmation bias via epistemic bubbles suggests the exact opposite correlation. That is, that people will trust a source the more they agree with it, for instance via confirmation bias. This measure will be reinforced by whether or not respondents had their mind changed on any issue, as reported via the survey. Conversely, abusive, or dismissive language towards opposition, in interviews or diary content, would suggest an epistemic bubble. Overall, the three measures of embubblment -- echo chambers, filter bubbles and epistemic bubbles -- can be plotted individually to check for the presence of each, or combined as one measure, under the umbrella term 'embubblment' here. Let us examine how this will work.

Operationalisation

The first step to operationalising the variable 'embubblment' involves the survey. The survey had the participant rate every single source they recorded encountering during the diary days, everything, from a *Guardian* article, any source quoted within it, to a friend they discussed politics with. A participant rated each source's agreeableness, then how much they trusted it on the topic, on a scale from 1 (very well) through to 7 (not well at all).

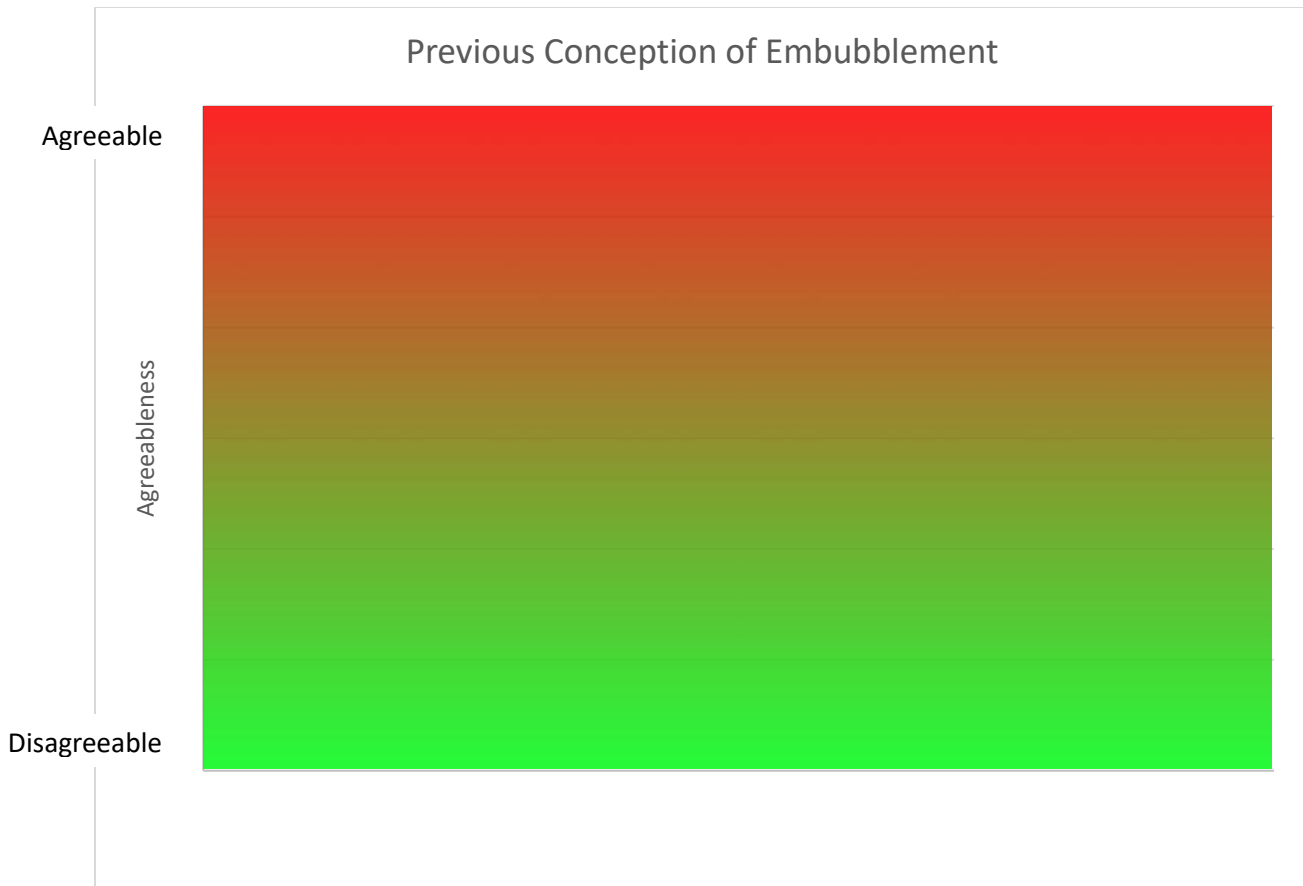


Figure 5: Previous, binary conception of embubblement.

Figure 5 illustrates the previous, binary conception of embubblement, where exposure to information one agrees with is unhealthy embubblement (red), and to information one disagrees with, healthily does not contribute to embubblement (green). This accounts for exposure: echo chambers and, when specifically online, filter bubbles.

Next, with the updated graph below (figure 6), it is suggested that adding in the epistemic bubble; what exposure participants are actually openminded towards (trusting of), significantly changes the calculation and colour pattern of the graph.

Sources that decrease embublement

High agreeableness +
Low trust

If a participant labels a source as say, 7, very agreeable, and 1, very untrustworthy, this is democratically healthy. Even if you are seeing strong agreement, the fact you do not trust it would suggest scepticism towards your own beliefs or own side, which is good political literacy; offsetting confirmation bias and avoiding embublement, especially the 'epistemic bubble'; partisanly trusting your own side.

Examples of this case:

Reading an article you agree with but being very weary of its bias.

Questioning someone you would usually trust, or everyone you agree with trusts.

Sources that increase embublement

Low agreeableness +
Low trust

If a participant labels a source as say, 1, very disagreeable, and 1, very untrustworthy, this is democratically unhealthy from an embublement perspective. This is the standard case of disagreeing with and distrusting the other side.

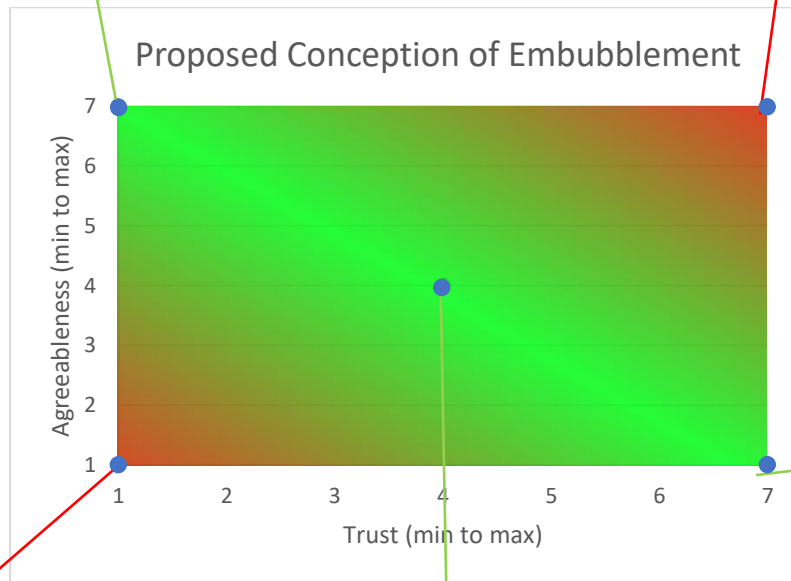
Example: dismissing everything 'evil Tories' say.

Sources that increase embublement

High agreeableness +
High trust

If a participant labels a source as say, 7, very agreeable, and 7, very trustworthy, it is bad enough to see such strong agreement, but to unquestionably trust it is even worse. If a participant were only getting this type of exposure, there is little opportunity for hearing each side, then if needed, opinion change and escaping the bubble.

Example: One participant only consumes feminist TikTok videos they agree with and trust a lot, very unhealthy from a filter bubble perspective.



Sources that decrease embublement

Low agreeableness +
High trust

If a participant labels a source as say, 1, very disagreeable, and 7, very trustworthy, this is democratically healthy because it means despite strong disagreement, the strong trust suggests there is still open-mindedness, therefore room for deliberation and if necessary, opinion change.

Example: talking with someone you like and trust, such as friends or family, where despite large political disagreements you can still deliberate civilly and possibly change your opinion.

Sources that decrease embublement

Middling agreeableness +
Middling trust

Sources the participant labels as neutral and/or they do not have strong opinions on are deemed healthy, as they do not do much opinion reinforcing either way.

Example: The average, relatively nonpartisan citizen consuming relatively neutral mainstream sources they neither partisanly trust nor distrust, like the BBC.

Figure 6: Embubblement matrix.

The embubblement matrix is a heatmap for categorising a participant's exposure, for example a news article. The redder the area it is placed in, the more the exposure contributes to unhealthy embubblement. The greener the area, the more it represents a healthy lack of embubblement. This accounts for mere exposure to information (echo chambers and, specifically online, filter bubbles) but now also openness (trust) towards the information (one's epistemic bubble).

The colour pattern is very different from the previous graph. This graph illustrates how in the triple filter model, it is not necessarily healthy to encounter disagreement, nor unhealthy to encounter agreement. Both can reinforce pre-existing beliefs and therefore embubblement, or not, depending on whether one is actually open-minded (trusting) of the information. The colour pattern suggests that if each piece of one's exposure were plotted on this graph, it is healthiest to have it all fall anywhere on, then closest too, the pure green diagonal line. It runs from the graph's top left to bottom right. Indeed, consider the average citizen, who is relatively nonpartisan. Their exposure would likely cluster healthily in the centre of the graph; mostly fairly neutral mainstream media that they are neither partisanly trusting nor distrusting of. Meanwhile, the strongest partisans' exposure likely falls unhealthy more in the reddest corners of the graph; niche hyperpartisan sources that they completely agree with and trust, or completely disagree with and distrust, either way reinforcing their pre-existing beliefs, that their side are right and or other side are wrong.

This conception of embubblement might now account for why strong partisans will actually seek out fierce disagreement, for example, when arguing on Twitter all day: because despite the (normally healthy) exposure to disagreement, it is still very unhealthy exposure, simply reinforcing pre-existing beliefs, as one would expect strong partisans to have. Strong partisan arguers would probably label each other as having very low agreeableness and very low trustworthiness, placing them in the bottom right of the graph, the reddest, unhealthiest area. Strong partisans may enjoy fierce disagreement because their epistemic bubble is still there to keep their ideology safe.

This operationalisation moves away from the binary of 'agreeable' or 'disagreeable' information, becoming a gradation, from most agreeable, through to neutral, then most disagreeable. Previous studies often omit that, and neutral information. This now accounts for how significant the disagreement is. Plenty of debate may be found in the tightest echo chamber, but focused on the finer points of its ideology. Meanwhile, hearing out drastically different opinions represents much more open mindedness and overcoming of one's biases.

Biases are the main theories that the triple filter model framework is rooted in, and therefore the normative expectation that partisans should offset their biases by actually listening to political opponents and trying to be openminded, not immediately distrustful. Meanwhile, they should limit their exposure to agreement, and be more critical of it, not completely trusting of it. Biases include selective exposure; the preference for agreeable information and confirmation bias; less critically processing what reinforces one's pre-existing beliefs (Berelson & Steiner, 1964; Del Vicario, Scala, Caldarelli, Stanley & Quattrociocchi, 2017). There are also in group, out group biases that can make one automatically assume the best of the in-group and their actions, but the worst of the out-group, such as attribution errors, halo and devil horns effects (Hewstone, 1990; Nicolau, Mellinas & Martín-Fuentes, 2020). There is the backfire effect too, where seeing disagreement can reinforce pre-existing beliefs (Nyhan & Reifler, 2010).

The triple filter model is also rooted in normative expectations and democratic principles. These include that informed citizens and voters require exposure to diverse viewpoints, notably by impartial journalists (Union, 1997). The framework's labelling of individual sources as 'healthy' or 'unhealthy' may appear hyperbolic. However, a participant's exposure should be fairly representative of their everyday exposure, so it adds up, potentially contributing to serious effects, primarily polarisation. Exposure to balanced perspectives should avert polarisation, promote political tolerance, and facilitate a public sphere, to name a few effects (Garret, 2009a). Theory from journalism studies states that exposure to source diversity ensures representativeness in consumption (Carpenter, 2008). The more different sources cited, the more likely the

story will reflect an issue accurately. Cohen (1992) corroborates that 'multi-perspectival news' helps offset a journalist's potential biases.

For each source, its two scores of agreeableness and trustworthiness from the graph above are averaged to give a score from 1 to 7. This forms a scale. On the scale, the further away the score is from 4 (healthiest), the more of an unhealthy bubble the source is producing.

1	2	3	4	5	6	7
Unhealthiest		Healthiest		Unhealthiest		
Most embubbled		Least embubbled		Most embubbled		

Example score combinations for any given source:

(7 = most, 1 = least):

Agreeableness	Trust	Average	Its distance from healthiest score, 4	Embubblemation level
7	7	7	3	unhealthiest
7	4	5.5	1.5	middling healthiness
7	1	4	0	healthiest
4	4	4	0	healthiest
1	7	4	0	healthiest
1	4	2.5	1.5	middling healthiness
1	1	1	3	unhealthiest

Figure 7: Embubblement's operationalisation, ultimately on a continuous scale from 0 (healthiest) through 1.5 (middling healthiness) to 3 (unhealthiest), in the black box above.

A participant's embubblement level was calculated for each individual diary day, as the average embubblement level of all sources they submitted that day. This single, but very nuanced value, can now easily be plotted and used in the quantitative analysis, and correlated with the other variables: partisanship, embubblement over time, polarisation, and engagement. All variables (except polarisation) are converted to the same scale, from 0 (minimum) to 3 (maximum), for best comparison.

Next is a more detailed discussion about the strengths and weaknesses of embubblement's operationalisation. Its strength is that permutations which receive the same score are conceptually equivalent. This is because that means they contain the same amount of opinion reinforcement.

An information source that gives a redder, higher score in a graph indicates being more in that type of bubble:

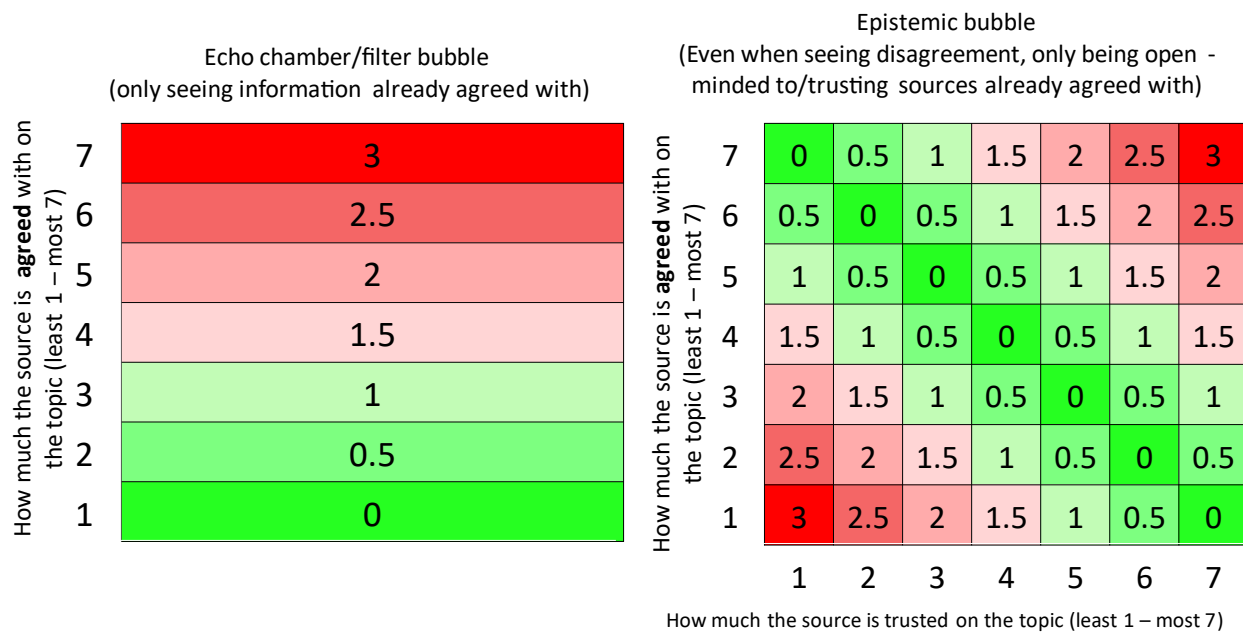


Figure 7b: How embubblement scores are calculated, via the previous agreeableness-only model (left) and the proposed triple filter model (right).

Figure 7b shows that the scoring system of the triple filter model (right) matches its conceptual underpinnings. The more agreeable a source is, the more it needs to be offset by decreased trust, in order to still get a low, healthy score - for the exposure to

not be unhealthy opinion reinforcement. Likewise, the more disagreeable a source is, the more it needs to be offset by increased trust, in order to still get a low, healthy score. Changes in levels of opinion reinforcement are calculated in linear increments of 0.5. Hence, a source accrues an additional unhealthy 0.5 onto their score for the number of adjacent squares they are away from the horizontal green line (healthiest, minimum opinion-reinforcement). This makes it clear to see why permutations with the same score are conceptually equivalent: they contain the same amount of opinion reinforcement. Weaknesses of the operationalisation include that it is less intuitive, more complicated. Another weakness of the model is that, like any quantitative operationalisation, it necessarily has to be a uniform, rough, *model* of reality only. Therefore, such proposed improved scientific models are argued to represent an ever-closer approximation of reality, rather than necessary perfectly capturing reality itself.

Conclusion

This chapter contributed to the core argument specifically by addressing the literature's limitations covered last chapter. It argues for overturning the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). The chapter first introduced the main theoretical framework, which had ties to Chadwick's (2013) hybrid media system ontology and French sociologist Bourdieu's (1993) field theory. Next, it justified the framework with reference to the literature's limitations, building off the last chapter. It made the case for integrating a third filter, an epistemic bubble, into the political communication literature, to form the triple filter model of embubblement. The chapter then explained its break from the binary operationalisation of embubblement, which assumed that opinion-reinforcement can only come from exposure to agreement, not disagreement. This chapter also used political literacy theory to justify the model.

With the theory introduced, the chapter then detailed how the new theory is operationalised. The standard operationalisation of embubblement was shown, then contrasted with the new operationalisation. It was justified further with reference to the

cognitive biases then normative expectations and democratic principles it is rooted in. Finally, there were the numbers behind the operationalisation, and a conclusion. This chapter has set up the methods chapter by explaining how the embubblement variable is operationalised, which is important given it is central to the methodology. The methodology uses the triple filter model, testing for embubblement in the data collected.

Chapter 4 Methodology: Proposing Holistic Data Collection Methods to Explore Embubblement

Introduction

This chapter continues the thesis' core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). Therefore, the selective exposure methodology that this chapter argues for is a mixed methods approach to the subjects of filter bubbles, political polarisation and the consumption and sharing of political news. Selective exposure is most likely to lead to agreeable content – again, it is the preference for agreeable information (Berelson & Steiner, 1964).

There are two sections. Section one is the introduction – the research question, and the ontology and epistemology used in this research. With that background established, section two concerns data collection: sampling, recruitment, digital ethnography, a cohort study, a diary study hybrid, a survey, an ethnographic chart, and interview hybrid. In the conclusion, the necessity of the new selective exposure methodology is argued.

Research Question

Again, given the small, unrepresentative sample in the end, the claims below are not formal hypotheses. They merely guide the descriptive statistics, that contextualise the qualitative analysis of this particular sample, and cannot be generalised beyond that.

Strength of partisanship positively correlates with young people's embubblement.

Young people's embubblement positively correlates with time.

Young people's embubblement positively correlates with polarisation.

Young people's embubblement positively correlates with political engagement.

RQ₁: What contributes to young people's embubblement?

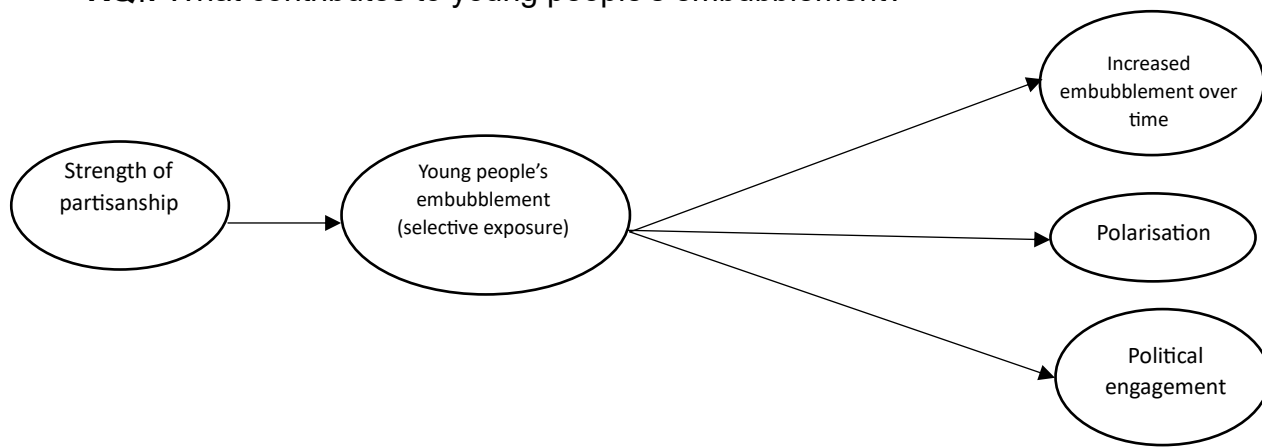


Figure 8: Model predicting the extent of young participants' embubblement and its implications for democracy.

As detailed later, all claims in figure 8 were explored quantitatively through regression analysis. This provides a rigorous, top-level overview of to what extent participants are in bubbles, and the implications for democracy. The mixed-methods link together primarily in that doing this first informs the qualitative analysis, because the more interpretive analysis of how exactly certain mediums and affordances contribute to embubblement draws on the quantitative data which rigorously quantifies embubblement levels of each source. The ethnography even contains quantitative graphs charting an individual participant's embubblement levels, to offer vital context. The research question (RQ₁) will be explored qualitatively through ethnography's thick description. This research question on what contributes to embubblement, in turn, offers a way of qualitatively understanding and shedding new light on the quantitative analysis, which merely quantified to what extent the bubbles exist. The qualitative analysis helps understand and provide nuance to the quantitative findings by revealing the mechanisms and processes through which embubblement takes place.

Ontology & Epistemology

The researcher is a thin constructivist, believing in structured context and a blend of positivist and more constructivist traditions, a midpoint accommodating the mixed-methods employed (Hay, 2002). This means that, firstly, the researcher's ontological perspective is broadly realist (Marsh & Furlong, 2002). There is an objective reality, given that we approximate it through ever more rigorous scientific observation and measurement, in line with positivism. Hence the use of quantitative methods in this quasi-experiment. This study *can* determine to what extent an individual encounters only disagreement, and its relationship with factors such as political engagement, out there in reality.

Still, it is clear people have their own perspectives of that reality, similar to interpretivist, constructivist, subjectivist, and critical ontologies. In contrast though, people's perspectives can simply be inaccurate and not align with that objective reality. This research accommodates an objective reality, while holding that it can be hard if not impossible to glimpse. Individuals are each stuck with their own positionality and biases. Nonetheless, their interpretation of reality can at least feel as real and be as determinant to attitudes and behaviours. That is why the study uses qualitative methods too, because perceptions are equally important.

This approach with qualitative methods, primary ethnography, is necessary for the researcher to interpret content participants submit, for example, to evaluate how it might construct a reality in which one's political side or in-group is always right, and the out-group is always wrong, embubbling the citizen. This approach is also necessary for interviewing participants, to understand how they construct aspects of reality, such as whether they conceptualise themselves as being in a bubble or not, and whether they see it as a problem or not, regardless of what the reality is. Overall, this ontology lends itself to a mixed methods study.

On epistemology, mixing qualitative and quantitative methods offsets limitations of each. This is methodological triangulation (Heesen, Bright, & Zucker, 2019). Following the three literatures reviewed, on selective exposure, political socialisation and young

people's politics, this study retains their primarily quantitative, positivist and deductive elements. Tried and tested regression analysis and surveys involve observation and empirical measurement to rigorously test preselected claims. However, the thesis breaks from this 'quantitative consensus' that binds political communication methodology (Karpf, Kreiss, Nielsen, Powers, 2015; Bennett & Iyengar, 2008). Quantitative and qualitative methods should speak to one another in research, but often do not.

Quantitative methods can provide rigorous quantification while qualitative methods can provide detail and context behind the numbers. This study is primarily qualitative, interpretivist, deductive, micro level, and small-N. That offers unpredicted detail and context behind the numbers, rare in the current literature (Johnson, Onwuegbuzie & Turner, 2007). The digital ethnography, which contains a diary study, ethnographic charts, interviews, and discourse analysis does introduce more subjectivity. However, that in turn is grounded by the more concrete quantitative elements. APC analysis aside, the longitudinal design is also uncommon. This cohort study's multiple waves improve reliability and allow for comparison over time; necessary to study polarisation.

Sampling

UK citizens were sampled, specifically young people, aged 16-18. This sample addresses the literature gap from almost all selective exposure studies being US based. It is timely and pressing to explore the situation here. Replication across cultures also bolsters the contested construct validity of selective exposure. Most studies use nationally representative samples, such as Beam & Kosicki (2014). That is impractical for a detailed, part qualitative study. Here, 16–18-year-olds were sampled. That is essential to explore the experiences of UK citizens potentially growing up in ideological bubbles. Young people, according to the impressionable years hypothesis, are more open to other perspectives. In regard to embublement, this could be a positive or negative. If young people are more open-minded, are they unlikely to get trapped in closed-minded bubbles? Alternately, does that impressionableness make falling into

bubbles likely? Attitudes and behaviours tend to become habitual (Hooghe, 2004). Therefore, adults' dispositions are long established in previous eras. By the same logic, young people in turn offer a window into the politics, democracy, and embublement of the future, as an additional contribution of this thesis (Hooghe, 2004). Overall, democratic theory suggests it is important to understand whether young people are becoming roundly informed citizens exposed to a plurality of views but ideally simultaneously able to do political engagement (Bartels, 1996; Union, 1997; Dennis, 2016).

Young people are the primary users of social media and online news (Newman, Fletcher, Eddy, Robertson, Kleis Nielsen, 2023). Hence, there is increased concern about their embublement. This regards algorithms creating filter bubbles, and the availability of hyperpartisan news online (Dennis & Sampaio-Dias, 2017; Lewis, 2018; Tufekci, 2018). It is particularly the case with independent sources that do not even pretend to uphold journalistic balance or traditional media's point counter-point format. independent media can continually reinforce to a self-selected audience that their political opposition are all incompetent, corrupt, and evil. This is without ever letting the opposition be present or interject to defend themselves.

Benkler, Faris and Roberts (2018) use network analysis to suggest there are whole right-wing media ecosystems built on this in the US, including outlets such as Breitbart and Fox News. Benkler et al call it 'network propaganda.' The concern in the UK is that an emerging right-wing broadcaster GB News is the start, of what some might call, a non-journalistic form of 'news.' This is a moving picture. Even recently published selective exposure studies may still use data from the Brexit-Trump era, or have not even reached that, which is less relevant for generation Z now. As are Facebook and Twitter. These proliferate current studies, when young people have largely moved on to Instagram (Ofcom, 2022).

Ages 16-18 are best for examining the main socialising agents' effects on embublement. This is because the participants will still be in education and living in the family home. The selective exposure literature overwhelmingly samples self-identified partisans. Hence the need for a less uniformly partisan sample, to finally reveal any

moderating effects of lacking partisanship. Less young people will be politically interested so should provide comparatively diverse strengths of partisanship (Neundorf, Smets, & Garcia-Albacete, 2013). To guarantee enough partisans then, students doing subjects such as politics and citizenship were sought primarily. Therefore, this is a desired self-selection bias.

Sampling young people can also contribute to the ongoing debate around lowering the voting age, from 18 to 16 in the UK (Pickard, 2019). The thesis can explore themes of young people being roundly informed, engaged, plus politically and media literate. Another justification for the sample of young people is that the selective exposure literature, as with most political science literature, samples adults by default. Also, studies often only sample partisans and internet users, given the concerns about partisans online.

The researcher investigated the practices and views of, for relevance, a purposive sample containing twenty sixth-form students (Ferber, 1977). A micro-level qualitative study can suffice with relatively small numbers of participants. These participants still produced more than enough data for one researcher to handle. A similar diary study, Dennis' (2016) work, succeeded with 29 participants. The initial aim was to capture data from 20 to 60 young people, as many participants as possible, to maximise reliability and investigate a broad range of views and practices.

Sixth formers provided a more representative and ideologically diverse than standard university student samples. The dependant variable, partisanship, is better isolated with students being fairly homogeneous regarding possible intervening variables. These include age, location, income, education, nationality, and life experience. Gender lacks influence (Stroud, 2008). To determine generalisability, the sample could be compared with national surveys such as the Hansard Society Democratic Audit, regarding demographic variables, and factors such as media consumption, plus political factors including level of political interest and partisanship.

Generalisability to a certain demographic is not the aim, given the inability to get a nationally representative sample for a qualitative study, and the focus being on strength of partisanship regardless of demographics. From an ethnographic perspective, early

ethnographies involved western men exploring foreign cultures (Murchison, 2010, p,7). This is argued to have produced biased representations. That is not least because these ethnographers would by default consult elder males within groups. Such homophily eases gaining access and building rapport. However, this likely led to poor representation of other demographics. To mitigate that problem here, the researcher will seek a sample that is as large and diverse as possible, then present their unique perspectives.

It has been suggested that under 18s are unworthy of attention because they cannot vote. This neglects their vibrant engagement repertoires, dominated by nonelectoral engagement. That is everything from reading news, liking Facebook posts right up to volunteering and protesting (Sloam, 2014). Indeed, a sample of young people can speak to such theory in the literature, about young people's issue-based engagement rather than serving traditional, grand ideologies (Vromen, 2003).

Demographic Traits	Sample Population	Target Population
Age	Age 17/18: 5, 56 percent Age 18/19: 2, 22 percent Age 16/17: 2, 22 percent	Age 17/18 33 percent Age 18/19 33 percent Age 16/17 33 percent
Gender	Woman: 14, 61 percent Man: 9, 39 percent	Man 51 percent Woman 49 percent
Ethnicity	White: 6, 77 percent Indian: 2, 15 percent Black African: 1, 7 percent	White 83 percent Indian 3 percent Black African 4 percent Other 10 percent
Location	Southeast England: 8, 89 percent Southwest England: 1, 11 percent	Southeast England 23 percent Southwest England 9 percent Other 68 percent
Subjects studying	Politics or International Relations: 3, 33 percent Economics: 2, 22 percent History: 2, 22 percent Biology: 1, 11 percent Other: 1, 11 percent	Biology 18 percent Economics 9 percent History 6 percent Politics or International Relations 3 percent Other 64 percent
Political engagement levels	Over the last year, how many have: Signed a petition for political or social cause: 6, 40 percent Bought or not bought a product for ethical reasons: 4, 27 percent Shared news about a political or social cause on social media: 3, 20 percent Voted in an election: 1, 7 percent Volunteered for a charity, social cause, or movement: 1, 7 percent	Signed a petition for political or social cause 83 percent Bought or not bought a product for ethical reasons 68 percent Shared news about a political or social cause on social media 3, 30 percent Voted in an election 55 percent Volunteered for a charity, social cause,

		or movement 52 percent
Education	Grammar school: 19, 83 percent Somewhat selective religious school: 4, 17 percent	Not found for UK 16-18-year-olds specifically
Socioeconomic status	First in family to go to university hypothetically No: 8, 89 percent Yes: 1, 11 percent Number of books in childhood home More than two bookcases: >200 books 5, 56 percent Two bookcases 101-200 books: 2, 22 percent One shelf 11-100 books: 1, 11 percent None or very few books: <10 1, 11 percent	“
Political ideology	Most important issues facing the country (picked up to three each) The environment: 7, 24 percent Mental health: 5, 17 percent Jobs: 4, 14 percent Housing: 3, 10 percent Racial, ethnic, or religious discrimination: 5 17 percent Gender equality: 3, 10 percent Education: 2, 7 percent Voting intention (every participant answered this every diary day they participated in, because voting intentions will vary over the 10 months) Labour: 66 votes, 50 percent Liberal Democrat: 23 votes, 17 percent Conservative: 20 votes, 15 percent Greens: 15 votes, 11 percent Don't know: 4 votes, 3 percent None: 3 votes, 2 percent Reform UK: 1 vote, 1 percent	Racial, ethnic, or religious discrimination 51 percent Mental health 46 percent The environment 41 percent Housing 27 percent Crime 26 percent Jobs 23 percent Education 18 percent Gender equality 15 percent Physical health 12 percent Immigration 9 percent

	<p>Self-Identification on political spectrum (again every participant answered this every diary day they participated in, because self-identification can vary over the 10 months)</p> <p>Centre left: 51, 37 percent</p> <p>Left: 37, 28 percent</p> <p>Centre right: 19, 15 percent</p> <p>Centrist: 11, 8 percent</p> <p>Don't really have political beliefs at the moment: 5, 4 percent</p> <p>Far left: 4, 3 percent</p> <p>Right: 4, 3 percent</p> <p>Far right: 0, 0 percent</p>	
Political interest	<p>Asked each diary day again</p> <p>Interested: 53, 40 percent</p> <p>Very Interested: 44, 33 percent</p> <p>Somewhat: 28, 21 percent</p> <p>Not really: 6, 5 percent</p> <p>Not at all: 1, 1 percent</p>	Not found for UK 16-18-year-olds specifically
Strength of partisanship	<p>Asked each diary day (weakest to strongest partisanship, 1-5 scale)</p> <p>4: 58, 44 percent</p> <p>3.5: 38, 29 percent</p> <p>3: 16, 12 percent</p> <p>4.5: 10, 8 percent</p> <p>5: 8, 6 percent</p> <p>2.5: 2, 2 percent</p>	“

Table 3: Sample representativeness, compared to UK young people generally (ages 16-18).

Table 3 suggests the sample is not particularly representative of 16 to 18-year-old young people in the UK², across practically all traits listed. This is because primarily qualitative research requires a smaller sample, and generalisability is not the aim. There were also the difficulties of recruiting during a pandemic. Therefore, even more than usual the quantitative findings should be taken into consideration alongside similar studies, ideally large n studies. The lack of representativeness is factored into the analysis throughout. Examples include a cautious phrasing of findings, and avoiding drawing conclusions about a demographic based on one or two participants. National surveys are referenced to verify suspected trends.

In the UK, 16-18-year-olds are approximately 3.3 percent of the population, 2,200,000 people (Office for National Statistics, 2022). On to describing the sample, as compared with that general population of UK 16-18-year-olds. Ages 17/18 are slightly overrepresented here whereas ages 18/19 and 16/17 are slightly underrepresented. The study's sample skews female when the general population skews slightly male. For subjects studied, Politics or International Relations are very overrepresented. Similar subjects, namely history and economics, are slightly overrepresented. Biology is slightly underrepresented. The vast majority of subjects are completely absent, as are young people outside of sixth form.

Much less of the sample are politically active compared to UK young people generally. The Southeast is highly overrepresented, overwhelmingly London, with almost no one

²If needed, more technical details about representativeness: the sample's demographics listed in table 3, all the way down to and including 'most important issues facing the country', are approximate (except gender and education). This is because only about half of participants completed the demographics questionnaire (9 of 21 participants). The other demographic data are precise. The demographics questionnaire was done after the ten months of diary days, as they were more important. The priority was to delay participant fatigue, attrition, and avoid influencing their behaviour during the diary days if participants were primed to consider their demographics. The drawback was many participants had left by the time the demographic questionnaire was administered. Almost all target population data come from a nationally representative sample of young people, with a booster sample from London (Sloam, forthcoming). Age, gender then ethnicity data came from the Office for National Statistics (2022; 2018). Note that national ethnicity data is approximate, since it uses a slightly broader category, 16–24-year-olds.

from elsewhere. White people are slightly overrepresented, Indian, and black African people are slightly underrepresented. Other ethnicities are completely absent. Vastly overrepresented are the grammar school educated, those with higher socioeconomic status, political interest, and strength of partisanship. Participants prioritise political issues slightly differently to other UK young people, but they do lean towards progressive issues, also Labour, Lib Dems, and the left of the political spectrum, which is more representative of UK young people.

Recruitment

One of the researcher's supervisors has worked with young people's politics organisations. From the Association of Citizenship Teaching, he procured a list containing 105 schools from across the UK, suggesting their potential interest in political literacy. They were all contacted, along with three others due to being close to the researcher. Those three did not participate anyway. School websites were scoured for email addresses of their reception, school leadership, head of sixth form, and any teachers of relevant humanities and social science subjects. These were mainly citizenship, politics, and media studies. It should be noted that individual emails, also reminders, were sent rather than using bulk emails for the most part. It is unknown then how many emails went unseen in spam folders. It is possible. One participant later complained that an email for them went in their spam folder. Few bulk emails might be better.

The sampling introduced bias, mainly from the 105 schools whose students could possibly be disproportionately politically literate, out of approximately 4,188 secondary schools in the UK, perhaps then the top four percent of schools for political literacy interest (Besa, 2019). Again though, politically interested enough schools and participants were necessary for uptake. Representativeness was still gauged via demographic questions. Each participating school's ethos was researched, to assess whether they are at all focused on political literacy, to possibly provide important context.

Several young people's politics organisations were approached by the supervisor. These were unfortunately unable to help recruit due to the Covid-19 pandemic causing reduced funding, and staff being furloughed. The schools and students were made much busier, what with last minute transitions between online and offline learning, Covid testing, and uniquely important mock exams at the time. Reportedly, teachers were told to only focus on essential tasks. There was also the general uncertainty, anxiety, stress, illness, and death, likely making it difficult for people to commit.

The sign-up form, forwarded by teachers, contained a project summary, information sheet and consent form. It is in the [online appendices](#). The earliest that a gatekeeper was approached was 23rd October 2020. Two months later, on 3rd December 2020, the first participant signed up. Four months later, by 5th March 2020, 68 participants signed up. A total of 20 participants got set up for the study. They spanned five schools in the south, within an hour and a half of London. About two thirds of participants are from grammar schools. These are possibly better funded, so more able to handle such extracurricular activities during a pandemic. This means more biased sampling. It is acceptable for qualitative based studies to be so, and be small-N. The focus is on accurately and holistically portraying the individual's experiences, not a nationally representative picture. Ultimately, it is fortunate the fieldwork could be carried out, otherwise intact, during the pandemic. Others were not so lucky.

Participants were offered emailed vouchers; Amazon, unless they expressed another preference. They got £5 for getting set up, then £10 and a raffle for further £5s after each diary day. Incentives can influence participants (Druckman, Green, Kuklinski & Lupia, 2011). However, these are not excessive, though necessary to spur participation and show thanks. Past ethnography has been criticised for leaving informants without tangible benefits despite significant work, creating an exploitative relationship (Murchison, 2010). There are also less tangible rewards: experience for their CVs, furthering science, and the findings informing stakeholders.

The invitation links to a Google form to register using email addresses. To make the project more comprehensible for the young audience, it was titled something simpler, 'how socialisation influences our political communication.' In line with that, there is no

mention of political engagement, being in bubbles, the specific claims, or the focus on young people. This reduces self-presentation concerns of participants feeling self-conscious about being in unhealthy bubbles, or not doing enough political engagement (Spears & Lea, 1994). It also avoids demand characteristics, experiment demands and priming their identities as young people. Otherwise, participants might feel obliged to act in ways they think the researcher wants them to, for example, as representative of young people or their other demographics.

Once signed up, participants were sent a simple instructions document, [\(in appendices\)](#). This explains how to access and use the required apps, then practicing recording and uploading at least one piece of diary content. Participants were given £5 vouchers for that alone, since it is a mundane and taxing barrier to entry to overcome. Paying participants so early should build trust, enthusiasm, and good faith. The instructions were designed as a colourful, engaging worksheet, which could be taught in class, appealing to teachers with time to fill. That did not happen, especially with the pandemic. Participants did it themselves. Alternatively, Zoom calls were offered, to get them set up quickly and easily.

Each instructions document was given a unique, random login for the participant's new Gmail account. The instructions documents were then automatically randomised then sent out via mail merge, allowing anonymity. The throwaway burner accounts are for accessing anonymous Google Drive accounts, as cloud storage for saving diary content. Logins use random words and numbers, to avoid any identifying names and passwords. Accounts are therefore not linked to the individuals or their personal details such as a name and email. Anonymity reduces self-presentation concerns, such as someone otherwise hiding that they consume far-right content. Although some inauthenticity persists with study conditions, a more authentic picture should emerge.

This is deemed better than older methods where participation occurs in person, by phone or polling company, making participants identifiable. The aggregate behaviour method is the only superior here. Scraping people's data off social media skips study conditions altogether. However, not consulting people is severely disadvantageous. Ideology must instead be deduced through dichotomous and patchy Twitter bio self-

identifications. Hence, the proposed method sounds best. From this point on the researcher monitored their email to see if (potential) participants had any questions or want to discuss the research.

Digital Ethnography

The proposed methodology will be evaluated against the four existing selective exposure methods, detailed in the literature review: retrospective reports, behavioural intentions, observed behaviour and aggregate behaviour. This selective exposure study offers long-overdue methodological improvements. Some original, others from little known but crucial methods reviews, Clay, Barber, and Shook's (2013) plus Murphy and Westbury's (2013). Ethnographic guidance comes primarily from Murchison's (2010) *Ethnography Essentials*. Another significant influence was Dennis' (2016) ethnography and diary study of the activist organisation 38 Degrees. Also consulted were various guides on research methodology for politics, political communication, and qualitative methods. Many methodological improvements were trialled in the master's dissertation, as a pilot study (Downham, 2018). The proposed methodology builds from it, and the observed behaviour method. Clay et al (2013) found observed behaviour already has the least limitations. The biggest, its reliance on one instance and one medium typically under lab conditions, solved here using digital ethnography.

Ethnography's longer timeframes boost internal validity by involving more data. They are more representative than one instance, reducing the influence of anomalies (Clay et al, 2013). Behavioural intention methods risked them, usually being lab experiments involving one-time use of a mock website. Retrospective reports and aggregate behaviour rival the proposed method regarding length. Retrospective reports can cover as long a time as respondents can remember. Aggregate behaviour is bound only by restrictions on accessing social media data. The proposed method is limited by incentives offered to have people participate longer. These three methods tie here.

Digital ethnography addresses the literature's lack of detail, context, and deductive exploration (Murchison, 2010). The descriptive prose offers 'thick description'; richly explaining a group's behaviour so that outsiders can understand it. The method is richer than many lab experiments and surveys because it does not collect data through a tightly controlled process. The digital component here allows for a multi-sited ethnography (Hine, 2020). This meant the fieldwork could take place in numerous locations, or field sites, wherever participants happen to be. The researcher otherwise could not have observed every participant's political communication simultaneously, without participants recording it through digital technology. In that way, this ethnography stems from and advances the active audience tradition of political communication, or 'living room' studies, for example Fiske (1989), Morley (2002), O'Loughlin & Gillespie (2012), and Livingstone (2013). The active audience tradition centres on how diverse audiences have diverse exposure to and interpretations of communications, plus reciprocal effects on those communications (Hall, 2000).

The researcher, as an ethnographer, becomes the main research instrument. They immerse themselves in the culture, in this case that of young people's political communication. Through participant observation, they actively engage with research participants. These are often called informants. Informants are more active and have a longer and more informal relationship with a researcher (Murchison, 2010). The aim is to go from having an outsider's to an insider's perspective. The researcher should adopt a more dependant and student-like role, with informants being the teachers. Extensive field notes are taken throughout the fieldwork, constantly refined and reflected upon as interesting themes and a structure emerge.

A disadvantage of specifically digital ethnography is that ethnographers cannot to the same extent commit to 'being there'. The ethnographer is not physically with informants. Researchers miss what goes on outside the screen, including where and what participants are doing at the time, and such wider context. Recordings tend to emphasise some aspects of a situation over others (Murchison, 2010). For example, sound recording a protest omits visuals, hindering ecological validity. The informant might have seen picket signs, banners, body language, and movement which go

unrecorded in audio. The interviews could follow up on such details roughly. They could ask what participants were generally doing during exposure and engagement. A piece of media or footage of an event could be findable online, if more context were needed, or if any recording were missing or of low quality.

An advantage of ethnographers not physically 'being there' is the relative unobtrusiveness of observing and notetaking far away from informants (Hine, 2000). That improves ecological validity. There are advantages of ethnography compared to more top-down methods, mainly questionnaires. The researcher's cultural assumptions get embedded in questionnaire questions and respondents often cannot contest them (Hine, 2000). Such methods might capture participants' normal or ideal behaviour and views, rather than capturing the messiness that exist in real life.

Ethnographers ideally become participant-observers, whereby they engage in the practices that their participants do. A digital ethnographer necessarily has a more passive observer role, at least until interviews. The quasi-experimental diary study should be conducted at a distance anyway, to maintain external validity. Overall, ethnographies are ideal for incorporating a complex blend of qualitative or quantitative methodologies, to fit complex subject matter. Hence, this is a mixed-methods, quasi-experimental digital ethnography. It incorporates a 10-wave cohort study, diary study hybrid, an ethnographic chart, interview hybrid, and surveys.

Cohort Study, Diary Study Hybrid

Cohort studies are longitudinal designs. A cohort of participants are followed over an extended period of time. Measurements are taken at regular intervals called waves. Such longitudinal designs are tried and tested for tracking development of political behaviour. There were several examples across the three literature reviews, to the point of perhaps being over relied upon in political socialisation and young people's politics literatures. Examples included Rodriguez, Moskowitz, Salem and Ditto's (2017) panel study, reporting a significant increase in Americans' selective exposure between the

years 2000-12. Neundorf, Niemi & Smets (2013) showed how civic education can level disparities in political engagement in those from apolitical families. Sloam and Henn (2018) used nationally representative surveys plus polling data to track 'young cosmopolitans' increased political engagement over recent decades. One criticism was that these studies were quantitative, so lacked detail. A mixed method cohort study is proposed.

This cohort study involves 10 waves, as many as possible, for reliability and testing for polarisation over time. The timeframe was influenced by participant attrition. There was one wave at the end of each month. Single days may be short, hindering reliability, but peoples' exposure varies little from day to day. An individual should roughly continuously live around the same people, use the same platforms, and follow the same select sources. Single days were fairly representative then. They yielded a lot of data, especially for one researcher to process. Longitudinal research matters because the multiple days improve reliability by minimising the influence of anomalies. Spreading participation out also minimised panel conditioning (Sturgis, Allum & Brunton-Smith, 2009). It minimized the risk that participants remember in detail what happened the previous wave, for it to influence their current participation.

The longitudinal design could capture polarisation. Perhaps a participant drifts rightward, from consuming the Daily Mail's immigration coverage, that they report agreeing with a bit, to Breitbart's, that they go on to agree with perfectly. Towards the end of each month, random, 'normal' days are used. Many studies centre on elections, such as Hayat and Samuel-Azran's (2017) during the 2016 US primaries. These are unique, polarising events that likely heighten selectivity and hostility (Stroud, 2008). Regular days are more representative of most of the time. This should therefore standardise and ease comparisons with other times and places. The only aim here was to hold diary days on different days of the week: a Monday, then a Tuesday, and so forth. Ethnographers try to make observations more representative in ways such as this.

Turning to the diary study aspect of this cohort study, diary study hybrid: in a diary study participants record material or notes longitudinally (Carter & Mankoff, 2005). It is standard ethnographic practice to have informants record their experiences and

routines (Murchison, 2010). Recordings preserve these, as cultural objects for analysis, and for eliciting informants' reflections. These concrete positivist data ground the more interpretive, unverifiable data on participants' views and memories. The diary study was inspired by Dennis' ethnography (2016). His activist informants recorded and reflected only on select stories they followed. Such patchy and subjective recollections are not so useful here. Also, participants required nagging to write their diary entries. Fatigue made some drop out despite costly incentives (Dennis, 2016).

Therefore, this study had to ease participation, whilst eliciting more complete data. The method must also enable the researcher to monitor diarists and remind them to record content. The solution was to use Gmail accounts, Google's free email service.

Participants were emailed multiple times about an upcoming diary day, far in advance, then the day before and first thing on the diary day. Reminders are also given directly by their teachers. Bundled with Gmail is Google Drive, a free cloud-based storage service. This is used for compiling the diary. The researcher could access the Google Drives using the anonymous logins assigned to participants. These are widespread Google services that students may have already used, easing participation, and trust, as a big organisation, namely Google will have even better data protection than a university. That the study could be done entirely online anonymously and in a distant way should allay participants' self-presentation concerns. They and the researcher do not know each other. Even a shared social network is unlikely because the researcher does not live around London where students are located, or know many people there.

This procedure built off my master's dissertation, which was the pilot study (Downham, 2018, p,26). It had a similar but much simpler procedure using software called Pocket. Pocket is a website and app that lets users save web links. It is functionally a cloud-based bookmark bar, plus links can be tagged and therefore better organised. Pocket worked well. It was easy to use and synched across devices. It even archived content as the user saw it, useful in case of a news site's later edits or deletions. Overall, it was praised as a novel approach. On reflection, it had limitations now addressed. The main problem was that it could only store web links. This meant the study neglected offline political communication, and anything which did not have a stable URL to save.

Examples include social media activity. Facebook content, for example, often can only be accessed if one is logged in and connected to the user or page that posted it. Plus, it would be impractical for participants to save the URL of every individual social media post seen. The pilot study therefore only had participants record their online news consumption from online news outlets, limiting ecological validity.

Another problem was that participants forget to 'tag' content with where it was found and where applicable, via whom. Example tags included 'shared by friend on Facebook' or 'from The Guardian directly.' Despite the instructions, participants forgot to do that. This left the research unable to determine the extent algorithms were involved in content selection, to distinguish echo chambers and algorithmically-created filter bubbles. The pilot study only had online news recorded, caught up in the panic over political segregation online. To try offsetting that, its survey did ask how often participants got news from all other mediums and to what extent each medium was pro-attitudinal. These are very limited self-reports. Recalling exposure and evaluating how much is pro or counter-attitudinal constitutes a heavy cognitive load. It therefore requires heuristics (mental shortcuts), risking bias. These self-reports could only provide rough context. This is why this PhD thesis became an ethnography yielding rich context, and observational data from all mediums.

Participants were asked to keep a diary of all the political communication they were party to, over those diary days. What is 'political' is subjective, so only rough guidelines were given. Participants were encouraged to judge for themselves, but include any edge cases, to create a low threshold. Hopefully then at least nothing important was excluded. Participants used PC and mobile screen capture software to record their online political participation, discussion, and information exposure. 'Exposure' is defined broadly, meaning any information one is exposed to, on any topic or medium. The focus here however is on any political communication participants partake in, both offline and online, across social media, forums, articles, videos, blogs, email, and messages.

Mobile devices' video or sound recorder could be used to record older media consumption including radio and TV, also, face-to-face communication such as talking politics with acquaintances or attending political events. Print media such as

newspapers, magazines and books are photographed. Participants can circle content to indicate which exact parts they read. They can also record, photograph, or at least note down any further exposure and engagement. They might photograph a political poster they read or note down products they 'boycotted' (buying products to send a political message of support), for example.

Overall, there is a lot of audio and visual data, which despite its growing prominence, political communication research often still forgoes for easier textual analysis (Graber, 2004). In cases where there is a privacy or ethical concern regarding the nature of a discussion, or recording others, participants can opt to write down a summary of the political communication. These are uploaded as word documents. Participants can edit or delete anything that is sensitive or irrelevant. All this forms their diary, otherwise uploaded to the Google Drive of their Gmail account.

Everyday political communication should therefore be documented relatively wholly and objectively. Such data quality, thus construct validity, was not found in the literature. Retrospective reports are vague, bias-prone, and unverifiable (Garret, 2009a). Behavioural intentions and observed behaviour usually centre one source, often a mock website with a balance of content. This forbids pursuit of neutral or unrelated content, likely inflating selectivity (Druckman & Kam, 2011). Aggregate behaviour methods determine outlets' ideology by the ideology of those who share its content. That operationalisation of selective exposure is circular, plus, should a *The Sun* article circulate amongst liberals, mocking it, that pushes *The Sun* towards being labelled liberal.

The study contributes many long overdue methodological changes. It is the first to mix in qualitative, interpretivist, inductive and longitudinal elements. This provides micro-level detail and context beyond reductive group-level averages, and pre-selected narrow, and abstract correlations. Existing studies overwhelmingly concern single mediums, mainly online news, single services, mainly Twitter, and a single unit of analysis, mainly tweets. This limits ecological validity, ignoring how citizens consume diverse older, renewed, and newer media within the hybrid media system (Chadwick, 2013). By only worrying about online embublement, many studies perpetuate 'digital

dualism' (Jurgenson, 2012). They treat online as it were somehow separate from offline reality. People also partake in political communication across lean-forward (active) and lean-back (passive) mediums (Rigby, Brumby, Gould, & Cox, 2019). It can be explored how selectivity fluctuates, for example, in Twitter debates where partisans can relish fierce disagreement.

As a solution, participants use screen capture software on any devices they use. They log in using their new Gmail accounts, for anonymity. They then upload the video as part of their diary via Google Drive. Free, reputable, accessible screen capture apps recommended are OBS, and 'Screen Recorder' for handheld devices. Apple devices have ones built in. Participants can turn these on whenever political communication occurs. Online, recording distinguishes say, coming across articles on Facebook, and going direct to a news site. This is important given that the different affordances mediums offer for aggregating information involve different levels of algorithmic influence, as a possible interviewing variable in selectivity.

Recording would uniquely enable delineation between echo chambers and algorithmically created filter bubbles, by showing exactly how information was accessed. It may uncover participants exiting disagreeable information faster or scrolling past it. Recordings reveal exactly which parts of a text were consumed, and time spent doing so. Participants will be told to regularly end and save long recordings in case of interruptions, for example their device turning off, as recommended by Tang et al (2006).

Capturing everyday exposure is uncommon, despite it increasing ecological validity. Meanwhile, behavioural intentions and observed behaviour methods are generally artificial lab experiments offering limited choices. Retrospective reports and aggregate behaviour methods have ecological validity, as consumption occurs naturally with subjects unaware of the research. However, past studies mainly concern single mediums, primarily Twitter, for example Grossetti, Du Mouza, Travers and Constantin (2021) and Wolfowicz, Weisburd and Hasisi (2023). This does not accommodate how people rely on multiple mediums for politics (Wright, 2012).

The literature review suggested screen capture is not common in these research areas. It is common in usability studies, for example Tang, James, Whittaker and Drews' (2006). Participants are screen recorded testing the user experience of websites or software. The relatively holistic nature of recordings allows for deeper analysis. Screen recording has been used in a variety of studies outside politics. There is the information literacy of school pupils, such as Bhatt, Roock, Adam's (2015) ethnography. It recorded pupils' PCs, and social media messaging on phones during class. Meanwhile, Tang et al recorded employee collaboration on PCs (2006). They reported that such observation can alter participant behaviour. This 'Hawthorne effect' risks ecological validity.

To mitigate that, participants controlled when they turned on and off the recording software, which this study does too. Nonetheless, they reported evidence of the Hawthorn effect. One participant messaged someone, saying he could not mess around as he was being recorded. Therefore, this thesis will go further by enabling anonymity, obscuring the study's specific focus (Murchison, 2010) on selectivity and engagement, and allowing time pre-study for the novelty of recording to wear off. Participants should also be able to edit or delete anything sensitive or irrelevant. Tang's (2006) study recorded external sound too, which this study does not require.

Whilst this limits the data, it leaves participants some privacy. The interviews can inquire about such context. Researchers did delete all the data afterwards, whereas the researcher here will archive it for future study or replication. Both studies anonymise data before publication or presentation. Names and other identifying information will be removed. Phrases that could be Google searched will be reworded. Overall, any Hawthorn effect should be much lesser than the traditional approach, having a researcher standing over an informant's shoulder.

Survey

The main aim of the survey is to generate variables for regression analysis. The first measures are how agreeable and trusted participants' content was for them, and

therefore how much of a bubble they are in each diary day. This becomes the variable, embublement, and also change in embublement over time. This value is the difference in a participant's embublement level from the prior wave compared to the current wave. These are for checking whether young people's embublement positively correlates with time, as in, are young people going down 'rabbit holes' of more and more opinion reinforcing content over the ten months? There is also a measure for strength of partisanship, which also becomes a variable, change in strength of partisanship over time, to check if strength of partisanship positively correlates with young people's embublement, and if young people's embublement positively correlates with polarisation. Lastly, there is a political engagement measure to check if young people's embublement positively correlates with political engagement.

Questionnaire links were sent to the participants' anonymous Gmail accounts immediately after each diary day. Questionnaires were completed as soon as possible so the respondent's views and memories hold. These were done last to delay questions that would prime respondent's identities, for example as conservatives. It avoids experiment demands or demand characteristics such as conservatives feeling expected to play the 'conservative role' in the study, likewise for young people (Intons-Peterson, 1983). Online questionnaires bypass social desirability biases of otherwise interviewing and administering questionnaires in person (McBurney & White, 1994).

Again, positivist measures are used here to ground and more precisely measure other qualitative, interpretivist data from elsewhere involving views and recall. Likewise, those ethnographic charts and interviews can verify and expand the narrow operationalisations here. Overall, the surveys do ask a lot of questions, but they are quick owing to being simple, formulaic closed questions on Likert scales. That should minimise participant fatigue (Egleston, Miller & Meropol, 2011).

The first half of the questionnaire is in Google Drive itself. As soon as the diary day is complete, the researcher accesses the Google Drives. The researcher then composes each participant's bespoke questionnaire. This has to be done quickly, to capture their views and memories at the time, for reliability. Files in the Google Drives are annotated

with “comments”, similar to in Microsoft Word. Each comment contains two survey questions, annotating and timestamping every single source within the diary. Sources might include, for example, BBC News, Boris Johnson, or a schoolfriend. The first question is the agreeableness measure: ‘How well does [the source] tend to represent your perspective on the topic? Second is the trust measure: ‘How well do you trust them on the topic?’ Participants later answer these on the 7-point Likert scale, from (1) ‘very well’ to (7) ‘not well at all.’ Middle, neutral answers are ‘(4a) don’t know’, (4b) ‘I don’t have an opinion on the topic’, and (4c) ‘they don’t have a clear opinion on the topic.’ There is also ‘Other – please explain’, to accommodate further unexpected nuance. Google Drive conveniently autosaves everything.

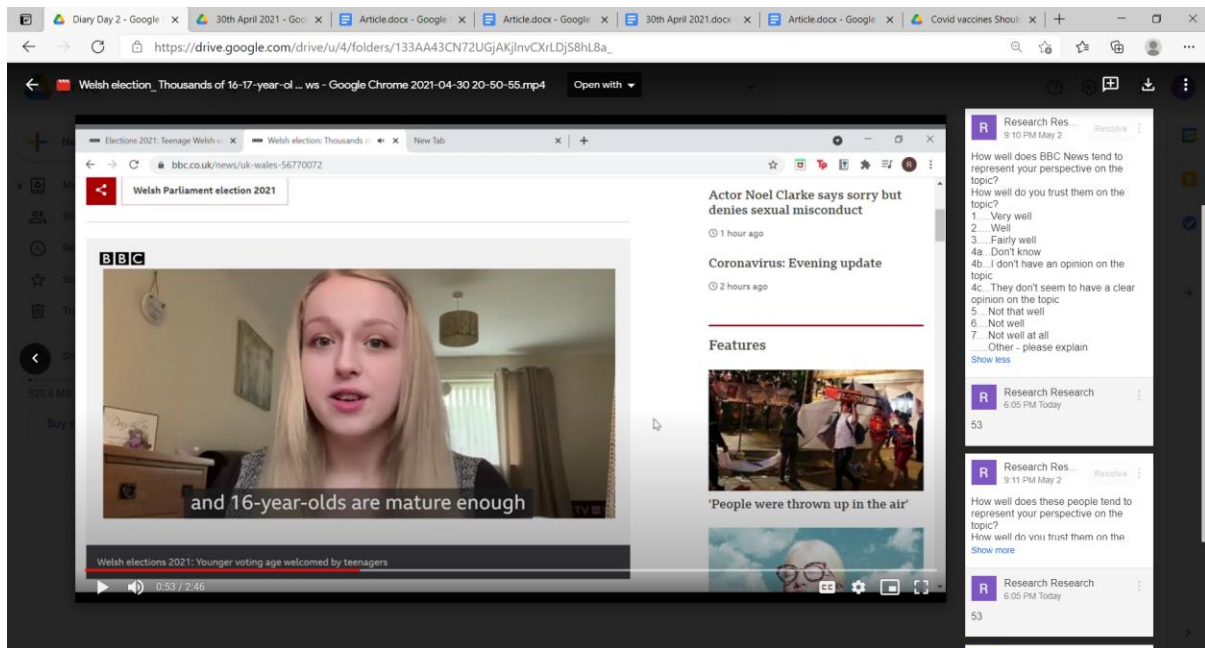


Figure 9: A participant’s screen recording of a BBC News article, put in their Google Drive.

In figure 9, survey questions display down the right, as ‘comments’ similar to in Microsoft Word. The participant’s later ‘replies’ indicate the sources represented their views (5) ‘not that well.’ Still, they trusted the sources on the topic (3) ‘fairly well.’ Such

disagreeable exposure, one is not distrustful of, is healthiest. This suggests open mindedness and a lack of embublement.

Unlike almost all other selective exposure studies, this one forgoes the researcher classifying then centring the ideology of sources that participants encountered. It is too subjective, complex and risks bias. Biases include selective attention and retention: focusing on and remembering pro-attitudinal information better (Clay et al, 2013). There is also the hostile media effect; partisans' tendency to view coverage as specifically biased against their side (Hansen & Kim, 2011). Researchers have been exploring objective measures of source ideology. Even those are unhelpful. Take one such method proposed by Shaoul & Westbury (2010). A lexical co-occurrence program, HiDEx, takes a corpus of articles and estimates how liberal or conservative outlets are. Likewise, the literature review already argued that Rodriguez et al's (2017) assessments via content analyses of articles ignores that really, what constitutes a participant's pro or counter-attitudinal content is entirely their subjective assessment, *their* biases and all.

Consider Iyengar and Hahn's (2009) experiment from the literature review. The BBC was declared neutral. The hostile media effect can leave partisans viewing a source as specifically biased against their side. The BBC notably faces allegations of bias from partisans all across the political spectrum (Bourne, Congdon, Davies & Veljanovski (2016). Suppose these partisans still regularly consume BBC News, to avoid being in echo chambers. Doing that could represent a far greater feat, and lack of selective exposure, than if they considered the BBC to only be neutral, even if it were. They are likely overcoming far more uncomfortable cognitive dissonance and negative effect (gut reaction), by hearing out perceived hostile media.

A YouGov survey (2017) confirms that UK public perception of UK newspaper ideology relates moderately to one's ideology. Left-leaning people see right-leaning papers as more right-wing, and vice versa. Those on the extremes see their side's newspapers as moderate. Some selective exposure studies only include easily classifiable outlets, such

as Fox News. Moreover, treating outlets on the same side as if they have identical politics might underestimate selectivity (Stroud, 2007). Again, pro-Brexit left-leaning people may consume *The Sun* for its pro-Brexit content. This still suggests a pro-attitudinal exposure, despite *The Sun* generally being counter-attitudinal.

One solution involves participants defining their pro-counter and altitudinal content themselves. This had one precedent before the pilot study: Garret's (2009b). His respondents were asked directly though. Outright asking how much of a bubble participants inhabit risks self-presentation concerns and experiment demands or demand characteristics. This study's surveys therefore phrase it covertly and less negatively. At the start of this questioning it says, "select 'other:' if your answer does not fit elsewhere, such as if a source changed your perspective, then write from which category, to which category, for example 'it does not' to 'fairly well', or 'I don't have a stance on the topic' to 'It does not at all.'"

This improves internal validity because a text could have indeed changed a respondent's perspective from when they found it. They might not remember such detail. This is still better than nothing. Indeed, the pilot study lacked it. Another benefit of checking for opinion change is it would be strong evidence against embubblement, and for open-mindedness. Thus, this can be another part of the operationalisation of epistemic bubbles. The 'other:' category allows writing in any niche answers. None appeared in the pilot study. Still, other responses get inductively and roughly coded into the most fitting category, a new one if really necessary, or at least considered more in the qualitative analysis.

Biases should be avoided through the positive framing. There is also the externalising of the question as an evaluation of a source's ability to reflect citizens' perspectives, rather than overtly probing the respondent's ideology. Grading agreeableness accommodates Garrett's (2009b) pivotal finding that the selective exposure hypothesis consists of two parts: selective exposure and selective avoidance. Partisans prioritise pro-attitudinal sources. They do not much actively avoid counter-attitudinal sources. Removing the liberal or conservative dichotomy accommodates people without uniform politics, such as centrists and non-partisans. Both are usually omitted, because it is

even harder for researchers to guess what to count as their pro and counter-attitudinal content. Here, the shift to self-reported agreeableness levels solves that problem. Again, accommodating these participants is essential, given that strength of partisanship is the independent variable.

The second half of the questionnaire is a [Google Form](#). It mainly yields independent variables for psychographics and engagement. There are batteries for strength of partisanship, ideology, level of political interest, knowledge, and engagement. The free and simple survey platform from Google is again ideal for data security. Google Forms are simple and widely used, so should ease participation too. Once the full questionnaire is done, the diary day is complete, and participants are emailed the £10 vouchers. Teachers are also notified, because they were invited to contribute anything their school offers for participation and achievement.

The pilot study lacked kinship charts and interviews for getting more detail, so was criticised for the poor ideology measures. Nonetheless, the ones here are still more nuanced than most political science and selective exposure studies. Those dichotomise people as strong or weak liberals or conservatives, also by self-reports. This selective exposure study is first to incorporate the ideological extremes. Self-identification is adequate. Subjective identification is often a better predictor of group attitudes and behaviour than reductive 'objective' measures pigeonholing people into groups regardless (Kowert, Griffiths & Oldmeadow, 2012; Hall, 1966).

The final wave's survey ends with additional questions on standard demographic traits, as possible moderator variables. Doing this last avoids self-presentation concerns, demand characteristics and priming their identities. Demographic variables are considered, especially to avoid offering a biased representation of culture that traditional western ethnographers are accused of (Murchison, 2010, p,7). Indeed, demographics may influence embublement qualitatively in ways not yet considered (Murchison, 2010). To this end, Hughes, Camden, and Yangchen's (2016) guidance on modern, inclusive demographic questions was consulted.

Where the question formats here diverge from theirs, it is for conciseness, for example some niche responses were replaced by an 'other:' category. There are cases where they use open-ended write-in answers. Specific answers are listed as well to exemplify possible answers. Meanwhile, listing off tens of genders might have risked young people selecting one for a joke, therefore withholding their important demographic details. The most likely answers for ethnicity and religion questions are taken from the UK national census.

Ethnographic Chart, Interview Hybrid

A third common component of ethnography, aside from participant-observation (on diary days), and interviews, is getting visual representations - maps, diagrams, or charts (Murchison, 2010). Informants are often asked to make these themselves since they have the knowledge. Such visual aids best convey the spatial dimensions of a culture. They tend to be geographic maps, for instance of relevant countries, a village, a house, or conceptual maps of social networks. A common example are kinship charts, which sketch family trees. This ethnography adapts these. The methodology needed something to roughly chart APC effects via the socialising agents that have been around informants, primarily family. This should illuminate historic embublement via political socialisation.

The ethnographic chart (in [appendices](#)) is inspired by a kinship chart but expands across the life-cycle and beyond family. It is a document with questions on how each main socialising agent (family, peers, education, media, and events) may have influenced participant's exposure and engagement, thus historic embublement. In this way, it elicits an informant's 'political journey', when they became interested or disinterested in politics and engagement or changed their political outlook. The ethnographic chart enables, not APC analysis, but a more qualitative analysis of age, period and cohort that is not so rigorous, but interpretivist, and relatively holistic. It is effectively a retrospective cohort study, which is cheaper and more feasible than the researcher setting up a cohort study that covers years and decades in the past.

It gives some context, even if informants will not remember some influences or exact years. This can also get at the difference between what people do and what they think they are doing, and how it makes them feel about engagement. Reliability is improved by using two disparate methods: diaries and self-reports, simultaneously as methodological triangulation. It is optional for participants to ask parents to check over the chart or even fill out a sheet separately, to independently corroborate details. They might remember aspects of a participant's socialisation that participants do not, especially from earlier years.

This method is an ethnographic chart, interview hybrid in that the questions asked, about contributors to a participant's historic embublement, also constitute an interview but one that takes place via the participant simply writing answers in a document rather than a synchronous interview. This approach was taken because face-to-face interviews were not viable anyway due to the pandemic. Asynchronous text-based ones are better especially for the young participants, to avoid compromising their anonymity, and avoid a daunting interview (Murchison, 2010) also one which would be very demanding in terms of expecting a participant to recall all exposure to political information throughout their life immediately and coherently in conversation.

Interviews are tried and tested, standard in ethnographies (Murchison, 2010). Examples include Dennis' (2016) interviews around activist organisation 38 Degrees, Hemment (2015) interviewing politicised young people in Putin's Russia, and another ethnography interviewing on young people's politics in London (James, 2016). Interviews are very uncommon in the quantitative-based literatures explored, especially selective exposure. Hence, interviews should yield new detail, context and reflections on participants' views and practices. The written interviews took place as soon as possible after the last wave. This was to keep participants' memories fresh and best capture their practices and views around that time.

That should reduce self-presentation concerns of participants talking about themselves in person. This approach forgoes formal interviews and recording them, which can be intimidating and give off putting connotations of sensational journalistic interviews (Murchison, 2010). It is more convenient also. On the other hand, this approach limits

media richness (Liu, Liao, & Pratt, 2009). An interviewee's body language cannot be considered. Another limitation of pre-determined, asynchronous questions is that interviewees could lead a discussion in directions that a researcher might not have even thought to. Following convention for ethnographic interviewing, it is not supposed to be too formal, hierarchical, or interrogational (Murchison, 2010).

Hence, the interview was semi-structured with set questions but space for participants to in this case write what, and as much as they wanted (Gillespie, 2007). The post-test design avoids discussing a participant's diary and survey data during waves. It reduces panel conditioning and experiment demands or demand characteristics. The questions could betray the study's precise focus on embublement. Interview transcripts were coded inductively for pertinent themes, analysed alongside a participant's other data as part of ethnography's thick description.

Conclusion

The chapter contributed to the core argument by proposing a new methodology to address the limitations identified in the literature review: namely, the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured. The selective exposure methodology that this chapter proposed is a mixed-methods approach to the subjects of filter bubbles, political polarisation and the consumption and sharing of political news. It laid out the research question, the ontology and epistemology and data collection. Data collection consisted of sampling, recruitment, digital ethnography, a cohort study, diary study hybrid, a survey, and an ethnographic chart, interview hybrid. Now the data collection methods have been outlined in this chapter, the next chapter can outline the data analysis methods used on that data.

Chapter 5 Methodology: Proposing Holistic Data Analysis Methods to Explore Embublement

This chapter continues the thesis' core argument, that our understanding of embublement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This chapter contributes by proposing a combination of data analysis methods argued to address some limitations identified in the literature. The chapter is structured by the order of methods used, regression analysis then ethnography's thick description, before discussing limitations. Lastly, the conclusion summarises.

Previous studies surveyed partisans' news consumption using logistic regression analysis (Hosmer Jr, Lemeshow & Sturdivant, 2013). These simply correlated 'liberals' consuming 'liberal content', then 'conservatives', 'conservative content' (Murphy & Westbury, 2013). Again, these false dichotomies are too simplistic and subjective. Regression analysis in R is used instead, with the triple filter model (explained in Chapter 3). The general structure of the analysis was planned as follows: the first half of the analysis will be quantitative, exploring four quantitative claims. The second half of the analysis will be qualitative, exploring a qualitative research question. The methods link together by the top-level quantitative analysis coming first, then the more detailed qualitative analysis providing more nuance and context. The findings will open with a quantitative, top-level overview of the results.

Regression Analysis

The first method used is regression analysis. It is a standard statistical analysis used in similar studies (Rencher & Schaalje, 2008). These include one about newer media and young people's sense of social security by Naderi & Rahimi (2017). Dworkin, Brar and Hessel (2018) used it to find reciprocal socialisation, of young people's technology use,

on parents. My master's dissertation correlated young people's selective exposure with partisanship (Downham, 2017). Regression analysis will test whether strength of partisanship positively correlates with embubblement, as a key agential factor. The data come from the strength of partisanship battery in the Google Form questionnaire, [in the appendices](#). This is administered to each participant each diary day. Note that partisanship here means how strongly individuals believe in their political perspective. This definition has nothing to do with political parties. The assumption is that only a minority, the strongest partisans, are invested enough in politics to curate their news feeds to cultivate bubbles. Young people's embubblement is measured for each participant each diary day, via the other half of the questionnaire in their Google Drive, as the average embubblement level of all a participant's sources each diary day. The same embubblement measure is also used to test for a positive correlation with their level of political engagement, averaged each diary day from the engagement battery in the Google Form questionnaire, [in the appendices](#). Given this claim was accepted, I suggests that embubblement might be an important benefit for democracy. This raises a 'democratic dilemma', a tension between two key pillars of democracy - participation and deliberation - if the more engaged partisans are, the less open they are to other perspectives.

Next, the regression analysis examines whether embubblement is associated with polarisation. Polarisation becomes a problem if citizens get so polarised, they cannot productively deliberate. Polarisation is operationalised in two ways, whether the average embubblement level of content participants submit each wave increases over time, and whether their strength of partisanship each diary day increases over time, as if participants are going down 'rabbit holes' of more and more polarising content over the ten months. Again, the data come from the questionnaires. For embubblement, the Google Drive questionnaire gives average measures of how opinion reinforcing each participant's exposure was to them each diary day. Strength of partisanship measures are collected each diary day via a partisanship battery from the Google Form questionnaire, [in the appendices](#).

That is how the first findings chapter provide a quantitative, top-level overview of the results. The last findings chapter is the more detailed qualitative half. The methods fit together in that the quantitative half could inductively inform what was then done in the qualitative half. For example, If the main factor in embublement were strength of partisanship, ethnography's thick description could have been structured around this, with it being centred, and analysed in more depth. It would not be the ethnographer's subjective evaluation that that is the case, it would be backed up by the rigorous quantitative analysis.

Ethnography's Thick Description (RQ₁)

The ethnographic analysis explores the factors that contribute to young people's embublement (RQ₁), to what extent young people's embublement is a choice, an agential or structural problem, in order to recommend solutions relevant for policymakers. Relatively narrow quantitative studies have perhaps overfocused on the role of individual selectivity online, and algorithms of tech companies. Ethnography enables much needed inductive, deep, and holistic exploration, in this case, of contributors to embublement across any medium off and online (Murchison, 2010). The method used to explore this research question is specifically digital ethnography, meaning via the internet. Ethnography is about exploring a culture, in this case of young people's political communication. From participants' diaries, the researcher gets a record of this culture, one day a month. This enables the researcher to 'visit' and immerse themselves in that culture, on select 'normal' days that should be most representative, as with traditional ethnography.

It is the case that digital ethnography during a pandemic allows less active participant observation. That distance is actually beneficial to reduce the researcher influencing participants during the first, experiment half of the fieldwork. In the later half, interviews allow for more standard engagement with participants. Similar ethnographies include Dennis' (2016), examining the political communication of young 38 Degrees activist.

O'Loughlin and Gillespie (2012) explored primarily Muslims' political engagement amid anti-terrorism media messaging. Arya and Henn (2021) in particular note the challenges and opportunities of their online ethnography with young environmental activists during the pandemic.

Ethnography's thick description (DiCicco-Bloom & Crabtree, 2006) should close out the findings section with long, rich prose recounting the fieldwork. The section is generally structured in line with the five main socialising agents. That is, structural factors that influence a citizen's political socialisation, and therefore embublement. These are (social) media, family, peers, education, and events. They are generally ordered and given coverage based on their prominence in the participant diaries overall, to provide that additional context. Vignettes include and move between different participants more than usual, following O'Loughlin (2011; O'Loughlin, & Gillespie, 2012). Setting out qualitative analysis as such allows for a close focus on particular participants, but then extending the vignettes to enable more detailed analysis by particular media consumed, as well as the participants' responses.

For each socialising agent, for example (social) media such as Instagram, two or three participants are included in vignettes, however many participants from which novel analysis could be drawn, before saturation. Indeed, activity within any one given medium was not particularly varied across the sample, so saturation was achieved with a handful of vignettes and featured participants. Also, some participants submitted far more content, or pertinent content, to analyse than others. It is important to note that if multiple participants, for example some young women, display similar behaviour, this still cannot be generalised as being in any way representative of any demographic. Nationally representative research will be cited to confirm or disconfirm patterns.

The thick description looks in depth, qualitatively, at the quantitative model of embublement and its implications for democracy, detailed previously. It especially deepens understandings of the embublement part. Hence the framework here is the proposed 'triple filter model' of embublement. The model clearly lays out what factors

are considered structural or agential, rooted in Chadwick's hybrid media system ontology (2013), itself rooted in French sociologist Bourdieu's (1993) field theory. Ideas of structure and agency are reconciled by giving them equal prominence, and holding that agents use what power they can competing to advance in any given field, then shape it reciprocally.

Structural factors, particularly socialising agents, compete to 'embubble' citizens in the field of our hybrid media system. Politicians, activists, news sources and tech companies want citizens to be exposed to the agreeable ideas, not the opposition's, plus they want citizens trusting those ideas, not others. This exposure to and trust of the in-group, not the out group, is how activists and politicians try to win elections, how news sources retain audience share over competitors, and how tech companies keep users engaged, for ad revenue. On the other hand, the main agential factor is how citizens can be politically literate enough to resist those efforts. Examples include seeking multiple perspectives and trying to be openminded.

Beyond strength of partisanship, political and demographic factors in the quantitative analysis, the proposed framework adds in concepts discussed at length in the literature review, from the political socialisation literature, specifically from its age, period, and cohort (APC) analysis (Neundorf & Smets 2017). Data comes from participants' diaries and interviews, also ethnographic charts. Relatively objective indicators, of such influences of embublement, will be the following. These are structural factors, primarily a participant's age, time period, and the demographic cohort they belong to, plus any politically homogenous family, peers, education, media, and events. Agential factors include participants' own consumption and association choices from those structures. These were coded in NVivo, specialist software standard for qualitative analysis. Participants' explanations and evaluations of their behaviour, from the interviews, are interpreted in this qualitative analysis to enrich the research question answers.

Again, this enabled relatively objective coding. If a participant reports a politically homogeneous conversation with family, family was coded as an influence of

embubblement for them, a structural factor. If homogeneity often comes from social media use, as a cohort effect of being young at this time, that would be corroborated with the quantitative, large-n APC literature. Again, participants could also be consulted to confirm the analysis, plus the raw data and reasoning will be transparent. The interviews fed into ethnography's thick description, exploring political literacy, or lack thereof, as a structural factor in embubblement (RQ₁). The ethnographic chart and interview transcripts were be coded as above, particularly for themes relating to political literacy, or lack thereof, as a factor in embubblement. Examples include whether participants could say they learnt such political literacy in school. Analysis will be included in ethnography's thick description as described above.

Again, the overwhelmingly quantitative literature does not use such qualitative methods. They miss detail behind the numbers. Many studies examine young people's media use. Some examples to hand are studies exploring the politicised mainstream media representation of young people, particularly those who play video games, see Williams (2003), McKernan (2013) Maclean (2015), and Downham (2017). This line of research highlights a main limitation of current research. The researcher pre-selects what content is sampled, for example 'all articles mentioning 'gamers' from these select mainstream outlets.' This cuts ecological validity because that systematic, abstract sampling is representative of no one's exposure and experience of such coverage. What materials are considered is dictated by researchers and their values and assumptions (Burnham, Lutz, Grant, & Layton-Henry, 2008). Only the participant's subjectivity is desirable. The sample frame here was determined by participants, what they experience and put in their diaries.

The analysis explored whether any voices within a text itself still offer opposing perspectives. This is a layer of nuance absent in current research that only focuses on agreeableness at the level of which news source a text came from. It is not so problematic to read a news article from an agreeable news outlet if it has a point-counterpoint format that still offers crosscutting perspectives. Sources are anyone talking or being cited within any text submitted. The analysis is rooted in the normative

expectation of journalistic balance, and the democratic ideal that citizens be exposed to a plurality of views on any given issue (Union, 1997). Crosscutting should stop citizens falling into bubbles, or if already embubbled, offer a way out. That is assuming the citizen is still open-minded enough towards the crosscutting.

Still unconsidered in current methodologies are cases where, despite crosscutting, there is little productive deliberation. This involves a source's activeness or passivity, the media richness it is afforded, and power differentials enabled by the hybrid media system (Saeed, Yang & Sinnappan, 2010; Chadwick, 2013). In a text, especially from hyperpartisan sources, there is often a pattern. Where a counter-attitudinal source is included, their argument might just be cited. Meanwhile, a pro-attitudinal source might get to criticise it at length without them being able to respond.

Examples of this include a politician during a rally, just quoting their opposition in outrage. It happens on a political radio show when callers get muted by the host if they give a good enough counterargument. YouTube political commentators often make rich video commentaries criticising political opposition, interspersed with less rich existing footage, images, or quotes of what they are criticising. All these examples have cross-cutting. However, it is easy to misrepresent opposition to win the argument (called 'strawmanning') when they cannot really respond. There is little productive deliberation here. The self-selected audiences will probably leave with stronger, more exaggerated views of how dumb, evil, or corrupt the opposition are. This is all without any real exposure to the opposition or their counterpoints.

This is enabled by power differentials from using hybridised mediums to allocate different voices different media richness. The ideal format for deliberation then would come from less partisan mediums, older mainstream media, even friendly conversations. These generally use the traditional point-counterpoint format as in, different sides deliberate civilly, ideally in real-time with the same level of media richness (Hackett, 2006), Hence, the sourcing analysis here considered source activeness and passivity, plus media richness across hybridised media.

Alternative explanations of embublement were examined, particularly through ethnography's thick description. Considered across all the analyses was the influence of age, period and cohort effects, plus socialising agents. APC analysis is widespread across the political sociology and young people's politics literature, so tried and tested. Examples include Neundorff and Soroka (2013) using it to examine the origins of redistributive policy preferences. Boarini & Díaz (2015) look at political participation in the UK. Fox & Pearce (2018) use APC analysis to confirm age disparities in Euroscepticism as a cohort effect, not an age effect. Being quantitative-only though omits micro-level context and detail. That inspired a kind of qualitative APC analysis here. Qualitative analysis that would fit the ethnographic data, mainly the ethnographic charts, which are too patchy and interpretive for standard quantitative APC analysis.

APC-style analysis was blended with the thick description of ethnography. Thick description explains the culture of young people's political communication so outsiders can understand it. It resulted in rich vignettes of participants' political communication. This is especially to the extent that their triple filter bubbles form within the hybrid media system. Ultimately, this analysis was able to explore to what extent embublement is a structural problem, then an agential problem, for the participants. Considered were the various socialising agents, a citizen's choice engagement with them, and a citizen's own disposition and biases, as encapsulated in the triple filter model. The thesis therefore concludes with recommendations to various stakeholders on further research, and practical interventions for reducing any embublement and harmful effects. There is also a method evaluation, given the methodological focus.

Limitations

Limitations were discussed throughout. The main ones included the fact that a purposive sample of twenty young people is not generalisable to the wider population in the UK. That is especially so if viewed in cross age perspective in the UK, a less

Southern and Middle class one in the UK, or across age cohorts in Europe and the Global South. It is important to stress that the situation will likely be different in such different circumstances and cultures. Generalisability is not the aim of such a qualitative-led project. Its scope is to provide micro-level vignettes that complicate the current narrow and abstract quantitative findings. After having to recruit during the pandemic's peak, Winter 2020, when many people were busy with other matters, more than enough data was still generated for one researcher to process. Given the small number of participants for quantitative analysis, there is always a risk of type two errors, because there is not enough statistical power to detect potentially small effects.

Many qualitative studies only have a single method, for example interviews, with single digit participants. Any statistics here are just descriptive. This is just one study, of many, that in time will enable convergence validity; seeing if other methods of similar studies find similar results, ideally macro-level studies (Macfarlane, Lee, Ho, Chan & Chan 2006). The conclusions might actually be more convincing, if similar results to this study are found at the macro and micro level, despite this being a small sample. Another limitation of this study is that, given the small sample in the end, it was not worth using possible moderator variables such as standard political variables including political interest, knowledge, ideology, or personality traits and standard demographic factors that could be controlled for.

Ethnography can be very subjective. The self-reports within can be inaccurate and bias prone. They still give some rough context that similar studies can always verify. The qualitative data should be strengthened by the quantitative elements, as methodological triangulation (Heesen, Bright, & Zucker, 2019). Digital ethnography limits participant-observation, as the ethnographer is not physically with informants. Not much should be lost however, because exposure to political communication as a young person is hardly an alien experience to the researcher anyway.

Regarding the diary study, observation can alter participant behaviour, risking ecological validity (Tang et al, 2006). Ways of mitigating this were discussed. Participants may have been passively aware of recording content, lowering ecological validity. They might have forgot to record some, harming construct validity. Ways used to allay these risks

were discussed. This multifaceted study may have induced a degree of participant fatigue, causing attrition and possibly inaccuracies. Participant involvement was strongly incentivised and kept as easy as possible. As with most of the political socialisation literature, this political communication thesis cannot distinguish between the effects of biology versus socialisation. This is despite genetics perhaps being a bigger influence on socialisation than currently known. The relevant discussion is in the literature review on political socialisation. Rigorously controlling and measuring such variables is left to lab experiments. The focus here is more on proximate causes and effects in participants' natural environments and everyday lives.

On the representativeness of the study given the specific conditions of the pandemic: a study recently replicating several pre-covid online political science studies found no change in the conclusions (Peyton, Huber & Coppock, 2020). Here, most participants' exposure was uniquely covid-related. However, it is so because participants were habitually browsing the top stories of the day on websites or apps, and their newsfeeds, so the behaviour itself is not unlike outside pandemics. Interviews could confirm and suggest why they behaved this way. Arguably, the pandemic context is so significant, unique, and represents such a long amount of time, that this context may instead add value to the research in and of itself. Depending on how the pandemic manifests in the findings, the study could be just as much a pandemic study, as an extra contribution. It does chart young people's political communication during a pandemic, and from lockdown through the various stages of unlocking, to more or less normal life.

Elsewhere there had been concern about students being left-wing, making it difficult to recruit those from other ideologies. This is why a sixth form sample was used rather than standard university samples. Relatively less educated sixth formers will be more representative of the general population. The sample miraculously contained a broad range of perspectives. This is especially so with the targeting of politics and citizenship students. They should be more politically interested and partisan, so less hesitant to share their beliefs.

On the limitations of the diaries, the literature review suggested using screen capture is not common in these research areas. It is common however in usability studies, such as Tang, James, Whittaker & Drews (2006). Participants are screen recorded testing the user experience of websites or software. The holistic nature of recordings allows for more nuanced analysis. Screen recording has been used in a variety of studies outside politics. There is the information literacy of school pupils, as in Bhatt, Roock, Adam's (2015) ethnography. They recorded pupils' PCs, and social media messaging on phones during class. Meanwhile, Tang et al (2006) recorded employee collaboration on PCs. They reported that such observation can alter participant behaviour. This 'Hawthorne effect' risks ecological validity. Political communication is generally not sensitive. However, if participants were involved in radical politics or activities, self-presentation concerns could hinder recording and recording truthfully.

To mitigate such problems, Tang et al's participants got to control when they turned on and off the recording software, which this study does too. Nonetheless, Tang reported evidence of the hawthorn effect and self-presentation concerns. One participant messaged someone that he could not mess around as he was being recorded. Therefore, this thesis went further by enabling anonymity and deemphasising the study's specific focus (Murchison, 2010) on embubblement and engagement. This is to avoid self-presentation concerns about being in a bubble or not doing enough political engagement. The study, as presented to participants, stated an accurate but less specific focus, 'how socialisation influences our political communication.' Other provisions include requiring practice, pre-study, for the novelty of recording to wear off. Participants get monetary incentives, to build good faith. They can also get the full study once completed and a personalised summary of their data. Hence, it is as much to their benefit to record accurately.

Another way truthfulness was encouraged is that participants and the researcher do not know each other. Even a shared social network is unlikely because the researcher does not live around London or know many people there. Tang's screen recording study recorded external sound too, which this study does not require. Whilst this limits data

quality, it leaves participants more privacy. The interviews could inquire about such context. Participants could also edit or delete anything sensitive or irrelevant. Tang and this study anonymise data for publication or presentation. Names and other identifying information are removed. Phrases that could be Google searched are reworded. Overall, any Hawthorn effect and self-presentation concerns were much lesser than the usual ethnographic approach of having a researcher standing over a participant's shoulder.

There were clear instructions, but if participants had trouble recording, the researcher could help via email or Zoom. If participants had struggled early on, then the first wave or observation day could have been discarded as a practice one. The researcher would have ensured everyone is up to speed for the other waves. All this encouraged their recording and truthfulness. Ultimately, if the odd piece of political communication went unrecorded, it is not that important, because there will be a lot of participants, waves, and data. This multifaceted study could have induced participant fatigue, causing inaccuracies or attrition. As said, participants get incentives; vouchers and raffles after each wave to maintain engagement. The schools collaborated with encouraged students, and some schools lent their own incentives, mainly achievement points. The aim was to get as bigger sample as possible, to offset any participant fatigue or attrition. Attrition appeared to be an issue, so there was likely further bias in terms of who was able to continue participating.

Ethical Considerations

An ethics self-assessment was completed and Royal Holloway's ethics council approved the project first time. Students aged 16+ consented through forms administered at least 24-hours beforehand. A disclosure barring service (DBS) check was done, for working with young people, though no schools requested it. Participants could stop cooperating any time and delete their input without explanation. Password-protected devices then reputable, widely-used software stored diaries anonymously and securely on the companies' servers. Anyone still identifiable was anonymised. Digital

data, including the ethnographic notes, were stored for analysis in the university's secure drive via password-protected devices. Consent was sought to retain data for future studies, given the holistic data could be useful for exploring other claims.

Conclusion

This chapter continued arguing that our understanding of embublement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). Hence, it put forth the new data analysis used, including regression analysis and ethnography's thick description, with its limitations and ethical considerations.

This methods chapter on data analysis flows into the next chapters which present the completed analysis. The next chapter, chapter six, is quantitative, addressing four quantitative claims. After, chapter seven and eight are qualitative, addressing a qualitative research question. The methods are linked by the top-level quantitative analysis coming first, then the more detailed qualitative analysis providing more nuance and context. The findings can now open with a quantitative, top-level overview of the results.

Chapter 6 Quantitative Findings: Participants' Embubblement Levels and Negative Implications for Democracy are Negligible

Chapter six contributes to the thesis' core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). The quantitative findings provide a rigorous top-level overview of the data, with descriptive statistics, not to generalise to a wider population, but merely to contextualise the qualitative work.

Regression analysis finds that when using the triple filter model of embubblement, revealing citizens' lack of epistemic bubbles, embubblement levels tend to be far lower, and healthier than current measures suggest. This is because the epistemic bubble supplies important context of to what extent people draw opinion reinforcement from information, even if it is disagreeable information, Regression analysis then suggests that the implications for democracy regarding polarisation are negligible. Lastly, only a benefit to democracy is found, given embubblement positively correlates with political engagement. The conclusion summarises these findings and reflects on the policy implications.

Impact of Triple Filter Model

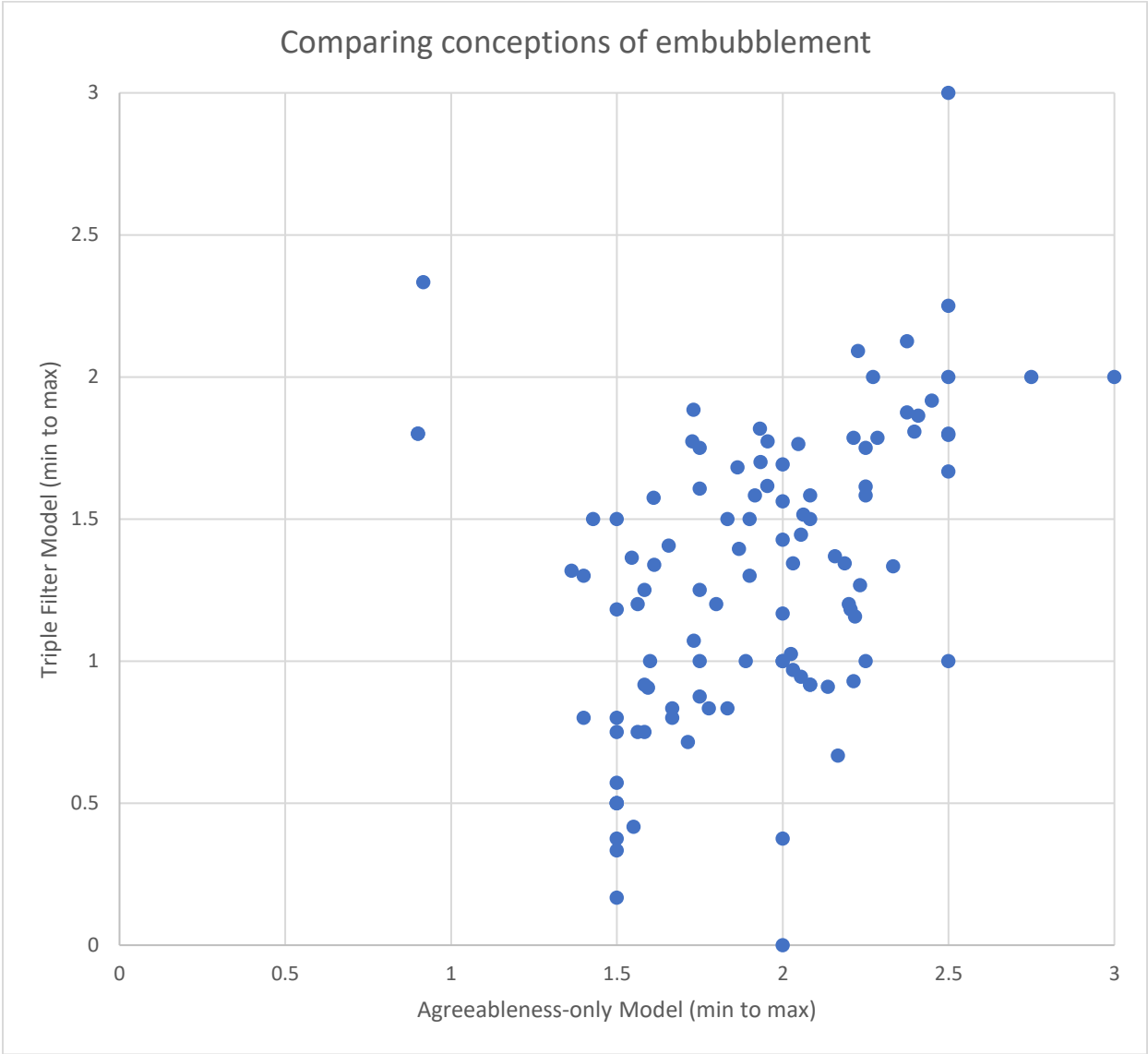


Figure 10: All participants' embubblement scores for all diary days, operationalised as in the triple filter model (y axis) then as in standard agreeableness only models (x axis). N = 108.

Embubblement is measured on a scale from 0-3 (none to maximum embubblement). Figure 10 illustrates that in standard agreeableness only models (x axis), almost all

participants registered diary days with embubblement levels above midway, 1.5 (dots on the right half of the graph). Scores averaged a high, unhealthy 1.92. Alternatively, under the triple filter model of embubblement (y axis), embubblement levels are clustered just below midway up. They average a low, healthy 1.3. Comparing the two operationalisations, there is a 0.62 difference in averages, a big difference on a 0-3 scale, the difference between healthy and unhealthy embubblement levels (1.5 being the midway point demarcating healthy, then unhealthy).

This is a very surprising and significant finding. If the triple filter model were to be accepted as more nuanced and accurate, then this would suggest studies may have lacked important context in the past. Participants' embubblement is less serious and widespread than suggested in even the newer optimistic literature. Participants mostly saw agreement, yes (averaging 1.92) but not the strongest possible agreement (averaging 3), so they are far off being in *complete* echo chambers and filter bubbles. Furthermore, the triple filter model suggests the picture is actually good, when taking into consideration people's (lack of) an epistemic bubble. The other mitigating factors its inclusion reveals are that when participants see all that agreement, they are not partisanly fully trusting of it. Similarly, when they see disagreement, they are not partisanly fully distrusting of it. Also, they are seeing more moderate mainstream sources primarily, that they do not partisanly trust or distrust either way.

That defies the gloomy expectations, given the very politically interested, partisan sample. The extent of actual opinion reinforcing information then might be less than agreeableness-only models historically imply. It is very surprising that the triple filter model, with its epistemic bubble, actually revises down embubblement levels, rather than up. The expectation was that even when partisans see disagreement, they distrust and dismiss it such that it reinforces their beliefs against it all the same. In the qualitative analysis, this is refuted and explored in more depth through an analysis of individual pieces of exposure and their agreeableness-trustworthiness score combinations.

Attrition Rate

There was significant attrition, matching expectations for longitudinal studies. After the full 10 months, only 6 of 20 participants (30 percent) remained. This skews the sampling further still. There is more than enough data though, with 108 individual diary days fully completed.

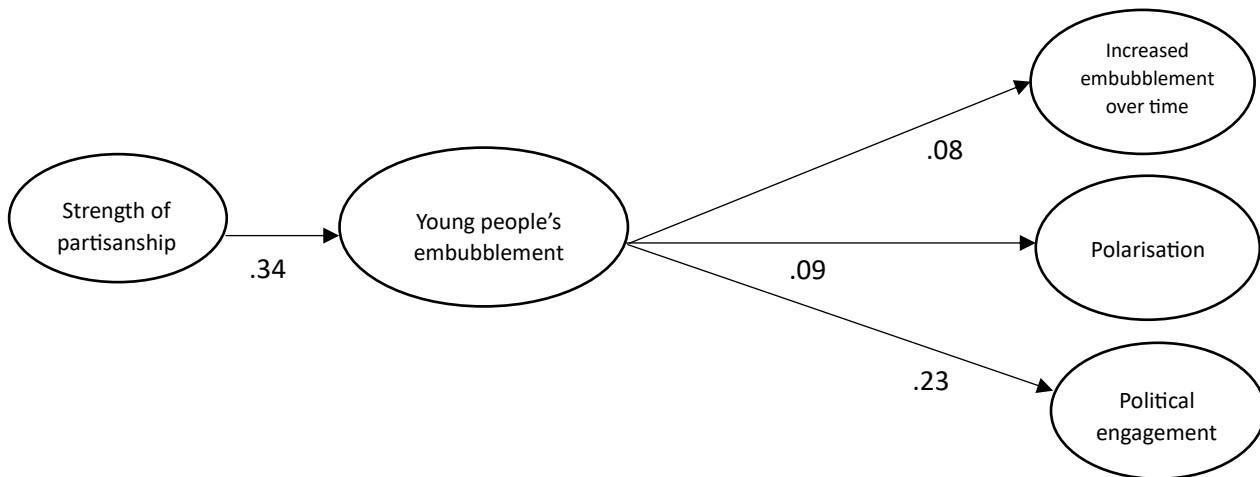


Figure 11: OLS regression models predicting the extent of young participants' embublement, and its implications for democracy. All relationships are linear and positive, as expected. The first is a medium sized effect. The second and third are non-statistically significant though, so rejected. The fourth is a small effect.³

³ For if the new triple filter model operationalisation is not liked: The regressions were also ran but with the traditional agreeableness-only model of embublement rather than the triple filter model. Strength of partisanship and Embublement's correlation weakens a lot, from .34 to .063 (now no significant correlation, $p > 0.5$). Embublement and increased embublement over time's correlation becomes slightly stronger, from .08 to 1.04 (now an actual, small effect). Embublement and polarisation's correlation becomes slightly stronger from .09 to .18 (now an actual, small effect size, though still unreliable as $p > 0.5$). Embublement and engagement's correlation strengthens from .23 to .39 (from a small, to a medium effect).

Strength of partisanship positively correlates with young people’s embublement (accepted)

Young people’s embublement positively correlates with time (not statistically significant, so rejected)

Young people’s embublement positively correlates with polarisation (not statistically significant, so rejected)

Young people’s embublement positively correlates with political engagement (accepted)

Table 4: Descriptive statistics for each variable.

	n	Mean	Standard Deviation	Minimum Score	Maximum Score	Range
Embublement	108	1.3	0.52	0	3	3
Strength of partisanship	132	2.11	0.39	1.12	3	1.88
Polarisation	101	0.01	0.31	-1.12	1.12	2.25
Engagement	132	0.4	0.25	0	1.52	1.13

Table 4 shows descriptive statistics for the variables used. Embublement has slightly fewer observations than most, 108. This reflects participants sometimes not completing dairy days or questionnaires, due to attrition or simply lacking exposure to any political communication to record that day. The mean embublement score is 1.3, which is healthily just under midway (1.5) on a scale from 0-3 (none to maximum embublement). For standard deviation: it is 0.52, suggesting embublement levels are highly clustered, healthily just under midway. Embublement has the largest possible range of 3 (minimum score = 0, maximum score = 3). Although, diary days representing minimum or maximum embublement had fewer items submitted. As in, a diary day with only one item submitted, with an embublement score of 3, gives an average of 3 for

the whole diary day, which looks particularly unhealthy without the context of it only being one item rather than lots of items all with high embubblement levels averaging 3.

Strength of partisanship has 132 observations. The mean strength of partisanship is a much higher 2.11 on a scale from 0-3 (none to maximum strength of partisanship). It shows the average participant to be a strong partisan. Hence, it is healthy and impressive that the average embubblement is so much lower (1.3). It is unclear yet whether this is due to the participants being two-thirds from grammar schools, so given better political literacy skills to avoid embubblement. Perhaps that is irrelevant, and the information ecology being dominated by relatively neutral mainstream media does not tend to allow for much embubblement. The standard deviation for strength of partisanship is a slightly smaller 0.39, given partisanship is more concentrated still, around strong partisanship. Strength of partisanship has a slightly smaller range of 1.88 (minimum score = 1.12, maximum score = 3). It shows an unfortunate lack of representation of participants with the very lowest partisanship levels, though understandable given the recruitment of politics students.

Polarisation has the least observations at 101. Polarisation is operationalised as the change in a participant's strength of partisanship between waves. This is on a scale from -3 (maximum depolarisation) to 0 (no change) to 3 (maximum polarisation). Note this is a different, larger scale compared to other variables, so the values above are not directly comparable. The mean for polarisation is 0.01, so overwhelmingly no change. The standard deviation for polarisation is a small 0.31. Polarisation has a range of 2.25 (minimum score = -1.12, maximum score = 1.12) again suggesting little change in polarisation.

Engagement has 132 observations. Mean engagement is a small 0.4, from 0-3 (none to maximum engagement). The standard deviation is a small 0.25, so very clustered. Engagement has a small range of 1.13 (minimum score = 0, maximum score = 1.52). Whilst these low figures suggest a lack of political engagement, engagement levels are not that low. This is because the maximum possible score of 3 would mean a participant were doing every form of engagement, and all the time, which is an extremely high bar.

Strength of Partisanship Positively Correlates with Young People's Embubblement (Accepted)

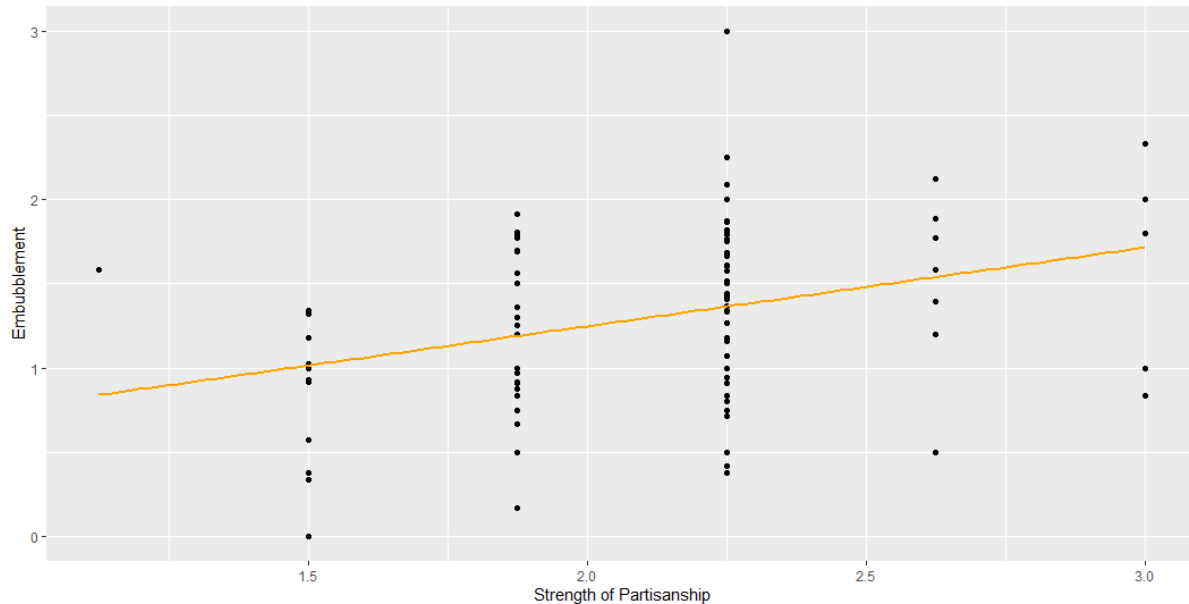


Figure 12: Scatter graph showing the association between embubblement and strength of partisanship. N = 108.

Strength of partisanship and embubblement have a linear positive correlation. The stronger a participant's partisanship, the more embubbled they are. This is a medium sized effect ($r=.34$, $p<.05$) in line with expectations from the literature review. The finding is mirrored by the bivariate OLS regression analysis ($b=.24$, $p<.05$). The regression equation is: $\text{embubblement} = 1.8 + (.24 * \text{strength of partisanship})$. There is a limited model fit. The R-Square of the model is .011, implying strength of partisanship explains a small 11 percent of the variation in embubblement. The standard error of the estimate (SEE) is .35, meaning the average error of the bivariate model is a small .35, on the embubblement scale from 0 to 3. This means there is little error. The values fall fairly close to their predicted value.

Table 5: Using the regression equation to predict one's partisanship and embubblement levels. These are predictions based on one variable. Other variables may moderate in reality.

Strength of partisanship	Embubblement level
0 (minimum)	1.8 (slightly high, slightly unhealthy)
1.5 (middling)	2.16 (high, unhealthy)
3 (maximum)	2.52 (very high, very unhealthy)

Young People's Embubblement Positively Correlates with Time (Rejected)

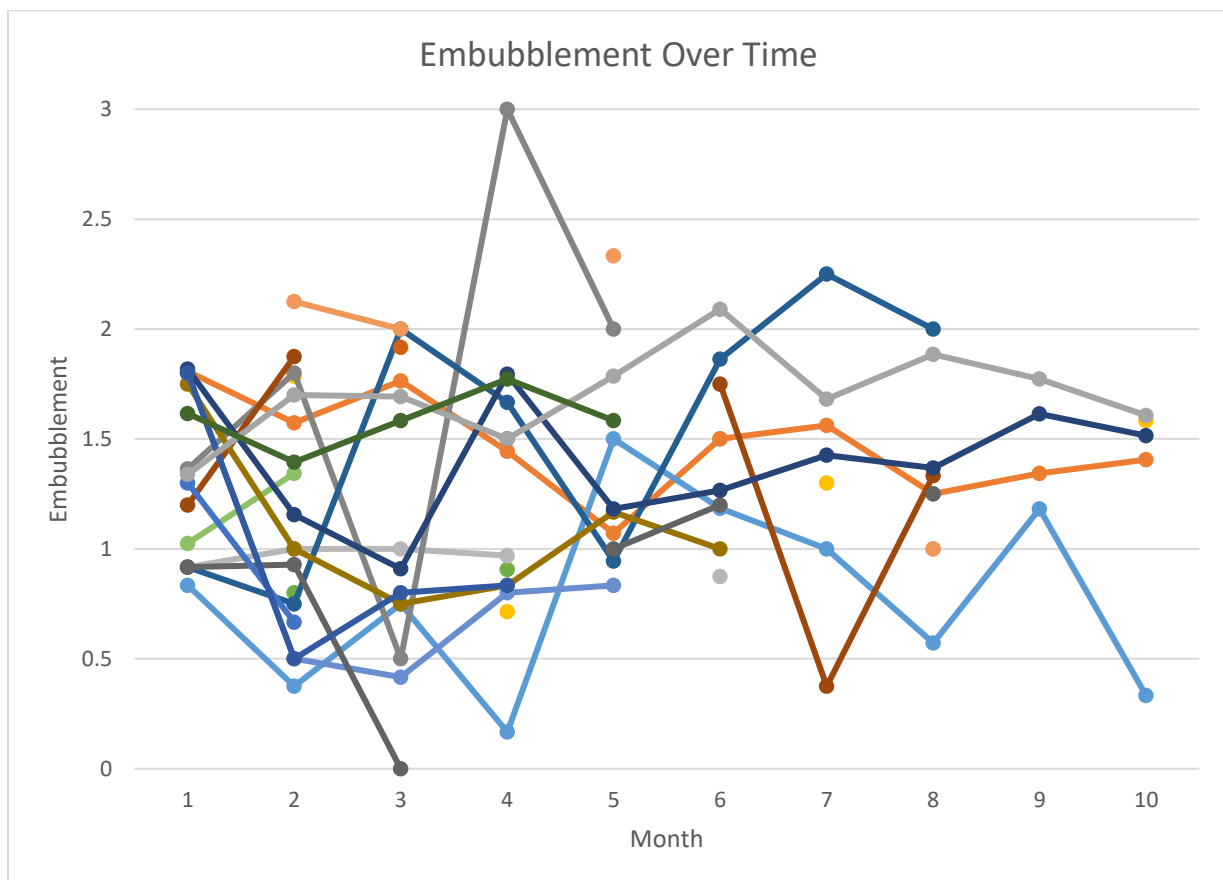


Figure 13: Embubblement levels of the 20 participants each diary day for ten months. Click a datapoint to see its series more clearly, highlighted. Some participants did not complete each of the 10 diary days. Hence, some datapoints are not connected in a full series, or present. N = 108.

This shows embubblement levels (as operationalised in the triple filter model; figures 4-7). Embubblement levels are on a scale from 0 to 3. Zero would mean not embubbled at all; only seeing the most neutral or disagreeable information one is actually trusting and open-minded towards. Next, 0.5 is the cut-off point between a healthy lack of embubblement (<0.5), or unhealthy embubblement (>0.5). Three would mean entirely embubbled; only seeing the most opinion reinforcing information – either that which one entirely agrees with and trusts, or entirely disagrees with and distrusts.

Embubblement levels are clearly clustered almost midway up the chart, around 0.5 – 2, erring towards less embubblement. Democratically, this is not perfect, but far away from the worst-case scenario - if datapoints were at the top of the chart. Also of note is the trajectories here. No participants' embubblement clearly increases more and more over time, indicating going further and further down rabbit holes, with sources encountered becoming more opinion reinforcing and polarised. This contradicts the fears of young people falling down rabbit holes and radicalising online. Instead, all embubblement scores fluctuate up and down from month to month. This does bring into question how representative the findings are of a participant's average day, if their embubblement varies so much day by day that the day arbitrarily chosen for a diary day is so impactful. As in, their 'average day' cannot necessarily be ascertained with so few days observed, when it varies this wildly.

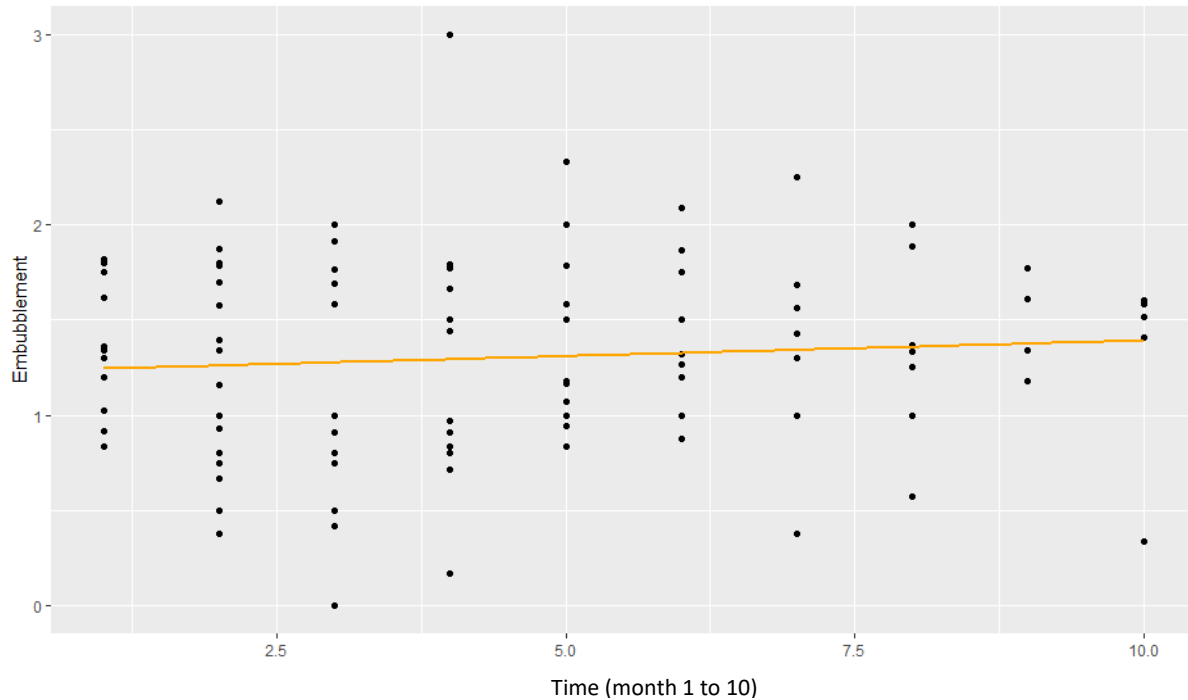


Figure 14: Scatter graph showing the association between embubblement and time. N = 108.

Embubblement and time have a non-statistically significant linear positive correlation. The more embubbled participants are, the more their embubblement increases between waves, marginally ($r=.08$, $p>.05$). The finding is mirrored by the bivariate OLS regression analysis ($b=.16$, $p<.05$). The regression equation is: $\text{embubblement} = 1.23 + (.016 * \text{embubblement over time})$. There is a limited model fit. The R-Square of the model is .007, implying embubblement explains a small .7 percent of the variation in embubblement over time. The standard error of the estimate (SEE) is .52, meaning the average error of the bivariate model is a small .52, on the embubblement scale from 0 to 3. This is good, it means there is not much error. The values fall fairly close to their predicted value.

Embubblement over time	Embubblement (0-3)
Month 1	1.25 (low, healthy)
Month 5	1.31 (low, healthy)
Month 10	1.39 (low, healthy)

Table 6: Using the regression equation to predict one's embubblement levels and their increase over time. Again, these are only predictions based on one variable. Other variables may moderate in reality.

Young People's Embubblement Positively Correlates with Polarisation (Rejected)

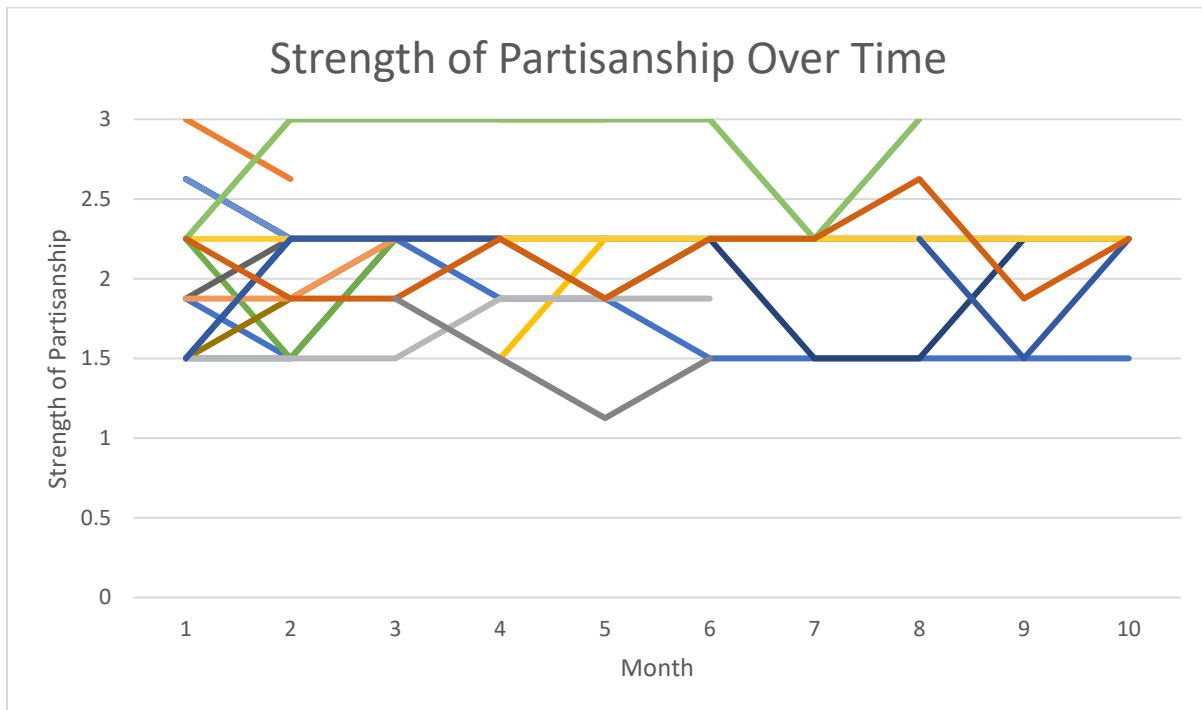


Figure 15: Strength of partisanship levels of each participant over the ten months on a scale from 0 (minimum) to 3 (maximum) partisanship.⁴ Again, click a series to see it highlighted more clearly. Some participants did not complete each of the 10 diary days, so their datapoints are not connected, or missing. N = 108.

Strength of partisanship here is how strongly one holds their political beliefs generally. This definition has nothing to do with support for particular political parties. This was used because for example, one could dissociate from the Conservatives due to disliking a particular leader at the time, yet still be a strong conservative. Figure 15 suggests all participant's levels of partisanship are stable and high (around 1.5 to 3, on a scale from 0-3). There are only inconsistent one- or two-point changes. No participant's strength of partisanship increases more and more over time, as in polarisation. There is no evidence here to fear participants becoming polarised, such that they could not productively deliberate.

⁴ Each participant's strength of partisanship was calculated each wave. This was the average of a participant's answers to two questions in the questionnaires: 'generally, how sure are you that your political beliefs would be the best ones for society?' on a 5-point scale (1 - Completely unsure, 2 - Very unsure, 3 – Unsure, 4 - Fairly sure, 5 - Very sure) then 'Generally, how strong are your political beliefs?' (1 - Very strong, 2 – Strong, 3 – Somewhat, 4 - Not strong, 5 - Not strong at all'; reverse coded). Scores were then translated onto the same 0-3 scale as other variables for comparison in the quantitative analysis.

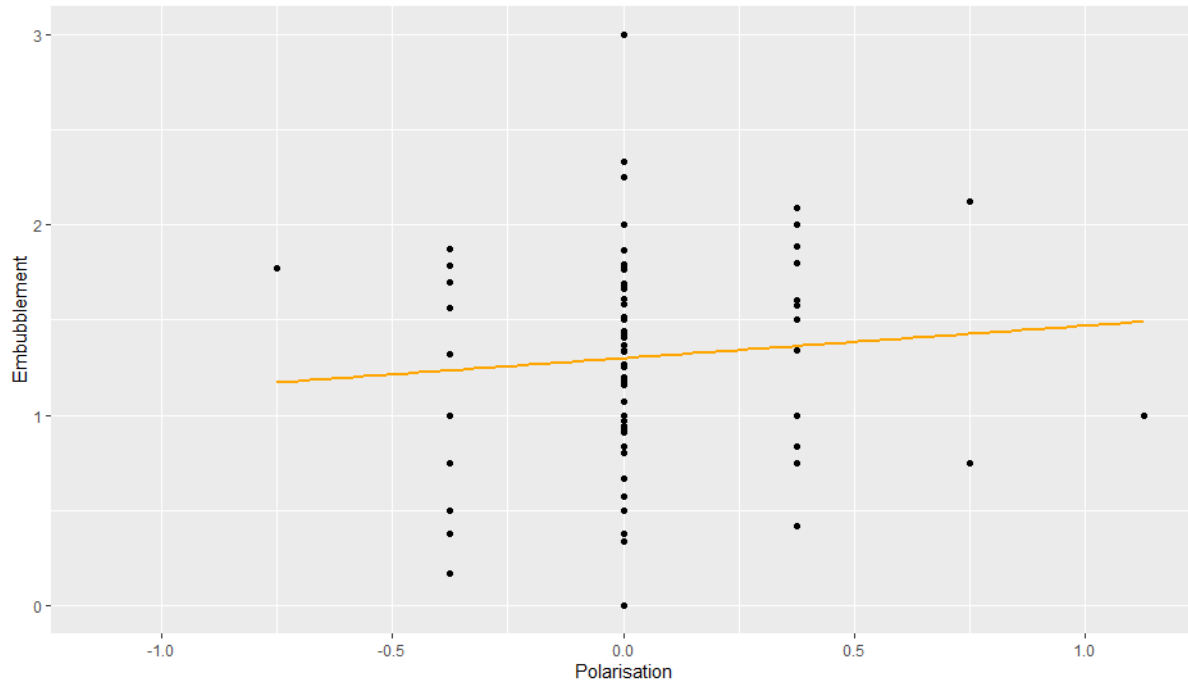


Figure 16: Scatter graph showing the association between embubblement and polarisation. N = 108.

Embubblement and polarisation have a non-statistically significant linear positive correlation. The more embubbled participants are, the more their strength of partisanship increases between waves, marginally ($r=.09$, $p>.05$). The finding is mirrored by the bivariate OLS regression analysis ($b=.17$, $p<.05$). The regression equation is: $\text{embubblement} = 1.29 + (.17 * \text{polarisation})$. There is a limited model fit. The R-Square of the model is .008, implying embubblement explains a small 8 percent of the variation in polarisation. The standard error of the estimate (SEE) is .56, meaning the average error of the bivariate model is .56, on the embubblement scale from 0 to 3. This means there is some error. The values fall fairly close to their predicted value.

Polarisation	Embublement (0-3)
-3 (maximum depolarisation)	0.78 (very low, very healthy)
0 (no change either way)	1.29 (low, healthy)
3 (maximum polarisation)	1.8 (slightly high, slightly unhealthy)

Table 7: Using the regression equation to predict one's polarisation and embublement levels.

Young People's Embublement Positively Correlates with Political Engagement (Accepted)

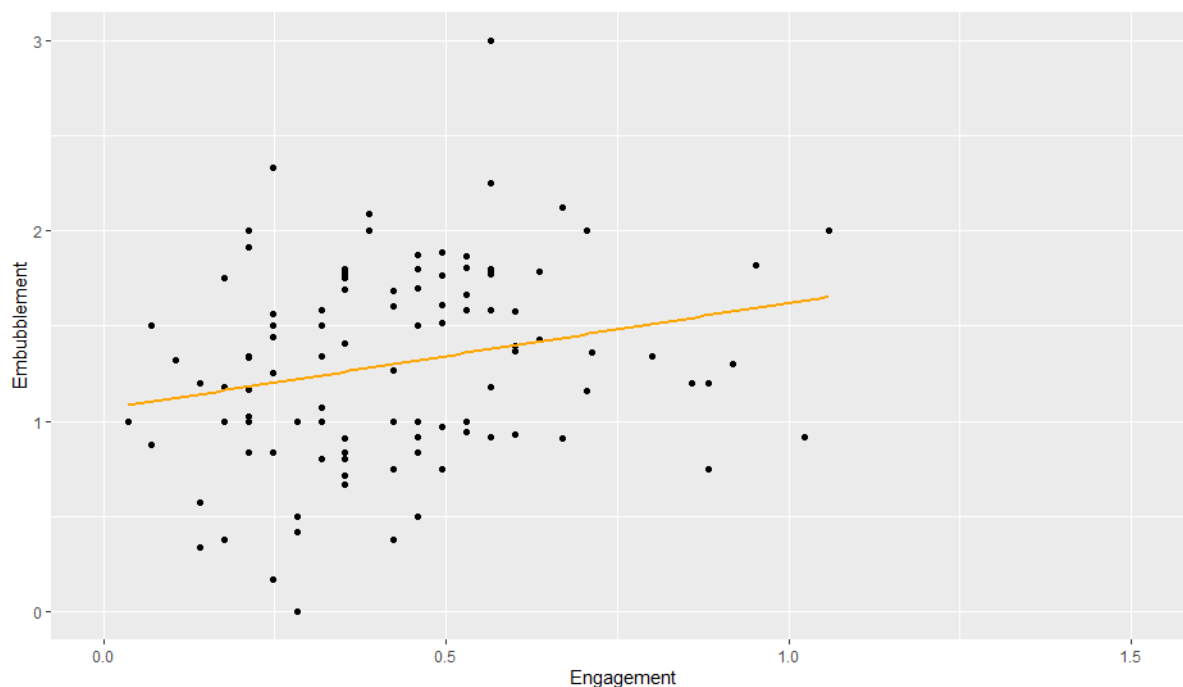


Figure 17: Scatter graph showing the association between embublement and political engagement. N = 108.

Embublement and political engagement have a linear small positive correlation. The more engagement participants do, the more embubbled they are ($r=.21$, $p<.05$). The

finding is mirrored by the bivariate OLS regression analysis ($b = -.589$, $p < .05$). The regression equation is: $\text{embubblement} = 1.06 + (.589 * \text{engagement})$. There is a limited model fit. The R-Square of the model is .087, implying engagement explains a small 9 percent of the variation in embubblement. The standard error of the estimate (SEE) is .29, meaning the average error of the bivariate model is a small .29, on the embubblement scale from 0 to 3. This is good, it means there is little error. The values fall fairly close to their predicted value.

Engagement level	Embubblement level
0 (minimum)	1.06 (low, healthy)
1.5 (middling)	1.94 (slightly high, slightly unhealthy)
3 (maximum)	2.83 (very high, very unhealthy)

Table 8: Using the regression equation to predict one’s partisanship and embubblement levels.

Conclusion

The findings of this chapter support the core argument that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is ‘good’). The first result concerned the impact of using the triple filter model of embubblement rather than the standard agreeableness only model. The standard model found there was significant embubblement on average, forming at least to a degree, echo chambers, and since exposure was overwhelmingly online, mostly filter bubbles specifically. However, when accounting for (the lack of) epistemic bubbles - that is, the extent to which participants were drawing on information for opinion reinforcement, whether it be agreeable or disagreeable - embubblement on average was (healthily) very minimal.

Strength of partisanship positively correlated with embubblement as a medium effect. This matches some studies from the literature review (Garret, 2009a; Rodriguez, Moskowitz, Salem & Ditto, 2017; Iyengar & Hahn, 2009; Garret, 2009b; Flaxman, Goel & Rao, 2016; Downham, 2018; Bakshy, Messing & Adamic, 2015). The findings contradict opposing studies (Iyengar, Hahn, Krosnick & Walker, 2008; Dennis, 2016; Nelson & Webster, 2017, p.18). The latter of these studies notably declared partisan selective exposure a “powerful myth.”

Here, embubblement positively correlated with polarisation, but was not statistically significant, and so was rejected. Polarisation was conceptualised in two ways: as increased embubblement over time, and as increased strength of partisanship over time. The findings contradict, from the literature review, proponents that include Stroud (2010), Zahid and Saeed, (2019), Dahlgren Shehata and Strömbäck (2019) plus Dahlgren, plus Shehata and Strömbäck (2019), whilst matching detractors such as Johnson et al (2020), Metzger, Hartsell and Flanagan (2020), also Peterson, Goel and Iyengar (2019).

Lastly, embubblement positively correlated with political engagement, as a small effect. This matches studies from the literature review (Tench, 2018; Mutz, 2002, Vaccari & Valeriani, 2021) and contradicts others (Huckfeldt et al, 2014; Knobloch-Westerwick & Johnson, 2014; Neo, Heijnen, Smits & Veen, 2020; Matthes et al, 2019). The lack of both large effects and perfect model fits means there is plenty of room for other variables to intervene in reality. The expected correlations came even with the use of the triple filter model, which gives this new framework some credence. It also gives the findings themselves more credence because they were arrived at with a very different approach to past studies, as methodological triangulation.

From a normative perspective, the results are good news for a healthy democracy. Embubblement levels were clustered towards less embubblement, with only a few instances of embubblement levels breaching even 2 on a 0-3 scale. There was also no statistically significant evidence of increased embubblement and polarisation over time. This is all despite the sampling, overwhelmingly of young strong partisans, expected to be most at risk.

One caveat is that these two-thirds grammar school students may not be representative of the general population. Perhaps they have avoided embublement due to getting better education and political literacy provision. Although, the lack of basic fact checking, identified later, suggests otherwise. Maybe they are too high socio-economic status and comfortable to ferment the hatred of an out-group needed to become most embubbled. If it is instead lower socio-economic status citizens who become embubbled, well they are less likely to be interested in politics in the first place, so the problem might not be pervasive there either. Maybe it is the niche intersection of low socio-economic status and high partisanship that brings most risk of embublement. Maybe it is age. Young people's relative open mindedness, the lack of strict ideology ingrained over time, may preclude embublement.

A big takeaway is that strength of partisanship and engagement are fairly good predictors of embublement. Therefore, increasing one's partisanship or engagement increases the likelihood of being embubbled. One concern underlying this research is that political literacy and engagement efforts targeting young people focus on reducing apathy, but maybe there could also be more focus on not pushing young people too far in the other direction. Young people might become strong partisans trapped in bubbles. Examples include Sky News' news show, FYI (For Your Information). Specifically for young people, it therefore very often only covers stereotypically 'young people', left wing issues and perspectives, mainly environmentalism and social justice. Hence, it may increase partisanship and engagement along these lines and be putting young people in bubbles.

Another example of risking young people going too far in the other direction to apathy, might be the young people's climate protests, especially then 15-year-old Greta Thunberg's 'school strikes for climate.' Trusted authorities, mainly schools encouraging environmental activism would foster partisanship and engagement but might limit the extent to which each individual can seek exposure to both sides and make up their own mind. The hostile framing of politicians and fossil fuel companies as negligent and evil, while great for mobilisation, might also put young people in an epistemic bubble where the other side of the story might be automatically dismissed by the young people. The

good news here is these are not large effects, and they have limited model fits. This means there is plenty of room for other factors to change outcomes in reality. As always, expanded political literacy provision would be the main recommendation. A less common recommendation is that initiatives targeting young people could check they are doing enough to prevent embublement.

That political engagement and embublement positively correlate reinforces the 'democratic dilemma' between two pillars of democracy, participation and deliberation (involving being open to opposing perspectives). It can be difficult for a citizen to fulfil both democratic ideals. If someone is confident enough in their beliefs to do political engagement, they probably find it more difficult to hear out the other side with an open mind, detached consideration of evidence, and if necessary, opinion change. Likewise, someone who is openminded as such, or is less politically engaged, is less likely to research enough or ever form a strong stance on an issue on which to do political engagement.

Again, greater political literacy provision would be recommended to engage young people yet avert embublement. Particularly useful might be explicit warnings about increased partisanship and how it can warp perceptions of reality, by cognitive biases that work to reinforce pre-existing beliefs, and lead partisans to assume the best of their political side or in-group, and the worst of the other. Particularly on personally important issues, our perceptions of reality are subjective and cannot necessarily be trusted. Political literacy lessons would offer an opportunity for young people to reflect on these psychological and epistemological questions.

Chapter 7: Digital Ethnography of Participant Diaries Suggests their Social Media Embubblement is Negligible (RQ₁)

This chapter contributes to the thesis' core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This chapter therefore calls for narrower concerns with specific mediums and affordances, such as TikTok's 'For You' feed, which contribute to a significant degree of embubblement and radicalisation of some citizens, to be addressed. It begins by detailing the theoretical framework: types of agency, asymmetric media richness, and the triple filter model of embubblement, specifically how these apply to the qualitative analysis. Next are the demographic details of the participants, then the ethnography which spans various social media platforms, before the conclusion summarises.

Theoretical Framework: Types of Agency, Asymmetric Media Richness, and the Triple Filter Model

Now the first findings chapter has provided a quantitative, top-level overview of the results, the last findings chapters represent the more detailed qualitative half. Qualitative analysis enables explanations about how certain affordances of different mediums work. Quantitative analysis can count how often they get used, but this explains *how* they are engaged with, how they construct meaning. Given many of the digital platform features are relatively new and not studied yet in political science, this is a unique contribution of the thesis. Vignettes are used here to address the research question (RQ₁): what contributes to embubblement? This considers agential and structural factors of embubblement, in order to inform policy recommendations. The theoretical framework draws on Berenskoetter's (2020) three types of agency: muted, creative-constitutive, and emancipatory.

It is argued that some structures impose 'muted agency' on participants. Muted agency is where agents passively act out their role within a system, while it feeds them information that reinforces an existing ideology. In this case, that is done via agreeable news sources, family, peers, social media influencers, and personalisation algorithms employing data commodification to generate profit through ads. On the other hand, participants also to some extent demonstrate Berenskoetter's second type of agency, 'creative-constitutive agency': exerting agency within structures. Examples include a user resisting embubblement by deleting their TikTok account and making another, to 'reset' the personalisation algorithm after realising it was radicalising her. There are also positive examples such as users efficiently pushing for political change by 'liking' a post to boost the post's reach via algorithms.

The view of structure and agency taken here is that any given situation involves both structural and agential influences, and we must ask the degree to which each is present. For example, if a participant is instructed to read a news article as part of a school lesson, any homogeneous exposure there is overwhelmingly caused by the structural factor, the socialising agent, of the school. The student has a tiny amount of agency; there are some agential factors here; the student could have chosen to not pay attention, or truant, but clearly there are overwhelming normative expectations and repercussions forbidding the actions. On the other end of the scale, a situation where the participant has the most agency would be when going directly to one news source, for example the Guardian website, or BBC News app. This is a relatively clearcut choice. Berenskoetter's third and final type of agency is emancipatory agency: imagining and acting outside of existing systems, writing blogs perhaps, but this was not observed in the fieldwork.

Primarily agential ('creative-constitutive agency')

Going to one source directly, for example the Guardian website, or the BBC News app.

Going to a medium with algorithmic involvement in source selection, such as social media feeds or search engines.

Getting linked to something by a friend, so being expected to look at it.

Discussions with peers one chooses, but often only as available from school or work.

Discussions with family one has to live with.

Forced exposure to information, for example, during school lessons.

Primarily structural ('muted agency')

Figure 18: Degrees of agency scale.

Placements of examples on the scale do not reflect deductive, concrete rules.

Placements can vary indicatively depending on the exact context. For example, listed as enabling peak agency is going to one news source directly, such as The Guardian.

However, if a citizen chose the Guardian because they were socialised in a household where The Guardian was considered credible, normal, then there is instead larger structural force from the institution of the family.

Next there is a novel, deductive theoretical framework proposed, involving what I call 'asymmetric media richness'. One main observation here is that participants almost always get some exposure to opposing perspectives, matching the recent optimistic literature. However, instances were found where that presumed healthy cross-cutting exposure and democratic deliberation is undermined, by opposing political actors being afforded asymmetric media richness. Media richness can be seen as a scale from not rich static text, through to photo then video, video call then most rich of all, face-to-face,

in person communication. Media richness theory holds that communication is most effective when undertaken through an appropriately rich medium (Tucker, Olsen, & Hale, 2023). For example, texting a partner is probably most effective for quickly and easily telling them that you will be late to meet, but one may instead opt for more nuanced, richer, in-person communication if breaking up with them.

In politics generally, it can be proposed that communication is most effective the richer it is, because it will be more persuasive, persuasion being the goal of most political actors. The peak media richness of real time in-person communication affords more persuasiveness, such as via tone, facial expressions, body language and being able to respond in real time. It follows that healthy political disagreement is most effective when both sides can have a back and forth, face-to-face and in real time, hence mainstream media's point-counterpoint format, where both sides are represented. This is also in part why mainstream media often want to get political actors into a studio to properly talk through issues.

What is seen mostly in niche hyperpartisan media instead is that their political opposition is not represented; they are afforded no media richness at all. Alternatively, if they are represented, they are usually afforded a comparatively low level of media richness, often because hostilities or affective polarisation mean that one side will not meet and talk to the other. This is enabled via the democratisation of numerous differentially rich communication mediums, which can be blended together in the modern hybrid media system. For example, a YouTube political commentator can embed short past video clips, news articles or tweets into their comparatively rich videos, to viscerally attack a political actor, without them being able to talk back. Hence, the conversation is rigged by affording the in-group far more effective communication. It is much easier to win an argument if your opponent cannot respond or cannot respond with the same level of media richness.

Media richness theory could be extended then. For this political communication context, four additions are proposed for the lowest levels of the media richness scale, in order of increasingly sullyng of effective communication. These are: quotation, narration, omission, and impersonation. Quotation is where political opposition, in their absence,

are at least afforded direct quotes. Narration is where the stance of the political opposition is merely alluded to. Omission is where opposition is not represented at all. Impersonation is where the source takes it upon themselves to play a caricature of the opposition, actually misrepresenting them. This is worst of all because it pretends to represent the other side but only rallies people against the other side, making the other side look worse than they might look were they present.

The third theoretical framework used in this chapter is the proposed 'triple filter' model of embubblement. It reimagines the current 'agreeableness-only model' of embubblement (left graph, below). This is the intuitive, standard operationalisation of filter bubbles and echo chambers whereby content, the more one disagrees with it, is healthier (greener) and the more one agrees with it, is unhealthier (redder). The addition of the epistemic bubble (right graph, below) accounts for the filter in our minds, maintaining an in-group and out-group. It adds trust on the x axis, acknowledging that there is such a thing as getting *healthy* agreement, agreement mitigated by the extent one is actually (distrusting) sceptical of one's own side, so it is not actually opinion reinforcement. Conversely, there is such a thing as *unhealthy* disagreement, disagreement compromised by the extent one is just dismissive (distrusting) of the other side, so it acts as opinion reinforcement all the same. There is also a healthy green centre of the graph, of perceived neutral content that cannot particularly reinforce opinion either way, as it is neither particularly agreed with and trusted, nor disagreed with and distrusted.

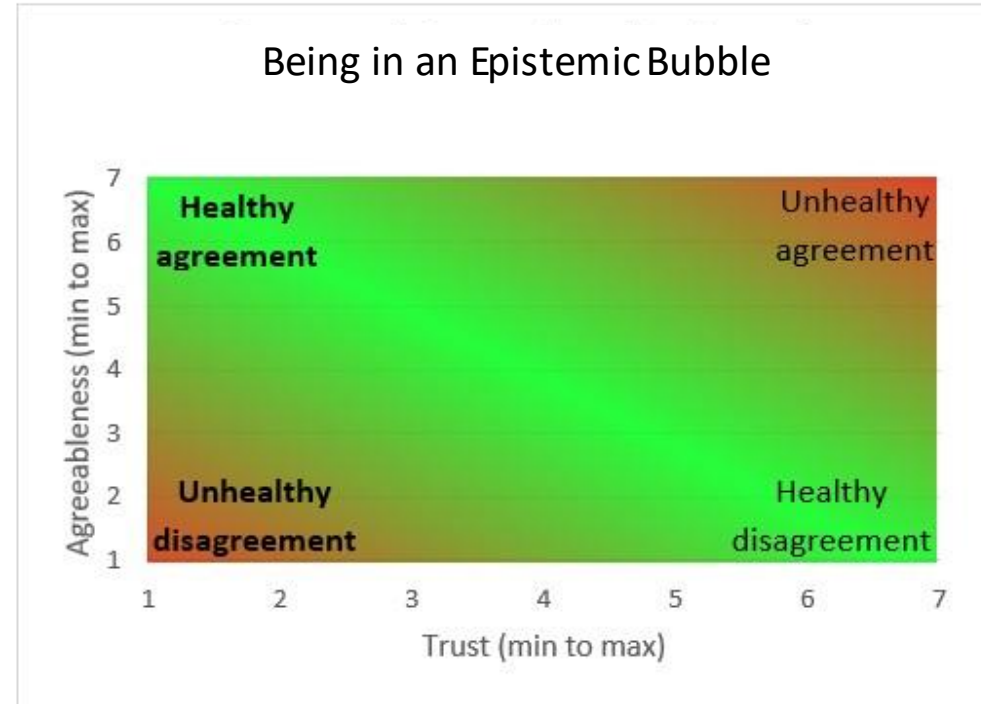
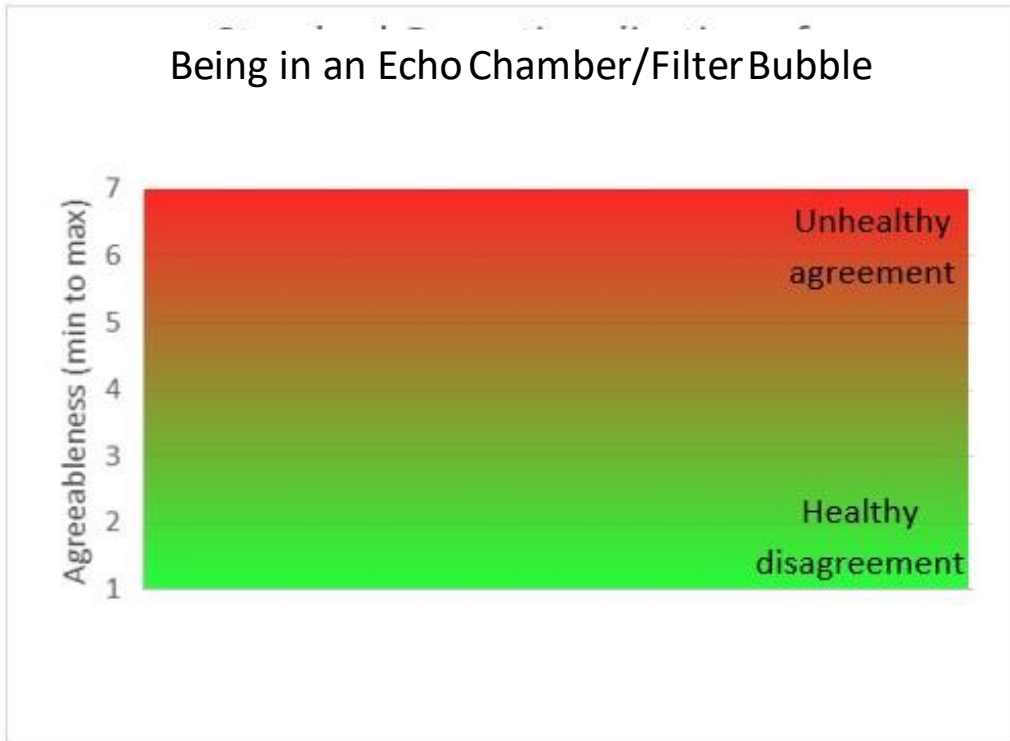


Figure 19: Triple filter model of embubblement operationalisation.

This section contributes to the overall argument of the thesis by concluding with condensing all the analysis below into a typology, of (i) types of agency, alongside (ii) the structural and agential media engagements within those types of agency that are likely to increase or decrease embublement, addressing the research question. Overall, the points paint a picture far from the worst-case scenario. Nonetheless, they identify clear areas for improvement. The typology calls for narrower concerns with specific mediums and affordances, such as TikTok's 'For You' feed, which contribute to a significant degree of embublement and radicalisation of only some citizens.

This chapter contains metaphors as shortcuts to make the data and explanation accessible and invite reflection about how the communication processes actually operate. There are food metaphors to convey passivity, for instance 'consuming' and being 'fed' from a news 'feed.' Indeed, the commonplace term 'healthy news diet' can be applied here (Roumell, 2020). Opinion reinforcement is akin to unhealthy food; alluring, but ultimately of little (nutritional) value and unhealthy – from an embublement and political literacy perspective. Meanwhile, opinion challenge is akin to the fruit and vegetables that we *have* to consume, to stay healthy, perhaps less enthusiastically. Note that more concrete justifications for the 'healthy' and unhealthy' normative claims are covered in the theoretical framework chapter. This conception is also guided by participant use of such terms, unprompted. I use traveling metaphors too - encountering a 'walled garden', 'rabbit hole' or 'fork in the road.' Participants can be conceptualised as travelling. Their direction, or obstructions they face, will determine what content they encounter. There is agency here, but also structures that put up walls or build paths. There are also epistemic bubbles 'inoculating' (like vaccines) against disagreement.

It is worth caveating these metaphors, given their power in shaping our conceptualisation of, and actions within the world (Lakoff & Johnson, 2008). The metaphors are not strongly advocated for the field to adopt, given the field is critical of metaphors for never fitting perfectly, namely its own, foundational ones, filter bubbles and echo chambers. For example, 'bubbles' and 'chambers' perpetuate misconceptions of citizens hermetically sealed off from disagreement, which is almost impossible owing to the prevalence of incidental exposure (Bruns, 2019).

The diary days began exactly one year after the first Covid-19 lockdown laws were passed in the UK. By this point, Britain was slowly, cautiously exiting yet another lockdown, unbeknownst to it the final one. The mood was tense and grim, but the quickening vaccine rollout offered some hope. This section is generally structured in line with the five main socialising agents. That is, structural factors that influence a citizen's political socialisation, and therefore embublement. These are (social) media, family, peers, education, and events, as discussed in turn during the literature review. They are generally ordered and given coverage based on their prominence in the participant diaries overall, to provide that additional context.

Vignettes include and move between different participants more than usual, following O'Loughlin (2011; O'Loughlin, & Gillespie, 2012). Setting out qualitative analysis as such allows for a close focus on particular participants, but then extending the vignettes to enable more detailed analysis by particular media consumed, as well as the participants' responses. For each socialising agent, for example (social) media such as Instagram, two or three participants are included in vignettes, however many participants from which novel analysis could be drawn, before saturation. Indeed, activity within any one given medium was not particularly varied across the sample, so saturation was achieved with a handful of vignettes and featured participants. Also, some participants submitted far more content, or pertinent content, to analyse than others.

Participant Demographics

Participant	Age	Gender	Ethnicity	Politics (far left 1 – 7 far right)	Avg. Strength of Partisanship (min. 0 - 3 max.)	Education	Location
45	18-19	Female	South Asian	2 - Left ('Left libertarian')	2.1 (fairly strong)	Grammar school	Southeast UK
35	18-19	Female	Indian	2 - Left ('Socialist'), became 3 - centre left.	2.1 (fairly strong)	Grammar school	Southeast UK
47	17-18	Female	White	3 - Centre left	1.7 (middling)	Somewhat selective religious school	Southeast UK
44	18-19	Male	White	5 - Centre-right ('one-nation conservative')	1.2 (weak)	Grammar school	Southeast UK
72	18-19	Male	White	3 - Centre left	1.9 (fairly strong)	Grammar school	Southeast UK
42	18-19	Female	South Asian	2 – Left	1.3 (weak)	Grammar school	Southeast UK
40	18-19	Female	South Asian	2 – Left	1.7 (middling)	Grammar school	Southeast UK
14	17-18	Male	White	5 - Centre right ('Economically left with some socially conservative views'), to 4 – Centrist, to 3 - Centre left ('Nkrumaism'), to 2 - Left	1.1 (weak)	Grammar school	Southeast UK

Table 9: Demographics of featured participants.

Embubblement Heatmaps

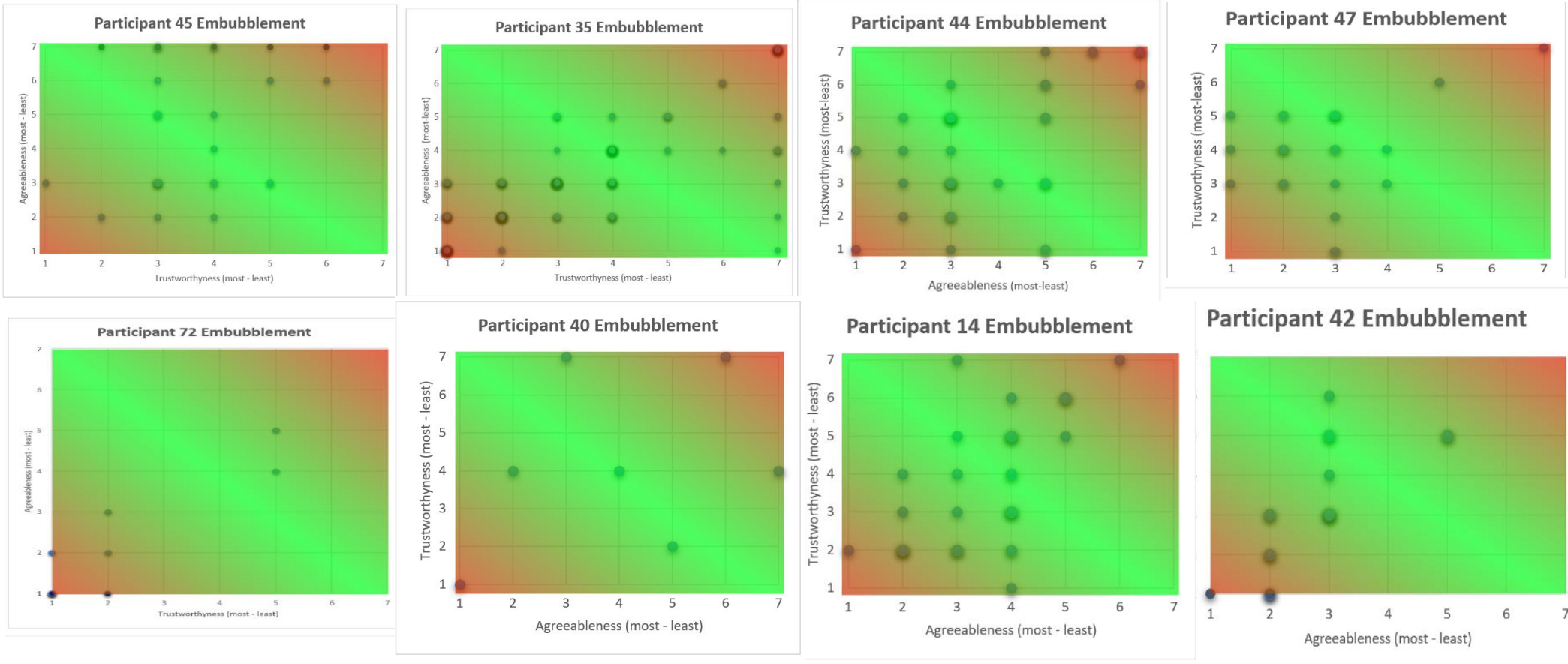


Figure 20: Embubblement heatmaps.

Some graphs are used even here, to bridge the quantitative and qualitative chapters. They provide micro-level views of the previously macro-level quantitative findings, to contextualise the qualitative analysis. All Epistemic embublement levels were fairly low and healthy. Participants were not just getting opinion reinforcement (datapoints falling in the redder areas), that is, seeing and trusting agreeable sources, or avoiding and distrusting disagreeable sources. Their sources and reactions were more neutral and moderate (datapoints falling in the greener areas).

Twitter: Contribution to Embublement Remains a Mixed Picture

Media, including social media, generally enables muted agency, because the participants simply looked at what was algorithmically served to them on the home pages or newsfeeds. Twitter is the fourth most used news source amongst UK 16–24-year-olds, at 35 percent (Ofcom, 2022). The newsfeed algorithmically selects information sources, blunting agency to some degree, but it selects mainly from accounts that users ‘follow’, allowing some degree of agency over exposure. There are very contradictory studies on Twitter’s effect on embublement (Bruns, 2019).

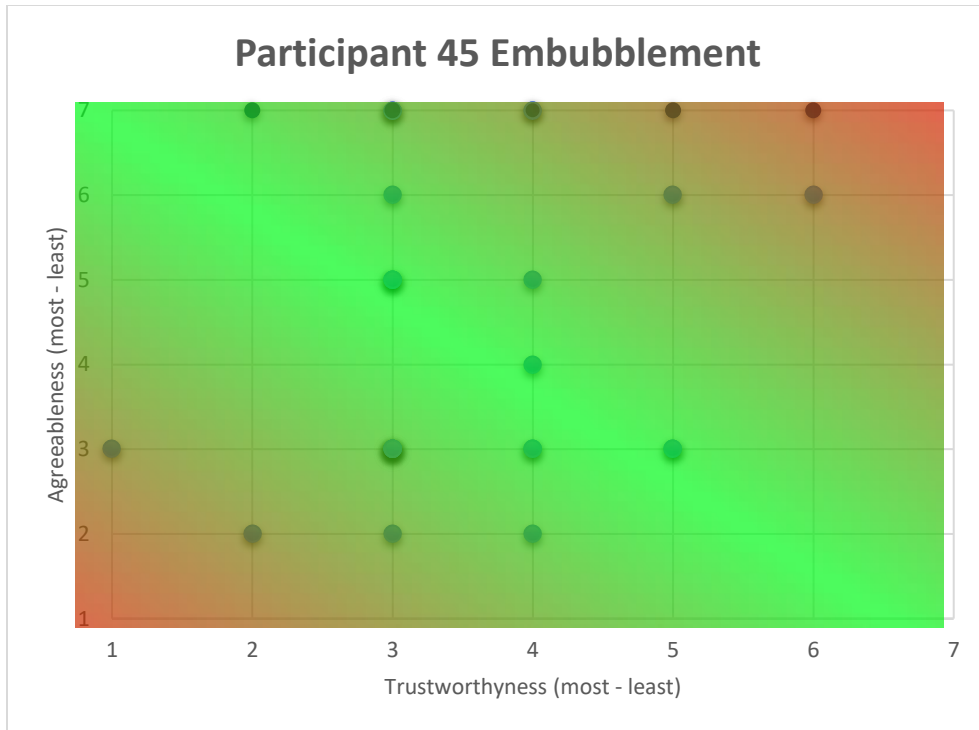


Figure 21: Participant 45 was an 18–19-year-old women of South Asian ethnicity, politically Left ('Left libertarian'), with a fairly strong 2.1 average strength of partisanship (minimum 0 – 3 maximum), and from a grammar school in Southeast UK. The high frequency of their information sources (n=30) in or close to the central, greenest 'neutral' area here suggests participant 45 was not in an epistemic bubble.

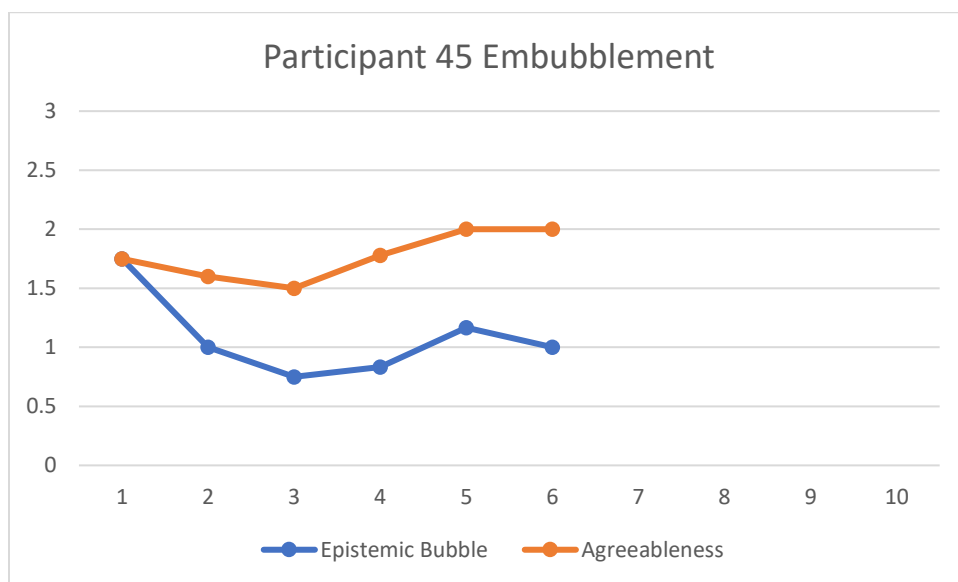


Figure 22: Though participant 45 was mostly seeing agreement (red) they were in an epistemic bubble to a much lower degree (blue), matching the trend across the participants generally. This means the agreeable sources were not particularly trusted, so could not reinforce beliefs much.

Figure 22 suggests participant 45 started out only slightly embubbled, scoring a slightly unhealthy 1.75 in both models (both on scales from not embubbled at all; 0 - 3; entirely embubbled). The participant's epistemic bubble levels steadily decreased from diary day 1, from a slightly unhealthy 1.75, down to a very healthy 1, in diary day 6. That happened as agreeableness steadily increased, from a healthy 1.5 in diary day 1, to an unhealthy 2 in diary day 6. The epistemic bubble is argued to be the most meaningful measure, so the disparity between the two figures here highlights the substantial nuance that previous studies may have missed. The implicit assumption in the old operationalisation of embubblment was that partisans get opinion reinforcement from agreement, but here seeing more agreement is not conducive to more opinion reinforcement, as the participant trusts the agreement less.

Participant 45 began in an online forum for students called The Student Room, browsing a thread about getting into a certain university. They screenshotted a comment, about how a certain university will let applicants into a completely different course to the one applied for. Another user asked why one should accept doing a different course, just for the prestige of getting into a certain university. According to this other user, universities do this to fill up courses, for money, so the university should be told to "shove it where the sun doesn't shine." The participant found that response highly disagreeable and highly distrusted, so this exposure to an opposing perspective probably did not change their mind.

The use of a traditional internet forum is quaint for generation Z. A forum, where the most current and popular threads rise to the top, at least means that everyone sees the same webpage. Compare with modern social media feeds where all users have a personalised experience, possibly further fragmenting society. On the other hand, the rudeness of the above comment highlights the downside of forums. Their characteristic

hostility, often brought on by the anonymity afforded, is not ideal for civil discourse. Screen recording, or screenshotting, were allowed for flexibility, but such a static screenshot lacks context of how the participant got to the forum, as a limitation.

Next, participant 45 submitted a screen recording of Twitter. The limitation here is that the participant used Google Chrome in incognito mode. It is unlikely this is their usual practice. It suggests they are privacy-conscious, given the fact that in the screenshot previously they censored vaguely identifying details too. Maybe these concerns influenced their behaviour. Certainly, one problem is the limited version of Twitter that was offered to those not logged in, and therefore the lack of normal personalisation via AI and algorithms. It makes the data inauthentic, so such data should be given less weight in the analysis.

That caveat aside, the Twitter screen recording starts with participant 45 moving to the 'News' tab. This is algorithmically generated. They scroll down and open a Reuters tweet thread promoting their article 'After H&M, now Nike and Adidas come under fire on Chinese social media over Xinyang.' Despite the presumed lack of personalisation, this exactly fits the participant's interests in clothing brand ethics. They agreed with and trusted Reuters well, despite Reuters' characteristic neutrality. Participant 45 did not read the content long enough to enable further analysis.

Another Twitter screen recording started on the 'For you' tab. The participant scrolled through 'viral tweets', to a meme about Amazon's working conditions, whereby staff are not given time to go the toilet. The meme proposed a 'new concept for the Amazon logo.' It was an upright bottle with 'Amazon' written on it. Flowing into the bottle diagonally was the Amazon logo's orange 'smile' complete with the creases at one corner of the smile representing minor splashback around the bottle's rim.



Figure 23: Meme depicting a new concept for the Amazon logo.

Comments were similarly mocking of Amazon. A few tweets asked for and gave an explanation or evidence, but there was no dissent or support for Amazon or its policy. One way Twitter in particular might embubble users is that it only displays tweet metrics for positive reactions, here retweets, quotes and likes. Having no tweet metrics to gauge disagreement or uncertainty could artificially inflate perceptions that one is on the right side of an issue, and that many people agree. This is the case likely for the same reason YouTube removed the video 'dislike' button, because it is a way of conveying a huge amount of hostility (Srivastava, Sloman & Sun, 2022). Participant 45 healthily agreed with the commenters 'fairly well' but trusted them 'not that well.' It is healthy not to trust much random anonymous people.

A Twitter video clip shows participant 45 viewing the primary 'For You' tab. This is highly influenced by algorithms. They click on the 'sports – trending' topic, about whether England should boycott the Qatar FIFA World Cup given the team's LGBTQ+ advocacy, embodied in the rainbow captain's armband. Epistemic embublement was a very low, very healthy 0.83. Agreeableness was a slightly high, slightly unhealthy 1.78. The trending topic affordance of social media sites such as Twitter are healthy because it provides relevant popular tweets, apparently regardless of the political perspective, and outside any homogeneity of who the user follows. This promotes unintended incidental exposure to opposing perspectives.



Figure 24: Marina Hyde tweet criticising Laurance Fox.

Another finding that validates this new methodology is the first tweet here, from Guardian columnist Marina Hyde. She criticises a tweet from right-wing activist Laurance Fox. Marina's tweet is quite hostile, dripping with sarcasm and extremely partisan. Therefore, previous research would label this as either reinforcing or challenging a participant's beliefs, depending on their ideology. It turns out though that the participant indicated they simply did not have an opinion on the topic (4b) and did not consider her to have a clear opinion on it (4c). Hence, this was actually very neutral, healthy exposure, unlikely to reinforce the participant's opinions either way, because neither were deemed to have clear opinions here. Perhaps her sarcasm was so thick it was hard to understand her actual position.

[TikTok: Reclaiming Agency and Resisting Embubblement from Influencers and Data Commodification](#)

TikTok is the sixth most used news source amongst UK 16–24-year-olds, at 27 percent (Ofcom, 2022). TikTok works by algorithmically curating users a 'For You' feed of its most viral short clips. TikTok cuts to the chase with this, even putting less emphasis on recommendations based on users' networks, compared to other social media platforms. The UK's Online Safety Bill targets TikTok following evidence of TikTok embubbling young women amongst eating disorder and self-harm inducing content (Logrieco, Marchili, Roversi & Villani 2021).

Participant 35 is a 18-19-year-old woman of Indian ethnicity, politically Left ('Socialist'), she became centre left. She has a fairly strong 2.1 average strength of partisanship (minimum 0 – 3 maximum) and is from a grammar school in Southeast UK.

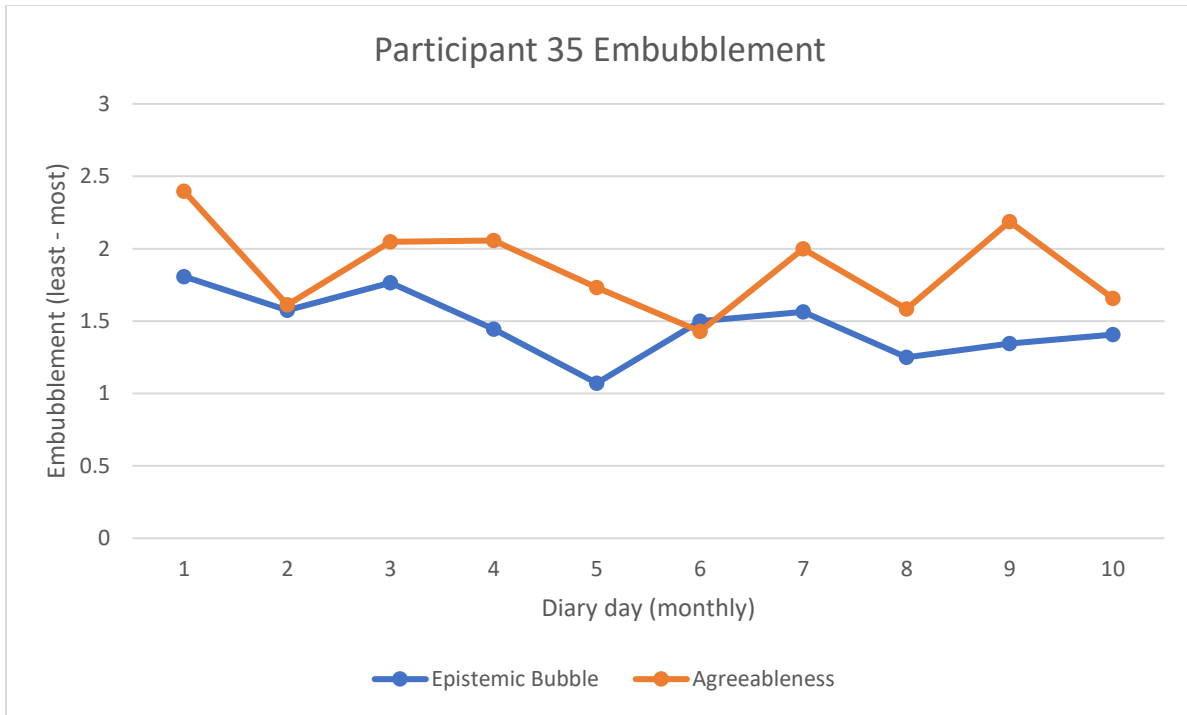


Figure 25: The extent participant 35 was in an epistemic bubble, compared to an agreeableness-only model of embublement.

For agreeableness-only embublement, participant 35 averaged a fairly high, fairly unhealthy 1.87. Yet, average epistemic embublement was a low, healthy 1.47. Moreover, both decreased slightly over the ten months (both on scales from not embubbled at all; 0 - 3; entirely embubbled).

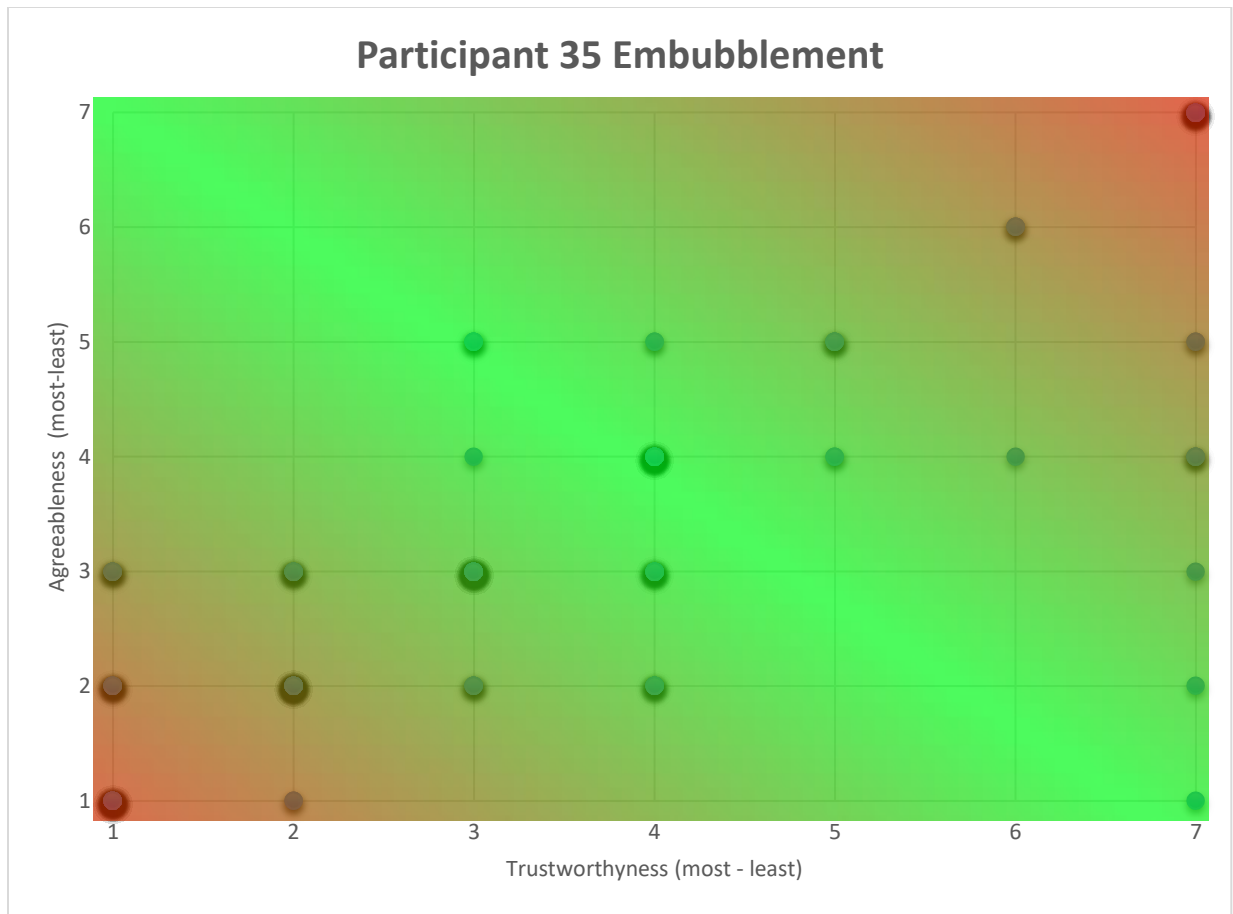


Figure 26: Participant 35's epistemic embubblement score overall was low and healthy because, although there was a lot of opinion reinforcement - sources falling in the redder areas of the graph, there was about an equal number of sources that did not reinforce their opinions - sources falling in the greener areas of the graph (n=234).

Participant 35 consumed TikTok videos almost exclusively, on average 15 each, on the 10 diary days. These are all from left wing, feminist, social justice-orientated content creators, often criticising 'non-oppressed' identities, people who are white, cis (have not changed their gender), conservative, straight, or men, also the patriarchy. It is unclear whether the content was all from one tightknit community or not but either way getting information via one source, TikTok, is unhealthy. TikTok has the most power within this structure-agency relationship: it structures the user's experience and content exposure to a very high degree. TikTok curates the newsfeed, and the participant eats it up. Given

the sheer number of videos consumed, TikTok might have succeeded in habit formation. Therefore, the participant's agency to resist embublement might be limited.

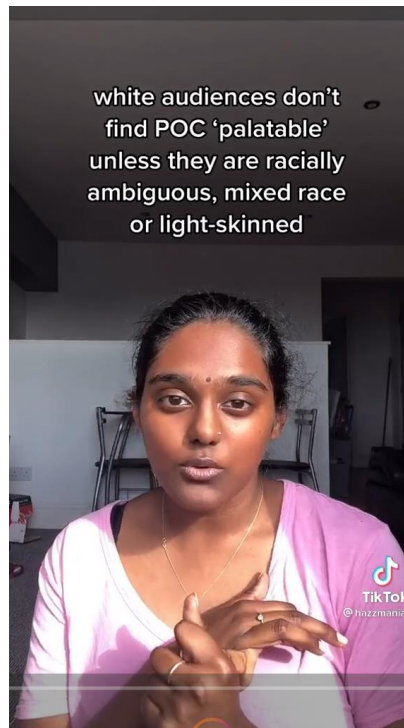


Figure 27: A TikTok influencer criticising people of colour's (POC) media representation.

The first video involves a minority woman explaining how Hollywood will not represent interracial relationships, unless one half is still a white person, and the other is still relatively light skinned and 'conventionally' attractive. She is responding to this complaint from someone else's video. Her explanation has a mix of academic authority, and the informality of a social media influencer; it appears she is kneeling on a somewhat untidy floor in her house. This is an influencer's trademark blend of being informative yet authentic, good, for example, for selling a sponsor's shampoo, and perhaps embubbling young people, alike (Cascio Rizzo, Berger, De Angelis, Pozharliev, 2023). Her continual use of both hand movement for credibility, and her humour, add to this. Indeed, the participant both agreed with and trusted her. The media richness

afforded by TikTok videos enables the more persuasive body language. With mainstream media being historically unrepresentative of the population, the democratisation of media production with platforms such as TikTok allows minorities more of a voice (Firmstone, Georgiou, Husband, Marinkova & Steibel, 2009). This influencer's minority status and her ability to speak from 'lived experience' of having such concerns likely adds to her authenticity, and therefore her agreeableness, trustworthiness, and ability to embubble the audience.

In terms of giving a young person a disparate representation of reality compared to other young people this influencer's line 'white audiences don't consider people of colour palatable' is poignant. Such lines could be seen as constructing white people as a hostile out-group who, in such everyday ways, constantly marginalise minorities. This is one strongly left-wing world view, that a lot of other citizens will not have. Yet, once it is pointed out, the participant could see this kind of pattern everywhere. TikTok's videoblogging format, the default being portrait mode fitting one person speaking to camera, ensures that no alternative perspectives need to be aired, compared to mainstream media's point-counterpoint format. Indeed, she speaks in an extremely confident, matter of fact way, leaving no room for alternative interpretation of reality. Such videos might represent a structural factor in embublement, via media, and a cohort effect of TikTok on some of generation Z.



Figure 28: A TikTok influencer discussing Islam.

Almost identical analysis applies to the next TikTok video watched. A gay man recounts why he left Islam: because a religious leader he came out to asked if he had been raped as a child. There are all the same features, the intersectional identity, the casual sitting, in a chair, constant hand movements, and the lack of opposing opinion. The quite moral, personal, and emotive testimony makes it more compelling. There is no journalistic norm of giving the accused a right to reply. This video contributed the maximum embublement possible, as the participant said they found this user very agreeable and very trustworthy.

A near identical video criticises another user for flaunting a Victoria Secret bra, because apparently, disproportionately black US prisoners are forced to do unpaid labour for such companies. Participant 35 agreed with and trusted the message well. The influencer's use of statistics might bolster that trust. A quick Google search leads one to an article by fact checker, Politifact, suggesting this is textbook misinformation, viral on social media around the time, but based on outdated information (Valverde, 2020). In this study's approach it is irrelevant who is right. The point is a young person, in a high trust, highly homogeneous community, has accepted as fact something that could be misinformation. At the very least, the topic is more contested than the impassioned presentation suggests. Again, there is no journalistic norm of a right to reply for the accused, or professional caution about accuracy or defamation. The video demonstrates how supposed misinformation can spread uncontested more easily in homogeneous communities, here of digitally networked young citizens, with a strong structural factor of media, and cohort effect from TikTok. Even worse is that the participant did not do a quick fact check using alternative sources. The data they provided indicated they believed the highly trusted TikTok influencer. The participant has not been equipped with enough political and media literacy to resist.

The next TikTok video involves a gay man dressed as a woman. His proposition is that straight men feel threatened by gay men, because straight men presume gay men will impose themselves upon straight men, because that is what straight men are used to doing to women. Participant 35 agreed with him fairly well and trusted him well. Again, there is the construction of a nefarious out-group, here, straight men, which means more people for the participant to dismiss, potentially embubbling them more. Participant 35's only exposure to formal mainstream politics was a TikTok with an influencer vaguely summarising alleged corruption at Liverpool City Council. This rarity reflects the participant's position, far away from the mainstream public sphere, down a feminist TikTok 'rabbit hole'. 'Rabbit hole' is simply an established term meaning following a path of getting information from ever more niche sources (Piccardi, Gerlach, & West, 2022). It is not supposed to be dehumanising.

The next TikTok provides feminist book recommendations, books on feminism that do not centre the western world. Here is an entire reading list which could further embubble the audience in feminist media and ideology. Books particularly can offer the reader a very long and comprehensive dive into opinion reinforcement. They also have an air of authority, as a more traditional and highbrow medium, authority that might be misplaced when mixed with a partisan ideology. Books are often a physical medium, with their buying, owning, and reading conferring cultural capital in a field such as feminism, therefore possibly reinforcing an in-group and out-group, and sense of feminist identity which could further embubble the audience, away from mainstream opinion. The only disagreement here is a comment criticising the books: 'not all trans inclusive though!' This suggests how previous binary, quantitative-only studies may have found disagreement, in a bubble, but it may be minor disagreement on the finer points of an ideology. Still, the participant healthily said they did not have an opinion on the topic and did not know whether to trust the source.

Here, there is evidence of some creative-constitutive agency, where actors exert agency within structures. A video has a woman advocating people sign her petition to parliament, against bills which would limit protesting, and give undercover police immunity from rape allegations. Participant 35 agreed with the influencer very well and trusted them well. The participant taps 'like' on the video and a few supportive comments to support the content. It would be easy to see this as slacktivism as they did not even sign the e-petition, but quick 'likes' are even more efficient, and these low threshold forms of engagement can lead on to more substantial forms, in a continuum of participation (Dennis, 2016). This clip demonstrates the democratic dilemma, of how unhealthy bubbles are nonetheless associated with a big benefit, promoting political engagement, especially for young people who are not well reached by most mainstream political actors. Another example of efficient political engagement here is the few people commenting, 'boost.' They have nothing to say but still want to supply interaction to help boost the content's ranking in the TikTok algorithm.

Another TikTok video has a woman imploring young women to care about their education, in light of women's education being suppressed historically because the

patriarchy fears powerful women. The participant agrees with the influencer very well and trusts them well. Similar to an earlier TikTok video about racist white media audiences, here there is the construction of another oppressive out-group, the patriarchy. Again, if the participant is regularly seeing these narratives, then it suggests they receive a negative representation of reality, in which they are constantly victimised because of their race and gender. It is a representation of reality most UK citizens might not see, due to lacking the very intersectional identity, or exposure to this particular media content.

Next was a woman simply laughing at the article, and comments, 'Human penises are shrinking due to pollution.' Men and Conservatives were cast at the out-group and mocked in the comments: 'no wonder they are so mad about everything', 'suddenly the Republicans care about climate change.' The participant agreed with and trusted them fairly well. Participant 35 found most of the TikTok videos very agreeable and very trustworthy. Only a few TikTok videos are without progressive criticism of a non-marginalised social group. In fairness, there were several videos that reduced embublement because the participant did not have an opinion on the topic, nor could they say the source had a clear opinion on the topic. Hence, even in a homogeneous environment, some exposure was effectively neutral and not able to reinforce beliefs.

Only two videos involve opposing perspectives. The first video sees an influencer have a scripted conversation, with himself, with the other version of him playing a character - videoed separately; recording two halves of the 'conversation' one after the other then editing them together. The character bemoans how a jogging woman he approached on the roadside while he was driving did not reciprocate his advances. The influencer, while being himself, explains that this was creepy, even dangerous-looking behaviour that women should not have to deal with. The opposing perspective was represented, of someone who does not hold as progressive views towards women. However, that opposing perspective is being imitated by the influencer, playing a character. The opposing perspective is set up to be dismantled. Despite the disagreement, it is still not real democratic deliberation. Unhealthily from a filter bubble perspective, participant 35 found the influencer very agreeable and very trustworthy.

There is only one TikTok video in the content participant 35 consumed that contains a genuine opposing perspective, for 23 seconds. This is enabled by an affordance called 'stitch', where a user can embed a clip from another user's video into their own, before responding to them. Someone might in turn respond to them and so an extra part of the video is added each time. The first influencer broadly criticises 'cis people' (people who have not changed gender) if they have not put pronouns in their online profiles, to help normalise the practice for trans people. In response, an apparently more conservative woman criticises the LGBT+ community for using so many labels if they do not like being labelled. The video was bookended by another influencer who explains why and says that the woman would fail a primary school English class. The disagreement is sandwiched between, then dismantled by, progressive influencers, with that insult too. This is not the most constructive democratic deliberation. The stitch affordance otherwise is a passable way to promote two-sided discussion on TikTok. However, its short clips and asynchrony do not enable the most nuanced back and forths. The response format may encourage influencers to act as though they are giving the final word on the topic, giving a sassy putdown of the other person, rather than influencers expecting a constructive back and forth. Given the apparent rarity of influencers with different perspective colliding as such, any TikTok communities may be too isolated for that to happen anyway.

The epistemic bubble concept is about a filter in the mind; the extent one dismisses, even demonises an out-group, thus blocking consideration of alternative perspectives. Here, the out-group of non-marginalised people is expended even further via an intersectional lens. For example, gay men are still men and often white, so they are still cast as part of a hostile outgroup for the ways in which they uphold white supremacy, such as by stipulating racial preferences on gay dating apps. Similarly, despite women themselves being considered marginalised, white women were called out, as with an example of one still being called racist. Black men were called out for 'being men before they are black' as in, having more similarity and allegiance to white men than to fellow marginalised black people, namely black women. One influencer said she came to this conclusion after hearing black men speak about the #metoo movement.

In their second diary day, one influencer video responded to a comment that made racist stereotypes about the influencer. A comment a different influencer responded to asked for clarification on the influencer's claim that some people are racist because they like Asian culture, specifically the entertainment media anime and K-pop, yet despise Asian people. This affordance allowing influencers to respond to individual comments via video is unique to TikTok. The problem is that it enables asymmetric media richness. The commenters are afforded only static text, whereas the influencer is afforded full video, also allowing for a more persuasive tone, plus facial expressions, and body language. The commentators cannot reply back in real time either. This means that anyone who disagrees with an influencer has far less power so is put at a disadvantage in the 'debate.'

Worse still for democracy are instances where partisans merely mention the opposing opinion. Again, although that provides exposure to the opposing opinion, it is still not legitimate healthy democratic deliberation. A partisan is unlikely to provide the most accurate representation of an opposing argument. In addition, the opposition does not get to respond, let alone in real time. One example of this is a YouTube video on the Jimmy Snow (2021) YouTube channel. It mimics a broadcast news format. The host, a progressive political commentator, discusses a US Republican's argument:

...I don't think he was prepared to not have to hit back at like, personal attacks, because the core of his rebuttal ended up being super stupid. The congressman called out the American family plan as a 'wish of government waste' that will put government even more in your life from cradle to college. That's right folks the right is now coming out against public education as being government intrusion. This would literally not put the government more in the middle of your life than the current K through 12 program does, which literally hundreds of millions of parents rely on to be able to balance childcare with their job where they go to work to make billions of dollars for other people...

The second line contains an opposing opinion, but it is merely reported speech, 'narration', and sandwiched between instant retorts to it. There is little room given for the audience to consider the opponent's argument. There is only the briefest summation of the opponent's argument, from what was said in the past. Hence, the YouTuber might know more now, being in the present, so that information asymmetry confers more power to them. Moreover, the influencer can spend any amount of time preparing a response, and the opponent does not get a chance to respond it turn. Pre-empting the opposing argument by calling it 'super stupid' also does not encourage the audience to give it serious consideration. The uncivil discourse is characteristic of hyperpartisan media as it is not regulated. Yet this content borrows the aesthetic of relatively neutral mainstream broadcast media. It has a presenter behind a desk, with a mug on it, a skyline background, even a photo of the senator in question edited and inserted in the top left of the video. The senator's silent, still image speaks volumes about how this professional media mimicking does not extend to allowing that opposition to speak back. Hyperpartisan content is also marked by its tendency to hold up one element of the political opposition, often the most extreme, and conflate it with the entire group, to smear them. This is evident when the host mentions this one senator's argument, then says 'that's right folks the right is now coming out against public education...'. The person stands for the group; the part stands for the whole, called 'synecdoche.' This is not conducive to constructive democratic deliberation.

There second diary day was almost identical to their first. Of note was a TikTok video about a #ClothesHaveNoGender protest, involving some male students and teachers wearing skirts, to protest that a male student was expelled and told to see a psychologist for wearing a skirt to school. It is a clip taken from broadcast media. One way that partisan communities contribute to their epistemic embublement is by overstating the support for their position across the population. This can give affirmation that their views are widespread, maybe even the majority, or at least the silent majority. The newsreader says, 'male teachers across Spain are wearing skirts in support of an expelled student.' This can be interpreted by the partisan community as them having a huge countrywide movement, when it might be a local issue with a few more

hyperpartisan, hyper online TikTok users joining in from elsewhere. The use of a professional broadcast clip could also confer legitimacy to the movement.

One affordance of TikTok that may help reinforce opinions is the 'duet' feature. An influencer's response to a video is played concurrently with it, in split screen. As the name implies, it was made for influencers to collaborate, mainly in singing. In politics it is often used to 'boost' (draw further attention to) a message the influencer agrees with. The influencer doing the 'boosting' does not say anything. They only nod occasionally as the other TikTok video plays, which does look slightly odd (to this analyst, at least). They might edit in a typed message on their video. An example of this type of duet happening was two influencers raising awareness of Israel's attacks on Palestinians. Elsewhere, one TikTok influencer explains how he will not be friends with a conservative because, for him, conservatives do not care about other people. The participant agreed with and trusted him 'fairly well.' This is a clear way to create an epistemic bubble, promoting not being friends with political opposition.

Participant 35 explained how when she was younger, she would get a lot of information through BBC News and from teachers, both of which she found fairly agreeable. She was not as interested in politics, and a lukewarm feminist compared to her position now. She then found a lot of content through YouTube from progressive YouTubers including Jimmy Snow and Rachel Oates, who she agreed with well. Most interestingly, she said:

... they have helped broaden my perspective on such stuff and recently with TikTok, I have definitely seen a big shift in change in my mentality however I do try to limit my time on Tiktok as you can easily be radicalised through Tiktok and I did notice some behaviour which caused me to take a short break from political content and I have had to make a new account to stop getting so much political content.

This is an important quote. Bearing in mind this was written at the end of the ten-month study, it shows an eventual awareness of potential radicalisation through TikTok. It also

shows a novel way agents can try to reclaim agency when facing embublement from data commodification, by deleting then making a new account. By the last diary day participant 35 was consuming far less content, and less of it was about social injustices. This shows reflexivity about how her 'mentality' was changed by TikTok use and then agency to create a different pattern of use and engagement of Tik Tok. Overall, this participant's data makes the case that there should be more focus on specific mediums and affordances, mainly TikTok's 'For You' page, rather than moral panic over widespread embublement.

Snapshot: Auto-Playing Content Not Necessarily Leading to Embublement

Snapshot is the ninth most used news source amongst UK 16–24-year-olds, at 19 percent (Ofcom, 2022). Unlike TikTok, Snapshot centres content from accounts one has subscribed to, reflecting slightly more agency. Snapshot works by, upon one piece of content finishing, autoplaying the next piece of content, which is agency-limiting. Snapshot is one of the relatively new platforms here which has not yet been investigated for embublement.

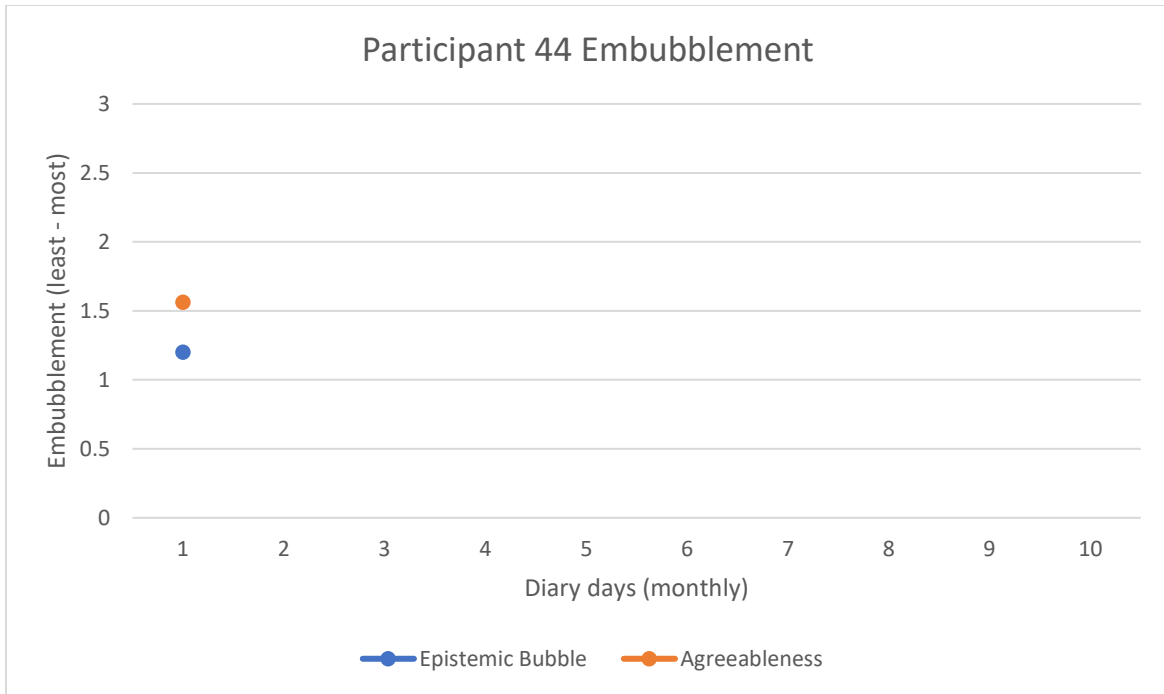


Figure 29: Participant 44's embubblement levels.

Participant 44 was an 18-19-year-old white man, politically centre-right ('one-nation conservative'), with a weak 1.2 average strength of partisanship (minimum 0 – 3 maximum), from a grammar school in Southeast UK. They completed the first six questionnaires. They only completed diary day 1. Their average epistemic embubblement was a very healthy 1.2. Their average agreeableness was a fairly healthy 1.6 (both on scales from not embubbled at all; 0 - 3; entirely embubbled). Throughout, they were a strong partisan and they identified as a centre-right one nation conservative.

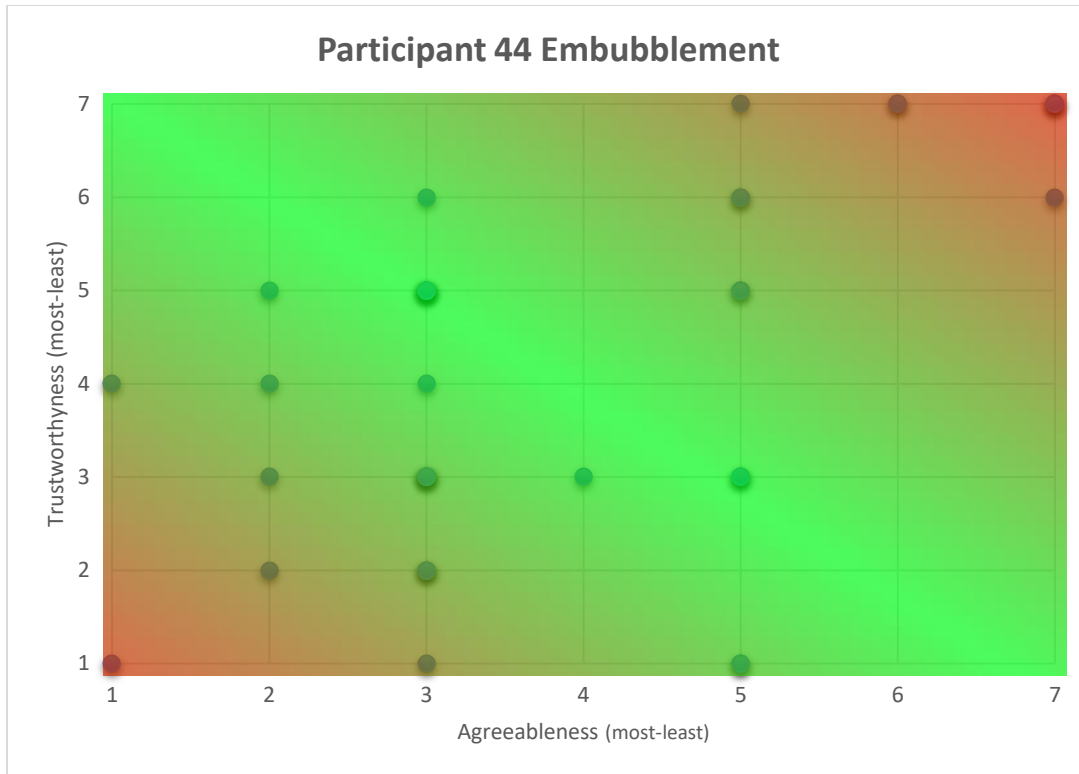


Figure 30: The participant was barely in an epistemic bubble, scoring a very healthy 1.2. This is because most of their exposure was minimally opinion reinforcing, landing on or near this graph's green diagonal line (n=40).

Participant 44 started out using the Snapchat app on their phone. They first browsed a carousel, or horizontal menu, containing the latest news from his subscriptions. This implies a high degree of agency if he has pre-selected these sources to appear there. He opened a Sky News article about singer Britney Spear's court case to remove her father's control of her affairs. Sky News was also not agreed with or trusted well for an e-scooter article. Participant 44 was then led to an article from an entertainment news site for young people, LADbible. The article covers Johnny Depp losing his legal appeal regarding domestic abuse of his wife. Snapchat works by, upon one piece of content finishing, automatically showing the next piece of content. This could make people give content a chance that they might not have otherwise, because it has already started playing in front of them. This is from the subscriptions carrousel though, so content is still in large part self-selected.

Instagram: Resurfacing of Partisan Narratives

Instagram is the most used news source amongst UK 16–24-year-olds, at 46 percent (Ofcom, 2022). It has users defer some agency to personalisation algorithms that make up the newsfeed, but at least users can select the sources that appear there. Compared to news sites and apps, social media sites such as Instagram have social features including being able to ‘like’ posts and message people, observed as factors in embubblement.

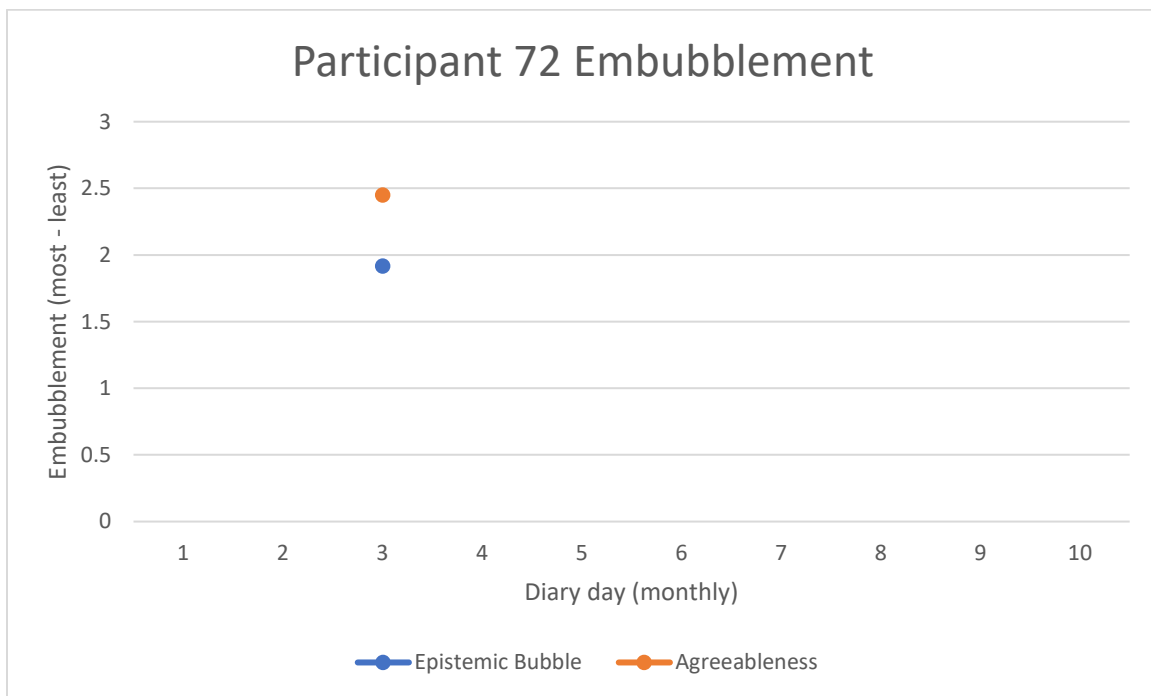


Figure 31: The extent participant 72 was in an epistemic bubble, compared to an agreeableness-only model of embubblement.

Participant 72 was a 18-19-year-old white man, politically centre left, with a fairly strong 1.9 average strength of partisanship (minimum 0 – 3 maximum) and from a grammar school in Southeast UK. Participant 72 reported no exposure to political communication except for one piece in diary day three. On Instagram, the participant was linked by a

friend to an old BBC News article ‘A-level and GCSE results to be decided by teachers.’ They were interested in it given they had recently finished the period in which they would have sat standard exams, had standard exams gone ahead without the pandemic. Being linked, an article is overwhelmingly a structural factor via peers. If a friend sends a link to something, one cannot really ignore it, and the friend will be expecting a reaction. The participant’s slight dismissiveness of the government is evident in their accompanying diary entry. They wrote “we reminisced over Gavin Williams’ complete U-turn and his incompetence” and “the article itself was well written although rather optimistic; the ‘consistency’ and ‘fairness’ of exams has varied dramatically in practice, and it will be very interesting to see how A-level results day goes.’

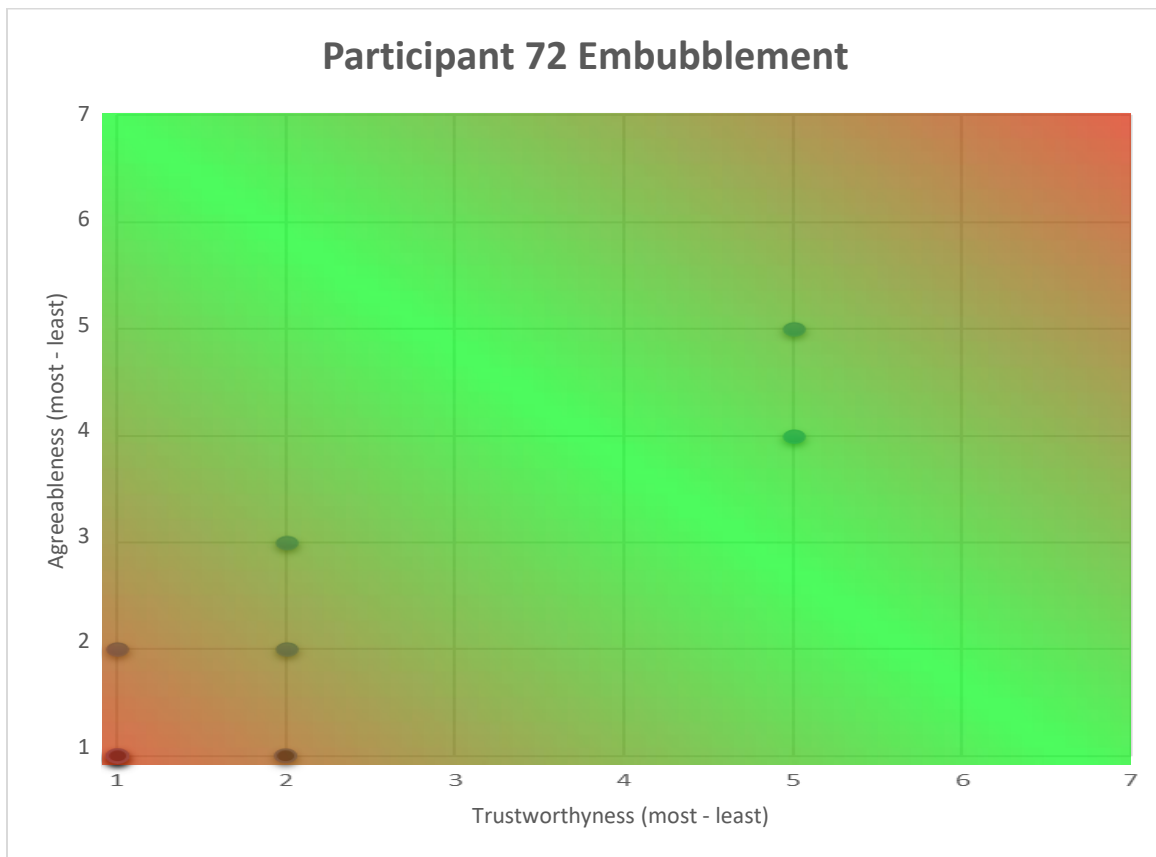


Figure 32: The BBC News article placed the participant slightly in an echo chamber and an epistemic bubble, scoring a fairly high, fairly unhealthy 2.1 for both (on scales from 0; not embubbled at all, to 3; entirely embubbled; n=10).

The article and sources mostly fall in the bottom left, a red unhealthy area, because these were both very agreeable and very trusted, so reinforced pre-existing beliefs. The sources were their friend, then BBC News, reporting relatively neutrally, several school pupils, and education or parent-related organisations quoted being fairly positive about the government's replacement assessment process, and Labour's Shadow Education Secretary Kate Green criticising delays. Off the green centre of the graph there is slight disagreement that the participant is not particularly dismissive of. This included Schools Minister Nick Gibb and Prime Minister Boris Johnson justifying the plans. Media richness is quite balanced.

Beyond text, the Schools Minister Nick Gibb is afforded a one-minute Zoom interview answer, to better convey his argument. Meanwhile, the school pupils are afforded photos of themselves, and also their large protest with picket signs berating the government, namely 'OUR GOV'T FAILED US' and 'GO AWAY AND SHUT UP GAVIN' (then Education Secretary, Gavin Williamson). This specifically, is strong opinion reinforcement. The participant is seeing so many pupils who look like the research participant, united in agreement, along with the emotive slogans. Overall, the BBC News article, while presenting both sides, is slightly skewed towards the participant's slightly left wing, anti-Conservative government stance (scoring a fairly high 2.1 for agreeableness on a 0-3 scale).

Returning to the research question, this participant shows how causes of embublement can be almost entirely structural, such as a friend sending a link to a news article, and especially when sent to an individual who otherwise does not consume much politics. It is a given that all participants knew standard exams were cancelled, so the news article could not give the participant a disparate representation of reality. Still, it is interesting that this fairly opinion-reinforcing narrative was resurfaced for this one partisan student. It recentred this narrative in their reality. Conveniently, it put the opinion reinforcement of perceived Conservative government incompetence back on their mind, which did not happen for other participants. It is also worth noting that, despite occurring on social media, algorithms were not involved in this exposure.

The affordance used to share content directly with another user, bypassing personalisation algorithms, is often overlooked in current studies.

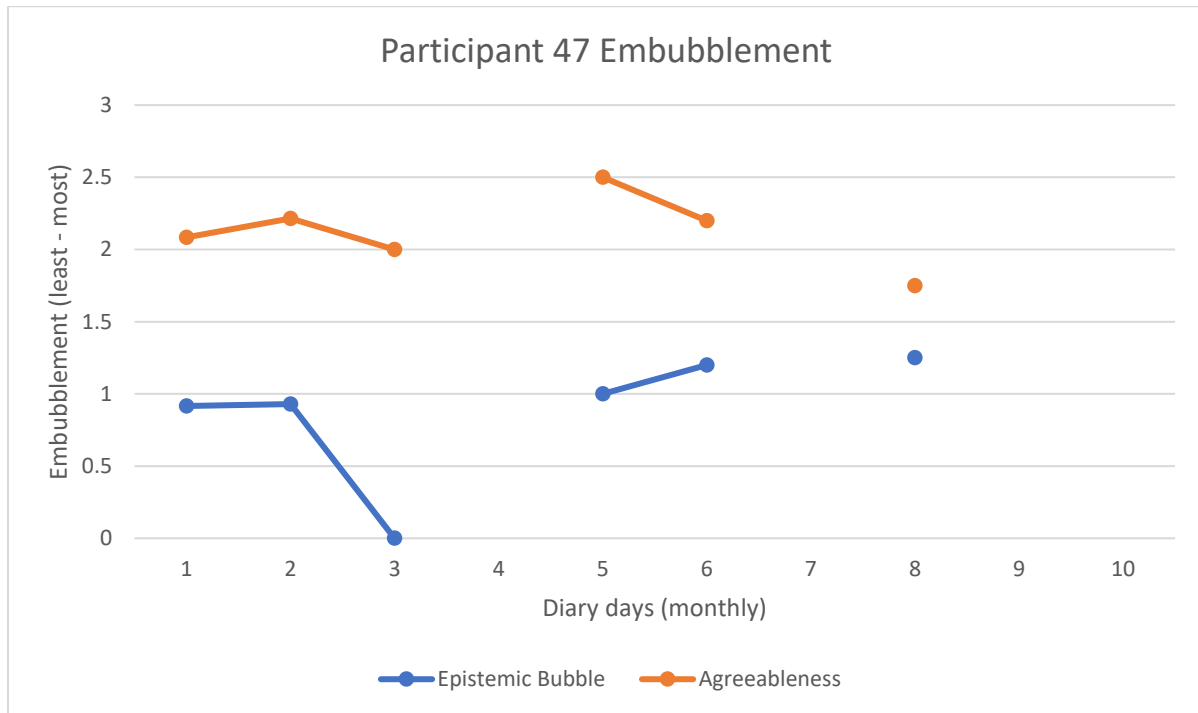


Figure 33: Participant 47's embubblement levels.

Participant 47 was a 17-18-year-old white woman, politically centre left, with a middling 1.7 average strength of partisanship (minimum 0 – 3 maximum) and from a somewhat selective religious school in Southeast UK. Her average epistemic embubblement was a very healthy 0.88. By the agreeableness-only model it was an unhealthy 2.12 (on a scale from not embubbled at all; 0 - 3; entirely embubbled). Generally, epistemic embubblement increased slightly across the diary days, as agreeableness-only measures of embubblement decreased.

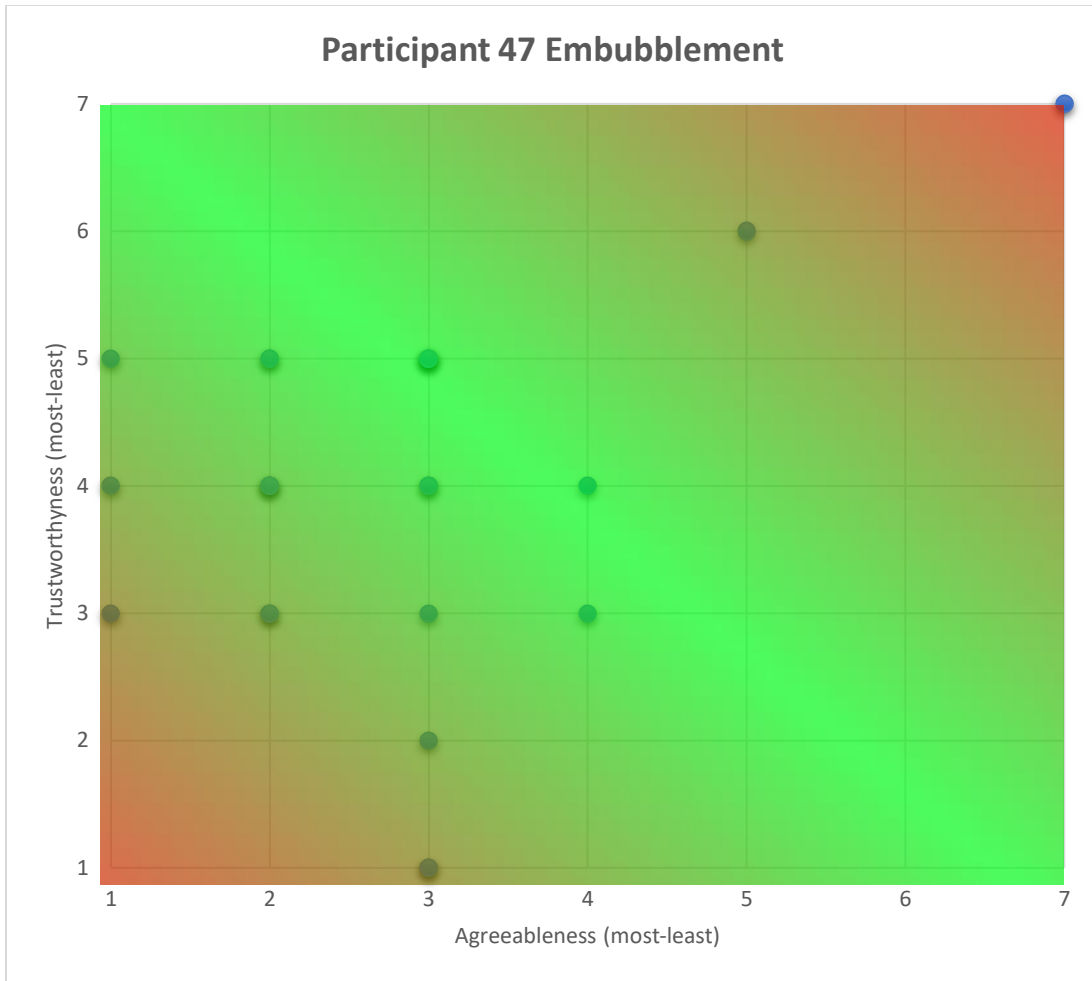


Figure 34: Participant 47's sources (n=67).

Their epistemic embublement was a very low, very healthy 0.88 (on a scale from not embubbled at all; 0 - 3; entirely embubbled) sources mostly fell into the greener, healthier part of the graph, being only moderately opinion reinforcing due to being only moderately agreeable and trustworthy. Participant 47's exposure was almost exclusively composed of Instagram posts, of several jokes from the comedy panel show Have I Got News for You.



Figure 35: Instagram post by BBC's Have I Got News for You

This was not opinion reinforcing relatively speaking (0), because although the participant agreed with it slightly well, they equally slightly distrusted it. Perhaps they distrusted it because it is a joke and truth can be stretched for comedic purposes. To a stronger partisan, this could easily be strong opinion reinforcement, since in terms of asymmetric media richness, it is impersonation: a caricature of the other side's stance, in place of their actual stance. Hence, the medium of comedy could be a structural factor in embubblement: it reinforces in- and out-group identities on partisan lines. In this view, it is no surprise that jokes and memes caricaturing political opposition proliferate in the most hyperpartisan social media communities. They both exclude an opposing perspective yet allude to enough of it to twist it into content that only reinforces

the in-group's political beliefs, 'inoculating' the in-group against such messages if they encounter them outside.



Figure 36: Another Have I got News for You Instagram post.

This post was mildly opinion reinforcing (1) because the participant agreed with it well, but slightly distrusted it. Participant 47 'liked' this, shown by the heart in the bottom left. These social metrics, comments and other engagement activities raise an interesting point on how an individual getting exposure to *their own* views can reinforces their beliefs, especially if they do it often. There is evidence for this. For example, Cho, Ahmed, Keum, Choi and Lee (2018) used data from a US survey and an online discussion forum to demonstrate that political self-expression online reinforces partisan thought processes and beliefs. Hence, for individuals who do even these low-threshold forms of engagement, what some might label 'slacktivism', these could add up to be a significant agential factor in embubblement – or, here, self-embubblement.

This is an extension of the 'democratic dilemma' from the literature. It is unfortunate that political engagement, necessary for participatory democracy, is associated with (maybe even self-) opinion reinforcement which hampers one's ability to think critically and disagree constructively, necessary for deliberative democracy. However, it is hard to recommend that citizens stop doing political engagement to avoid embublement via self-opinion reinforcing.

Another mechanism behind self-opinion reinforcement might be that if an individual regularly expresses their opinion online, it could be more difficult for them to change their opinion, because everyone will know it and expect them not to change it, especially if they are an opinion leader for a particular 'side.' What is unique about the situation nowadays is that social media is an easily accessible record of people's political stances, even some regular people's dating back multiple decades now. On the topic of self-opinion reinforcement, next the Green Party solicited that, with an Instagram post asking, 'why are you voting Green?' for the 2021 local elections. This was fairly opinion reinforcing (scoring 1.5), being fairly agreeable and trusted. They got lots of flattering responses back.

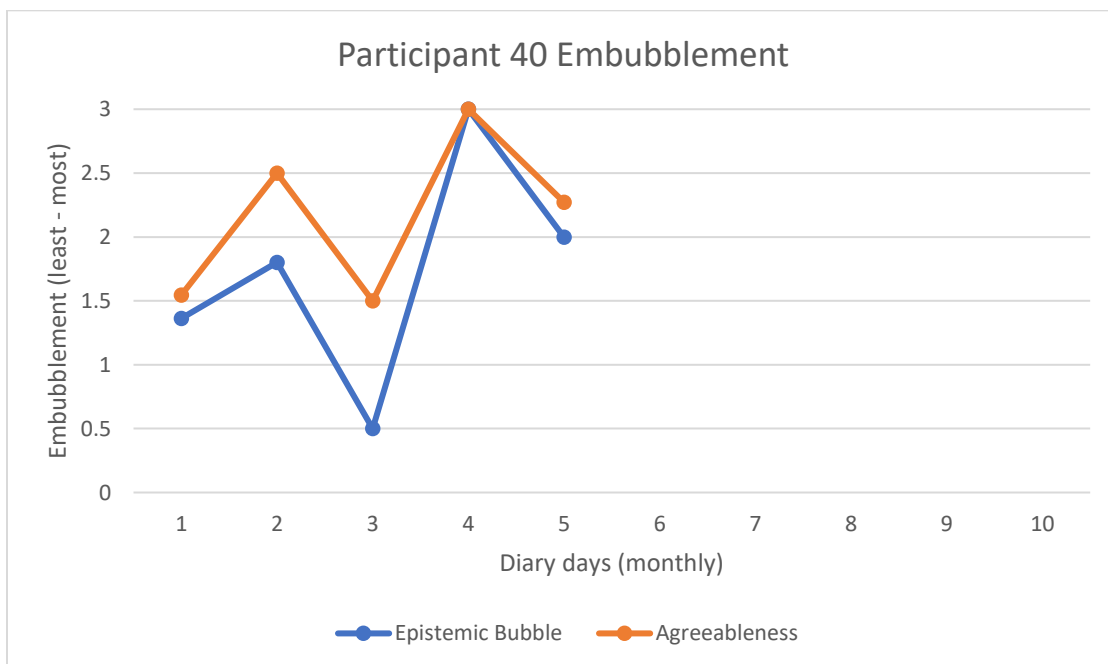


Figure 37: Participant 40's embubblement levels.

Participant 40 was a 18-19-year-old woman of South Asian ethnicity, politically left, with a middling 1.7 average strength of partisanship (minimum 0 – 3 maximum), from a grammar school in Southeast UK. Participant 40 completed the first five diary days. The average agreeableness of their exposure was unhealthy 2.16, above 1.5 every diary day. It oscillated vastly from between 1.5 in diary day 1 to 3 in diary day 5. With the more nuanced epistemic bubble measure, embubblement was almost always slightly lower, but sometimes still unhealthy above 1.5, averaging 1.73.

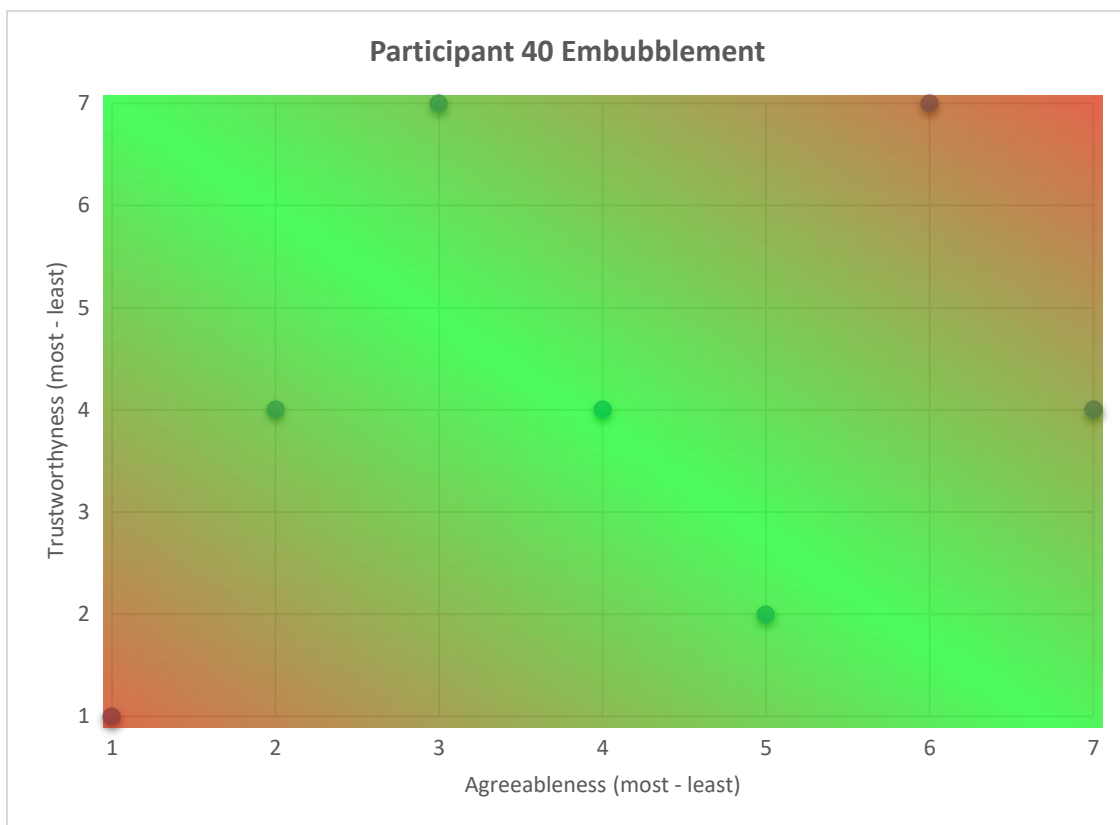


Figure 38: Participant 40's average epistemic embublement was an only slightly unhealthy 1.73, corroborated by their sources being spread equally around greener healthy and redder unhealthy spots of the graph (n=88).

Their second diary day scored a slightly unhealthy 1.8 (on a scale from entirely not embubbled; 0 – 3; entirely embubbled). They found almost everything here agreeable and trustworthy: a Wikipedia article on the US civil rights movement, an Instagram post promoting a fundraiser event for India, gripped by the Covid-19 pandemic, and a petition calling for a more diverse history curriculum. Only the UK government response to the petition was disagreeable and distrusted. Lastly, an Instagram video explained how there was a formal Hollywood code, then only the informal stigma, about representing gay people in media, which could be offset if the character was framed negatively, hence the tradition of 'camp' villains. Healthily, the participant found that video agreeable but not that trustworthy.



Figure 39: Al Jazeera content on Instagram.

For their fifth diary day, they came across this by Al Jazeera: 'Israeli war crimes apparent in Gaza attacks, says report.' As it is a screenshot, the participant must have seen just the still image. There is no further context on how they got to it or how long they were there either. Regarding images, the building being destroyed is a horrific image well suited to reinforce the participant's beliefs, critical of Israel. Indeed, they found this content very agreeable and fairly trustworthy. The headline might add to the impact, given it is all capitals, bold, and with high contrast white on black text.

Conclusion

This chapter contributes to the core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). It did so by answered the research question: what contributes to embubblement? These qualitative findings provide much needed detail and nuance on embubblement. Qualitative analysis enabled explanations about how certain affordances of different mediums work, important given that many of the digital platform features are relatively new and not studied yet in political science, so this is a unique contribution of the thesis.

Also, a deductive theoretical framework was proposed, asymmetric media richness. It accounts for how even when opposing perspectives are included in hyperpartisan media, this is often done so only nominally. The evidence suggests that these participants were mostly exposed to agreement, and passively, via social media. This reflects muted agency where actors are being fed an ideology by, and acting out their role within, the existing system.

Simultaneously, these participants to some extent demonstrate 'creative-constitutive agency': exerting agency within structures. The proposed triple filter model suggest that it matters less how personalisation algorithms and other actors might work to 'embubble' citizens. Regardless of those structural factors, citizens can turn unhealthy exposure into healthy exposure. This is a matter of how trusting and open-minded they are to different information. They could be more sceptical if they agree with the source or be less dismissive if they disagree with the source. By having the awareness to do that, through their own reflections and by exerting their own agency to make decisions concerning how to engage with different content, citizens can gain and retain agency and power over embubblement. Indeed, all participants were often doing this, perhaps not intentionally, but epistemic embubblement was almost always lower than agreeableness-only embubblement. Participants were not just seeing and trusting

agreeable sources, nor avoiding or distrusting disagreeable sources. Their sources and reactions were far more moderate, and mainstream.

Chapter 8: Digital Ethnography Identifying Media, Family, Peers, Education, and Events' Contributions to Embubblement in Participant Diaries (RQ₁).

This chapter further addresses the research question: what contributes to embubblement? It contains the ethnography as relates to the socialising agents more generally: media, family, peers, education, and events. These are discussed in order of their prevalence within the diary data, for extra context. The first section is on news apps, including Sky News then BBC News apps, as 'walled gardens' that prevent exposure to other sources. Section two covers in-built, personalised news tabs, on smart phones then the web browser Microsoft Edge, as in-built embubblement risks. The third section on education explores the role of teachers' political neutrality. Section four outlines a hierarchy of households, in terms of them being worst to best for healthy political socialisation: apolitical, homogeneous, then heterogeneous households. The fifth section is on podcasts. It details how podcasts are a potentially high embubblement risk for some. Section six centres Google search and how a citizen can go down the rabbit hole. The conclusion draws together these observations, creating a typology of contributors to embubblement.

News Apps: Walled Gardens

The BBC News site and app constitute the fifth most used news source amongst UK 16–24-year-olds, at 29 percent (Ofcom, 2022). The Sky News app is not in the top ten. Both were found to function much the same in this analysis. Citizens generally demonstrate more agency when going direct to a specific organisation's news app because that means they have personally chosen that one information source. This is compared to social media where some amount of agency is deferred to algorithms which serve up a variety of information sources, and the user could access a random source they would not have otherwise. Meanwhile, when one personally chooses a news site or app it naturally tends to be fairly agreeable, so this is a case of citizens

using their increased agency to increase their embubblement, as found in cross-national polling by Fletcher and Nielsen (2018).

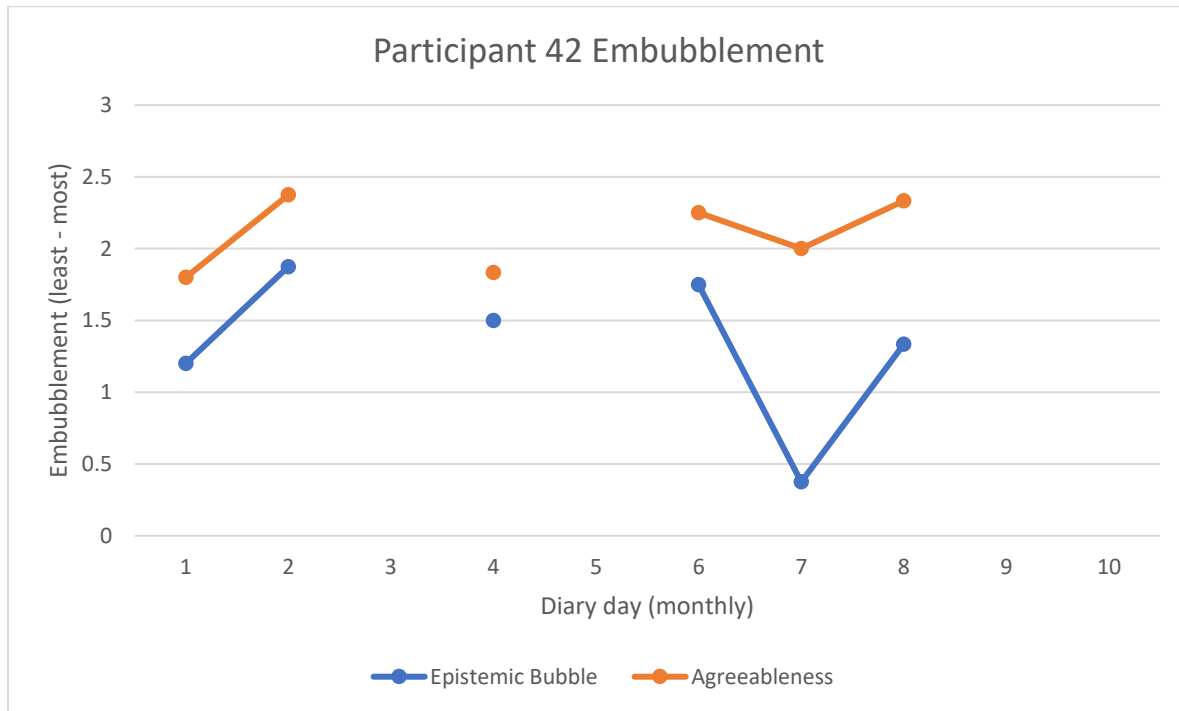


Figure 40: The extent participant 42 was in an epistemic bubble, compared to an agreeableness-only model of embubblement.

Participant 42 was a 18-19-year-old woman of South Asian ethnicity, politically left, with a weak 1.3 average strength of partisanship (minimum 0 – 3 maximum) and from a grammar school in Southeast UK. They only used the Sky News mobile app. Reliance on one news source is concerning. The difficulty of reporting objectively means the participant may have received a ‘Sky News’ version of reality, based on these reporters’ partisanship, positionality, and story selection. Sky News is a relatively mainstream, moderate outlet, so there still is not much risk of the participant falling down a rabbit hole of niche narratives far removed from most citizens. Sky News should use the traditional journalist practice of the point-counterpoint format, representing both sides. It is possible this participant’s data is inauthentic, given the short, skimming news use, at

least in this diary day and the fact they only downloaded the Sky News app in diary day 1. Perhaps this is not their standard routine, and they needed some news to read, to participate in the study. It is hard to tell. They read more in later diary days, making those appear more authentic – more typical of their usual media use.

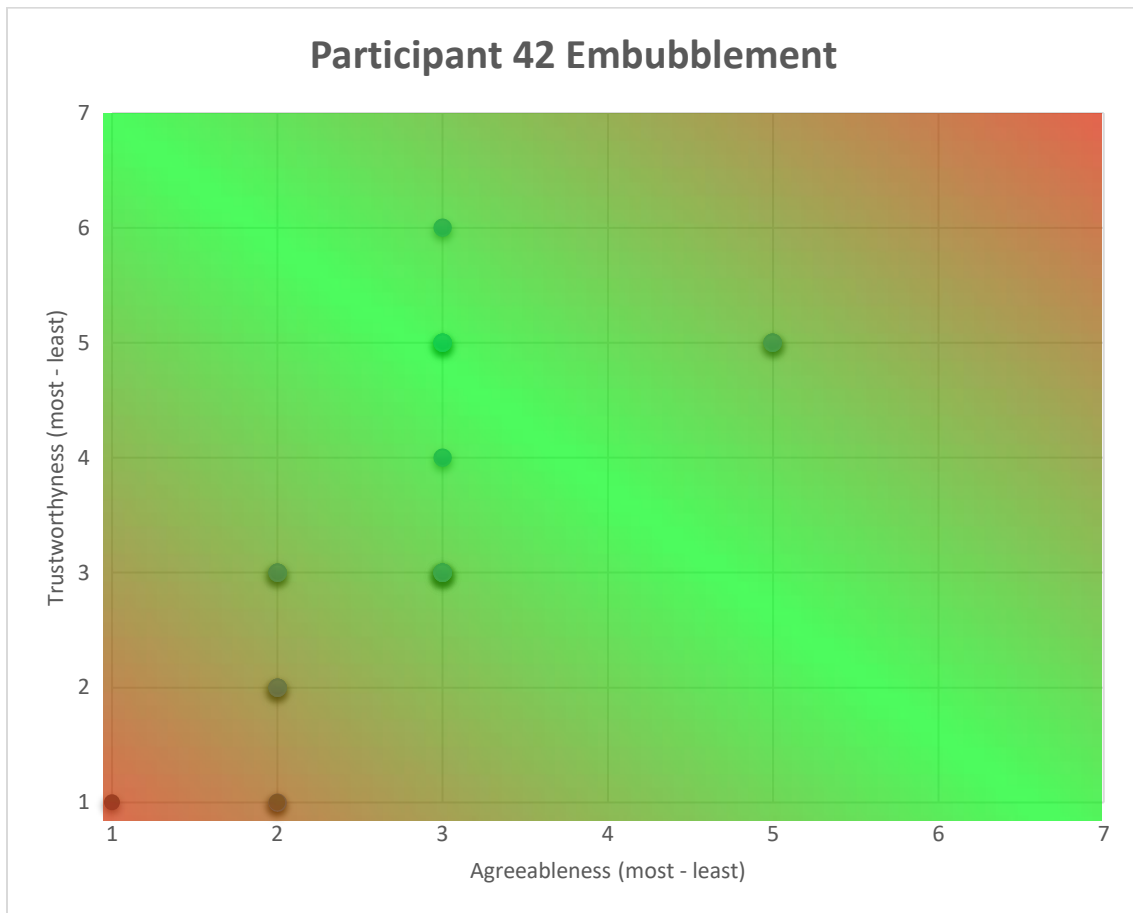


Figure 41: Agreeableness and trustworthiness ratings for every source within participant 42's exposure during the study (n=67).

Healthily, most sources fall close to the pure green diagonal line, in the centre, meaning the participant was relatively neutral and moderate in respect to agreeing with and trusting sources, keeping an open mind. The bigger the dot, the more sources fall there. Overall, participant 42 was barely in an epistemic bubble, scoring a low, healthy 1.34

(on a scale from entirely not embubbled; 0 – 3; entirely embubbled). That did oscillate, the main peak being an unhealthy 1.8 in diary day 1, the main trough being 0.4 on diary day 7. Meanwhile, the average agreeableness of their exposure was a more stable, higher, and unhealthy 2.1 (on a scale from entirely not embubbled; 0 – 3; entirely embubbled). The disparity between these two scores reveals that even with people's preference for agreeable information, selective exposure, there is not a partisan strong trust in, and therefore opinion reinforcement of, agreeable views. Nor is there a partisan strong distrust fuelling opinion reinforcement against disagreeable views. Even all the strong partisans here are far more moderate in their thinking.

Participant 42 opened the Sky News app on their phone. They were met with its 'top stories' feed which contained breaking news. It is difficult to know how much, if any, algorithmic involvement there is here, but there will be editorial selectivity in terms of what is categorised as breaking news. It is unclear whether the participant was looking for the first top story they clicked instantly, so retained some agency, or had deferred much more agency to the app; the media app being a structural factor in embubblement. The very low embubblement levels are owing to an agential factor, the participant repeatedly choosing to rely on this one relatively balanced news app. A news mobile app a relatively new method of attempted embubblement by news organisations, competing to capture audiences in the attention economy. An app usually sits on a phone's home screen, rather than a person having to go via a web browser of infinite news source alternatives.

Once in the news app, it is a 'walled garden', a limited set of technology or media information provided to users, to create a monopoly or secure information system. A news app can be presented as a convenient one-stop shop for all the news one needs. There are no affordances to encounter external alternatives, for example via an internet search bar or bookmarks, that a web browser would have. A key selling point of news apps such as Sky News is the breaking news push notification. These further monopolise attention as soon as possible when news breaks, well before an individual could manually find news from alternative sources.

Perhaps participant 42's reliance on one app for all their news is an anomaly. It is hard to believe that those invested in politics enough to use a news app would not get political exposure from anywhere else. According to Ofcom's (2020) national polling 'News Consumption in the UK', people more frequently visit a news site or app directly, rather than use a search engine. This is not broken down for only apps, but it warrants consideration of potential news app involvement in embublement. This may be overlooked by a lot of current studies which scrape limited data from search engines and Twitter, let alone gaining access to data on news app use.

This participant first skimmed the top breaking news article, "Millions set to get Covid Jab in September to 'keep virus at bay.'" A broadcast interview clip with Sajid David was embedded. This online journalistic practice is interesting, making the most of the hybrid media system. Such a video could present a significant 'fork in the road' for different partisans to exercise partisan selective exposure. The option to play a video is an affordance that might make a partisan who supports the interviewee watch the video, which could potentially be lengthy. An opposing partisan can easily skip all that. Opposing partisans may see the same article, but owing to that video, could spend completely different amounts of time there having a different experience, giving very different attention to different sources. Clips from recorded interviews tend to feature a government minister, presumably from the news organisation's broadcast content that day. This might reflect 'indexing' where due to being in power, government ministers attain more coverage (Bennett, 2015). Here this manifests as being afforded greater media richness in the following news articles, and therefore the opportunity to be more expressive and persuasive, compared to relatively dull text quotes, hence more embubbling to partisans.

Should embedded interviews with only one side of the story be avoided? It could be suggested, at least, that recorded comments from both sides of a debate should be included. However, given the incumbency bonus of government ministers proliferating broadcast news shows, it appears outlets do not have a recorded quote from anyone else, and getting one would null the efficiency gain of reusing broadcast content. Still, maybe that is something news outlets could consider; if including a video, ensure both

sides are represented. Even then there are always more than two sides to every debate, including beyond the mainstream. Our first-past-the-post electoral system, marginalising minor political parties, may cause their politicians to get less exposure in the media, as a structural factor in embublement.

For their fourth and final diary day they completed, participant 42 provided their usual short clip from the Sky News app. She clicked a breaking news story about the annual Climate change summit. It was a few stories down, showing some agency, “COP26 latest: Greta Thunberg tells 10,000 protesters in Glasgow that COP has been a failure.” For once, the article placed participant 42 in a strong, unhealthy epistemic bubble: 2.3, agreeableness 2.3 (on a scale from not embubbled at all; 0 - 3; entirely embubbled). They spent longer on this article too. Opinion reinforcement appeared to come from highly agreeable, highly trusted sources advocating for more action amid COP26. These included ‘the Maldives’, a passage about ClimateCast, Sky News’ climate podcast and Sky News.

Sky News and their climate podcast passage would reinforce the participant’s pro-climate action perspective. Sky News mention some countries and even individual businesswomen across the world who are contributing to climate action, conveying that this is a global problem, and global effort, so, they ask, how could anyone oppose? They suggest this as a feminist approach to climate action, which will make it more appealing to the socially progressive target audience. There is an embedded COP26 livestream, also a linked climate podcast, which create a fork in the road for partisan selectivity. Someone very interested in climate action could spend a lot longer on this page than someone who is not. The podcast comes with social media ‘share’ buttons beside it, another possible vector for embublement, since this is a common affordance which encourages diffusion to like-minded others within a reader’s social network. An image of Greta Thunberg protesting under her little umbrella, with her rucksack and trademark “skolstrejk för klimatet” protest sign makes her look small and vulnerable, yet her expression is determined. Likewise, the article thumbnail shows her speaking confidently into a microphone. There is also an image of the giant protest by young

people, like the participant, speaking out despite their age. The images are therefore well suited to reinforce the young participant's beliefs.

Young climate activist Greta Thunberg was entirely agreeable and entirely trusted. Thunberg brands COP26 "a failure" - "they know exactly what they are doing." (Morris, 2021). The implied nefariousness, and the harsh language demonstrate how activists, like many actors in politics, often need to 'other' their political opposition to embubble and motivate their supporters, plus shame opponents into action. This political engagement pillar of democracy conflicts with that of political deliberation: respectfully hearing out and considering other perspectives. It could be said that Thunberg's repeated othering puts especially impressionable young people such as participant 42, in an epistemic bubble, where the other side of the argument is not given a fair hearing. Similar applies to Sky News. Despite their traditionally conservative reputation, they now push climate change action very strongly, even running a dedicated climate show. Again, this is great for promoting climate action, but it is doubtful that the "ClimateCast" is the place for balanced perspectives. This innovation of having what was originally a mainstream broadcast news show but for only one area of news - the first ever dedicated climate news show - does present a new avenue for embublement, especially for more impressionable and climate-concerned young people.

The only slight dissent came from Downing Street. The article simply said Downing Street criticised protesters who skipped school, but nothing more, making this a disappointingly unbalanced article for 'neutral' mainstream media. This might reflect Sky News' suspected bias towards climate action. On media richness, that was short, reported speech. This line ended with a link to another post on it. However, that buries it, under the high barrier to entry, or threshold of interest and engagement one would need to actually click that instead of continuing to skim the article. Here, Downing Street were not even afforded a quote, let alone the paragraphs the pro-climate action sources were afforded. Interestingly, the participant agreed with Downing Street fairly well, but trusted them not that well. This is another example of participant 42 being able to agree with an actor they distrust. It also highlights how even within a highly agreeable article, the triple filter model framework captures such nuance. The participant also agreed with

but distrusted a 10-year-old advocating climate action. It is unclear why. Maybe it was their age, or the fact they skipped school to protest, which the participant disapproves of, or their perhaps unorthodox slogan “the dinosaurs thought they had time too.” Either way, the participant healthily avoided strongly trusting someone just because they agree with them.

The minimal opposing perspectives here may be down to a modern journalistic practice, in that this is actually a ‘live’ article, for COP26. It is not one traditionally single, static, cohesive article, where it is easy for a journalist to check they have a balanced number of opposing sources, publish, and be done with it. Instead, this is similar to a continually updated social media newsfeed where a journalist posts individual snippets of information as soon as it is possible to, over the course of hours or days. Journalists therefore forgo their usual journalistic balance and point-counterpoint format in any one snippet. A snippet might contain multiple sources on one side of the argument, and the journalist might rest assured that they will add one with opposing views later, perhaps in a minute, or a day. In that time many readers, like participant 42 here, may have only seen the latest snippets and received very one-sided coverage. Maybe some key quotes from different sides could be pinned at the top. Again, easily skipped links are insufficient.

Participant 44 used the BBC News app, which provided only moderate content. They instantly skipped the tabs ‘top stories’ and ‘my news’, for the ‘popular’ tab and its first article ‘MPs extend Covid powers until September.’ After they returned to the ‘popular’ tab and instantly opened another article, ‘Prophet Muhammad cartoon sparks Batley Grammar School protest.’ Overall, the article and its sources healthily contributed little to epistemic embublement (1.3) or agreeableness-only embublement (1.3; on a scale from entirely not contributing to an epistemic bubble 0 – 3 entirely contributing to an epistemic bubble). Next, they switched to the ‘top stories’ tab, then its article covering America’s vaccine rollout. It covered how some Americans were holding out for vaccines other than Johnson & Johnson’s, given its apparent lower efficacy.

Overall, the article and its sources healthily contributed little to epistemic embublement (1). The agreeableness-only measure was slightly higher (1.5; on a scale from entirely

not contributing to an epistemic bubble 0 – 3 entirely contributing to an epistemic bubble). Participant 44 swiped rightward to the next story ‘North Korea fires two ballistic missiles into Sea of Japan.’ This article overall contributed to slight and slightly unhealthy epistemic embublement (1.75) with the agreeableness-only measure being even higher (2.25; on a scale from entirely not contributing to an epistemic bubble 0 – 3 entirely contributing to an epistemic bubble). Unhealthily both BBC News, and the Biden administration discussing the threat, were fairly opinion reinforcing, being fairly agreeable and fairly trustworthy. There was no opposing comment from Kim.

In-built News Tabs: In-built Embublement Risk

Smart phones, even web browsers, now have built-in news tabs. These, compared to social media, news apps and sites, are unsolicited yet easier to get sucked into because they are right there, by default, and sometimes personalised. Some even send unsolicited push notifications for breaking news.

Participant 45’s second of six diary days began with the inbuilt ‘new top stories’ tab on their phone. It healthily aggregated current articles from numerous news organisations, albeit only mainstream ones. For ten seconds, the participant skimmed a Politics Home article, ‘Cut Him Some Slack: How Boris Johnson Is Losing Control Without Calming Former Comms Chief.’ ‘Westminster insiders’ criticising then-Prime Minister Boris Johnson were seen by participant 45 as fairly agreeable but not well trusted, perhaps due to ‘insiders’ anonymity. Again, this combination is healthy. They found the publication fairly agreeable and fairly trustworthy; not so healthy. On visual politics, the photo of the former Communications Director James Slack walking to 10 Downing Street does capture a facial expression that looks as though he is about to start a fight with someone. On the other hand, the article also contains a lot of praise for his communications expertise, so this is not partisan caricaturing.

Next on a PC, this participant used Microsoft Edge, the web browser formally known as Internet Explorer. Various news tabs can be pulled up on its homepage, aggregated by

Microsoft News. Participant 45 selected the generic 'news' tab and scrolled through a lot of headlines there, before clicking one, an Independent article, "Boris Johnson news – live: Tories 'hopelessly distracted by sleaze' Starmer says ahead of local elections." The article averted epistemic embublement, scoring a very healthy 0.83. Agreement was a healthy 1.58 (both on scales from not embubbled at all; 0 - 3; entirely embubbled).

User comments under content are unique to the internet. They are not private, like physical letters sent by post to the editor. Comments can span anything from completely reinforcing the main content, to being mixed, to completely repudiating it. Comment sections will usually be moderated and sorted to varying extents, adding more filters. Predictably, the comments regarding Boris Jonson's or his party's 'sleaze' were very partisan and hostile. The first deflected from Conservative impropriety by claiming many Labour MPs and councillors were under police investigation or charged – and that some even wore ankle trackers. The commenter then decried 'pathetic lefty fools.' Another called politicians 'self-serving charlatans.' Others mocked the deflecting in the original comment and called it 'very sad.' Such hyperpartisan content validates the triple filter model. It does not matter that participant 45 got equal exposure to both sides in the comments. They likely only came away with their opinions reinforced, due to the hostility to the government, plus their in-group trust and agreement, out-group distrust and disagreement.

Education: The Role of Teachers' Political Neutrality

The socialising agent of education is an overwhelming structural factor in exposure because students have little agency to resist schooling. Teachers are at least expected to use this great power to decrease rather than increase students' embublement, by presenting diverse information relatively neutrally, unlike other socialising agents with clear political and financial interests.

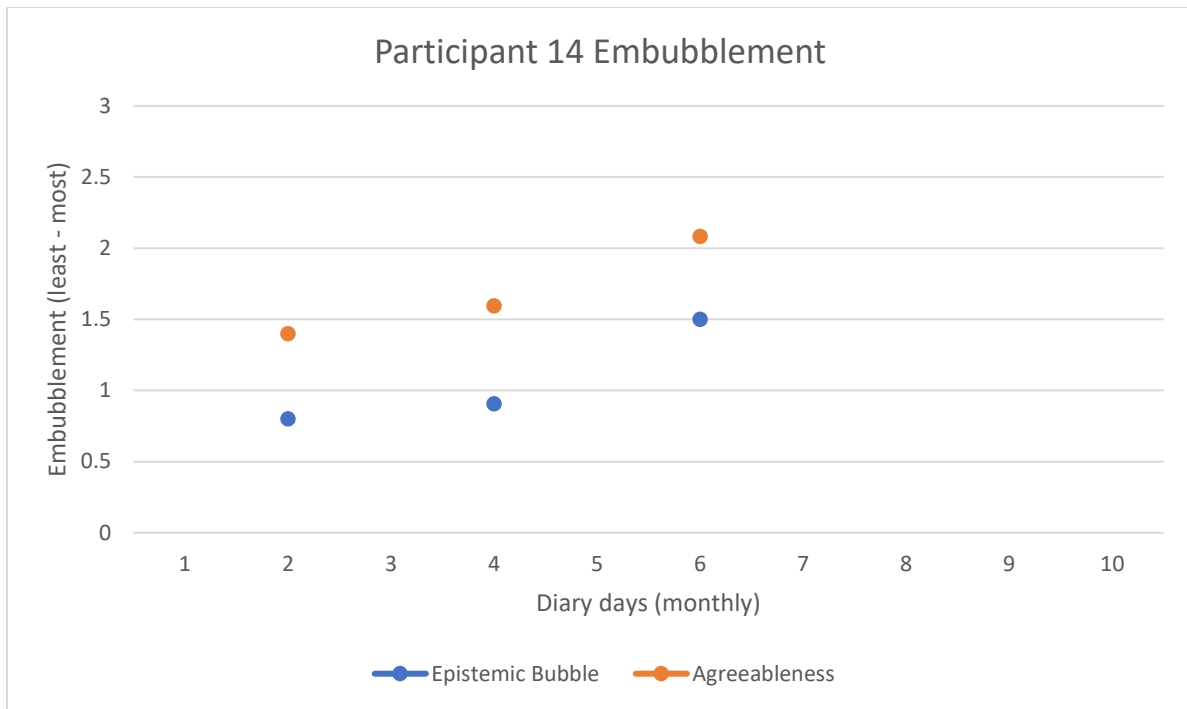


Figure 42: Participant 14’s embublement levels.

Participant 14 was a 17-18-year-old white man. He was originally politically centre right (‘Economically left with some socially conservative views’), then centrist, then centre left (‘Nkrumaism’), to Left. Strength of partisanship averaged 1.1; climbing from 0.8 to 1.5 (minimum 0 – 3 maximum). He came from a grammar school in Southeast UK. Their average agreeableness level was a slightly unhealthy 1.7 (on a scale from 0; not embubbled at all, to 3; entirely embubbled). Epistemic embublement was a very healthy 1.07 (on scales from 0; not embubbled at all, to 3; entirely embubbled). Both measures rose steadily in parallel over the three diary days.

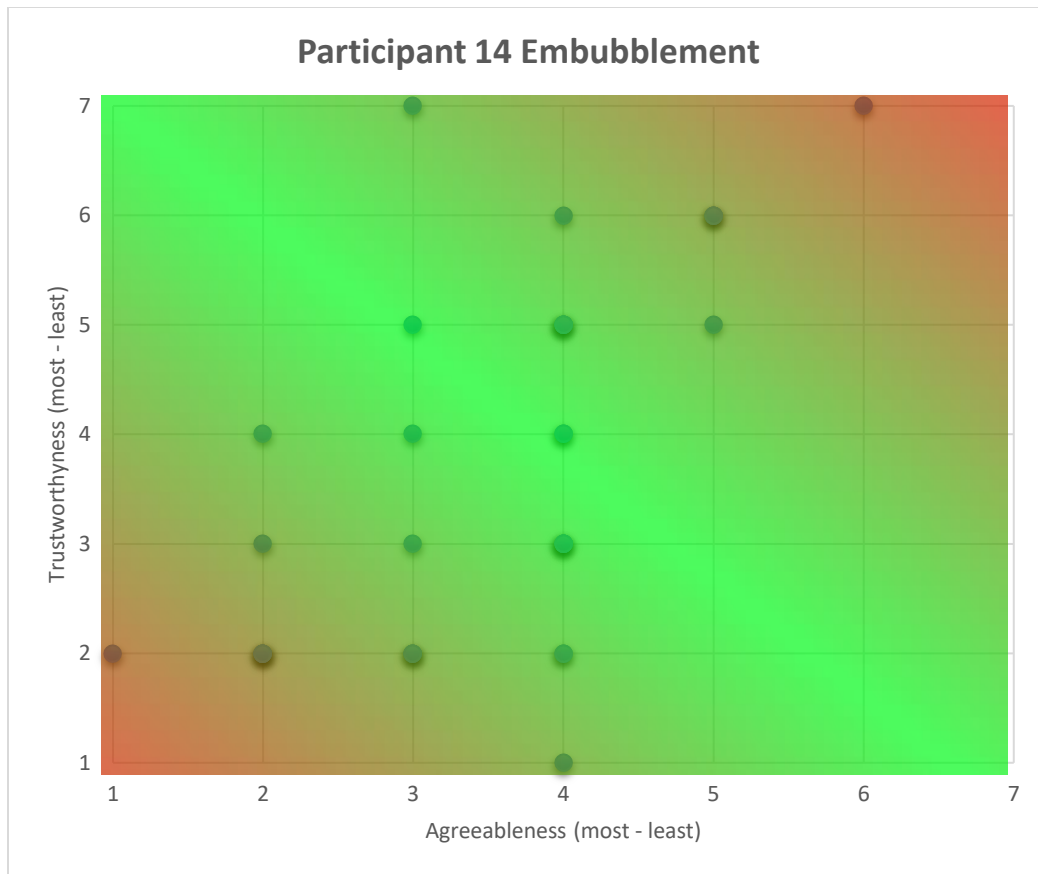


Figure 43: Participant 14 had very low, healthy levels of epistemic embubblement, 1.07, because most of their sources were seen as relatively neutral so not opinion reinforcing, falling on or close to the green, healthy centre of the graph (n=116).

Participant 14 firstly visited their school's online learning platform on Google Classroom. They read a post from their politics teacher, for a UK government module. It provided homework on Liberalism. They had to look at some content from the BBC, but firstly a conservative commentary website UnHerd, entitled 'why I was wrong about liberalism.' The article was a philosophical discussion about different forms of liberalism. The participant fairly healthily did not have an opinion on the topic but trusted the article well. They then Googled BBC News, going direct to the site, before eventually choosing the article 'Boris Johnson's flat row: what do we know about the PM's expenses?' This was a descriptive look into his finances. The participant then clicked 'back' to return to the

BBC News homepage, before clicking another article 'Boris Johnson's personal phone number available online for 15 years.' Both articles were healthily considered to be neutral and fairly well trusted.

Participant 14, on Google Classroom again, read a teacher's post on the UK government. The post links to and discusses current relevant news stories. As the participant put it, the teacher 'is fairly neutral and sounds out a wide range of material.' While there are not multiple sources for the same story, the sources used healthily span the political spectrum, from *The Spectator* to BBC News and *The Guardian*. The participant skimmed the articles. The teacher poses questions about the stories rather than telling students how to interpret them. This demonstrates a teacher being responsible in avoiding embubbling young people.

It should be acknowledged that teachers in the UK overwhelmingly have progressive politics, even more so than graduates generally, as suggested in a report on the state of citizenship education in the UK (Weinberg, 2021). Therefore, with such power there is still a possible risk of this teaching implicitly leading young people in one political direction. As Weinberg (2021) recommends, better funded teacher training can help ensure the professionalism and political neutrality of politics education. Participant 14 photographed a few book pages written by a year two teacher. The teacher argued that we do not live in a post-racial society. As evidence she says even her minority pupils tend to only write their stories with the antagonists being white people.

The participant reflects on racial issues through written notes. She writes, for example, that uniquely when minorities complain about the UK, it is seen as being ungrateful. She suggests that empire and slavery are still defining our attitudes and actions, yet white people are not taught about these, so it simply makes those people uncomfortable, and so these issues are ignored more. She also made notes in Spanish class. The class were taught a play, in which women were being oppressed, but these women got to oppress other women in turn so that ameliorated their oppression. Accepting and enabling one's oppression is called internalised oppression. In contrast to the neutral politics teacher first of all, it is interesting from an echo chamber perspective that even in Spanish class, there are strongly progressive themes.

Family: Hierarchy of Apolitical, Homogeneous, and Heterogeneous Households

Family represents a significant structural factor in potential embublement, because young citizens especially cannot choose their family and are often obligated to be around them.

Participant 45's sixth and final diary recounted a conversation with family, who they agreed with and trusted fairly well on the topic.

I had a conversation with my family about the possibility of Scotland leaving the UK and what impact this would have. We discussed that it wasn't very likely for Scotland to separate but we talked about how the PMs, Boris Johnson in particular, incites the Scottish people to leave as they are treated unfairly. We also said the English have the biggest impact on outcomes of elections as they are the biggest population and how this could mean policies could pass that do not properly represent what the Scottish people want, and how this would further encourage them to want to leave.

This discussion is not unlike the ones had in university seminars. It is striking that some young people can get this level of political discussion in the home while many other participants get nothing. That combined with the agreeableness (though not particularly strong here) suggests how such young people might however be at risk of being embubbled throughout childhood, due to a possibly partisan household. It would be normatively desirable, in a democratic context, if there were diverse opinions, avoiding an echo chamber. Furthermore, pre-existing family ties might still allow for high trust and open-mindedness, avoiding an epistemic bubble too, in an ideal situation.

The headlines on a page of the *London Evening Standard* newspaper caught participant 40's eye on her kitchen table. This implies her parents were a big factor in embublement here. Her epistemic embublement was a very high, very unhealthy 2.4 (on a scale from entirely not embubbled; 0 – 3; entirely embubbled). It turns out that this particular page features lots of issues related to young people: an "outstanding" grammar school being downgraded to "inadequate" over sexism, trigger warnings in

university, and students preferring Spanish over the French GCSE. The participant found all this very agreeable and trustworthy except for anyone taking a more conservative stance. It is interesting that a newspaper is not algorithmically personalised, but this page might as well have been.

Participant 35 reported coming from a politicised household. In the recent 2019 election, her mum voted Labour and her dad voted Conservative. This is interesting because her diary data, where political, only contains lots and lots of progressive TikTok videos. A couple of videos are overtly insulting towards conservatives. It is healthy then that she apparently has good relations with someone despite them voting Conservative. She can probably hear their perspectives and disagree with them civilly. Politically mixed parents represent the perfect balance, between neither living in an apolitical household, lacking important political socialisation, nor living in a politically homogenous household, where one's entire childhood could be spent in an echo chamber. Indeed, Jennings, Stoker and Bowers' (2009) US panel study concludes that the more that parents' political orientations are signalled, and match, the stronger their transmission to children.

Participant 35's parents have always encouraged her to vote, and she is very much interested in voting. Yet, her parents do not try to push their political views on her. They encourage her to consider both sides and research issues. The only downside is that this mindset does not manifest in her diary data. She exclusively consumed largely agreeable videos from TikTok influencers who are progressive and feminist. There is no evidence of fact checking using opposing sources. In her household, the kind of topics spoken about would be anything on the news, perhaps once a month or when a very important thing happens, for example Black Lives Matter (BLM) protests, Brexit, Covid-19 and the government's response. The participant indicated having mixed levels of agreement with her parents on these topics. This raises the idea that we can have multiple political selves, a 'double identity' of someone with their own relatively homogeneous, antagonistic space on TikTok, but can still civilly deliberate with a conservative parent. It highlights the importance of analysis beyond one medium.

Podcasts: A Potentially High Embubblement Risk for Some

Podcasts are a long-form audio, episodic medium. They can now be found on almost any topic, but embubblement research on them is absent. Participant 45 listened to one called British Scandal about various scandals in the UK, by a podcast network Wondery, owned by Amazon. The particular 42-minute episode was 'The Litvinenko Affair: The Mysterious Edwin Carter.' The context of how the participant reached this podcast is missing due to it being screenshotted. The podcast was a retrospective on the poisoning of Alexander Litvinenko, so contained no current events. There was only one more politically relevant comment, one of the hosts said, of UKIP and then Italian Prime Minister, Silvio Berlusconi, that those are 'the two most rogue outfits in European politics at the time and you just can't get any more dodgy than that.' The poisoning of Litvinenko involved another, Russia, so the podcast might reinforce this left-wing participant's opinions against these more right-wing entities. However, the participant reported having and hearing no clear opinions on these, while they trusted the podcast well. This highlights the nuance of the methodology; it is sensitive to how partisans do not necessarily get opinion reinforcement even from where it is expected, when partisan smears are involved.

Podcasts themselves are a relatively novel medium. There was radio before, but podcasts are far more private and personalised, often too focused and niche to be put on for the whole family, or in public settings such as hairdressers or dentists. Such tertiary consumption (incidental exposure selected by someone else) enabled incidental exposure to disagreement, and some level of healthy 'collective exposure' to the same political information. The emergence of podcasts then, at least the more political and partisan ones, might pose a greater risk of embubblement. They could allow one person an often regular and long experience of opinion reinforcement. Therefore, this is a strongly agential problem, with some structural involvement from the emergence of podcasts via the socialising agent of media. Since podcasts are newer media enabled by digitalisation, they could have a cohort effect on newer generations' embubblement. Indeed, regarding podcast listening on a weekly basis, polling company Statista found

that 38 percent of UK 26-35-year-olds do, compared to only 21 percent of those over 55, in quarter one of 2020 (Statista, 2022a). Only 7 percent of UK 16–24-year-olds consider news and politics their favourite podcast genre, as of 2022 (Statista, 2022b). This implies that, as with filter bubbles generally, any problem would be limited to a tiny minority of the population. Still, it being rare may compound their intellectual isolation, and makes their situation worse in contrast.

[Google Search: How a Citizen can go Down the Rabbit Hole](#)

Google search is used for news by 12 percent of UK adults (Ofcom, 2022). Though agents defer some agency to the algorithms, search engines provide more source diversity than going direct to a preferred news source (Fletcher & Nielsen, 2018). On a revision site called Study Rocket, participant 14 coincidentally read a page on media influence, which included the notion that media generally reinforces pre-existing beliefs. The participant indicated that they had no opinion on Study Rocket's agreeableness, since it is only a revision tool, but trusted it well. They then Googled the Libertarian philosopher Ayn Rand. Again, they did not have an opinion on it but trusted it fairly well.

They then Googled Nkrumaism, the pan-Africanist socialist ideology of Ghana's ex-Prime Minister Kwame Nkrumah. They found an article on The Conversation, a media outlet which publishes articles by academics, which the participant agreed with and trusted well. The article discussed how America's Central Intelligence Agency (CIA) plotted a coup against Nkrumah. Participant 14 then Googled 'did America kill Nkrumah' and read a BBC News article 'four more ways the CIA have meddled in Africa.' After, they Googled 'Nkrumah and the CIA' and read the article 'How did a CIA coup – executed 55 years ago this February 24th – doom much of sub-Saharan Africa?' from Monthly Review, an independent socialist magazine. In it they clicked a link to the same article but from CovertAction Magazine, a site that criticises global covert operations, US Foreign Policy, the CIA, and capitalism.

From that article's bibliography they clicked through to documents on the US role in Nkrumah's overthrow, on Wikispooks, a version of Wikipedia focused on the 'deep state.' The participant agreed with and trusted these sources well to fairly well. Only Wikispooks and one other Ghana President was giving a 'don't know' trust rating. There was only one opposing perspective. That some Ghanaians were opposed to Nkrumah, as a dictator, was merely alluded to in one sentence in the Conversation article. Participant 14 agreed with it 'not well' and trusted it 'not well at all' so it did little to change their mind. In the questionnaires the participant reported moving leftwards ideologically, from centre right in previous diary days to this point where they now identify their ideology as left-wing and Nkrumaism. They did confirm that their research was 'not for a class, just interested in Nkrumaism and post-colonial African liberation.' All this could be interpreted as the participant going down a rabbit hole. They started out with BBC News and The Conversation, then the sources got progressively more fringe and partisan, culminating in 'Wikispooks', all about the 'deep state', often labelled a conspiracy theory term. Rather than going down this rabbit hole, or the potential Ayn Rand one, there is a way for a citizen to move across these paths, and not end up down any. Young people should know that when doing research, especially about a controversial political figure, it is best to get the other side of the story too. The participant could have further explored the original search results for 'Nkrumaism', given search engines offer more source diversity than using specific news sites, or search for the opposing perspective, for example by Googling 'Nkrumah dictator.' This might be another example of where better political literacy provision is needed.

Muted agency: being fed an existing ideology of, and carrying out one's role within, the system.	Creative-constitutive agency: exerting agency within the system.
Structural factors increasing embubblement:	Agential factors increasing embubblement:
<ul style="list-style-type: none"> • Opposing perspectives being omitted or merely quoted, narrated or impersonated • Traditional internet forums allowing anonymity and therefore more hostility • Social metrics, such as likes and retweets, not having dissenting options such as 'dislikes', perhaps artificially inflating the apparent popularity of the in-group's messages. • TikTok's 'for you' page algorithmically curating users a feed of its most viral short clips. • Partisan social media influencers • Social media misinformation • TikTok influencers being able to video respond to text comments; asymmetric media richness • One's political stance implied as being widespread, for example during mainstream media coverage • TikTok's duet feature when one influencer reposts another's video clip and nods alongside it. • Agreeable content being shared directly with a friend • 'Walled garden' mobile apps • Embedded clips of minister interviews in online news articles • Our first-past-the-post electoral system, marginalising minor political parties, may cause their politicians to get less exposure in news media • Partisan political actors namely politicians and activists • Limited political literacy provision • 'Live' articles • Being linked to an agreeable article by a friend • Possibly being held to one's existing opinion via a social media record of it • Agreeable, emotive imagery 	<ul style="list-style-type: none"> • No fact checking was observed, or contrasting of opposing sources, even when doing research on controversial topics • Going directly to agreeable sources such as news apps and sites • Self-opinion reinforcement by supporting content through likes and comments.

<ul style="list-style-type: none"> • Built in, personalised news tabs • Any teachers that are not politically neutral • Politically homogeneous households • Podcasts 	
<p>Structural factors decreasing embubblement:</p>	<p>Agential factors decreasing embubblement:</p>
<ul style="list-style-type: none"> • Social media and search engines providing more source diversity than users would find when going directly to agreeable news apps or sites • Traditional internet forums lacking personalisation algorithms • The ‘trending topic’ affordance such as Twitter’s providing relevant popular tweets, apparently regardless of the political perspective, and outside any homogeneity of who the user follows • TikTok’s ‘Stitch’ affordance where opposing influences can at least talk via asynchronous video clips. • Teachers that are neutral and provide multiple perspectives • Politically heterogeneous households. 	<ul style="list-style-type: none"> • Deleting a TikTok account and making a new one, to ‘reset’ personalisation algorithms • Participants were not just seeing and trusting agreeable sources, nor avoiding or distrusting disagreeable sources. Their sources and reactions were far more moderate.

Table 10: Typology of contributors to embubblement.

Table 10 summarises the findings in terms of how embubblement can be increased or decreased by structures (muted agency) or an agent within those (creative-constitutive agency). The typology forms part of this chapter’s conclusion in that the conclusion explains the typology and its implications next.

Conclusion: A Typology of Contributors to Embubblement

Based on the findings, I have constructed the adjoined typology, of (i) types of agency, alongside (ii) the structural and agential media engagements within those types of agency that are likely to increase or decrease embubblement, addressing the research

question: what contributes to embubblement? The points paint a picture far from the worst-case scenario. Nonetheless, they identify clear areas for improvement. This typology is a contribution to the field that I hope researchers in political communication can make use of in their own studies.

These findings contribute to the overall argument of the thesis by showing how our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). This typology calls for narrower concerns with specific mediums and affordances, such as TikTok's 'For You' feed, which contribute to a significant degree of embubblement and radicalisation of some individual citizens.

Chapter 9 Conclusion: Recommendations to Protect the Citizens at Risk of Embubblement

This chapter summarises the thesis, then evaluates the methodology, before reflecting on broader contributions to the literature across political communication, political socialisation, and young people's politics, providing policy recommendations throughout. Lastly, it offers recommendations for future research. First of all, to summarise: particularly since the shock popularity and victories of Brexit and Donald Trump, there has been increased concern that citizens, en masse, exist in democratically dysfunctional ideological bubbles, where they only hear likeminded perspectives (Kagarlitsky, 2017). Researchers vastly revised down the extent of these bubbles, that supposedly existed particularly online, and were driven by personalisation algorithms of digital platforms such as search engines and social media (Fletcher & Nielsen, 2018).

This study therefore explored specific causes and effects of 'embubblement' in one marginal and perhaps high-risk group, young people. They are considered more impressionable and they get more of their news online (Hooghe, 2004; Ofcom, 2022). This mixed-methods digital ethnography utilised a 10-wave cohort study, diary study hybrid. One day a month for 10 months, participants aged 16-18 (n=20) captured any political communication they encountered or did, across all mediums online and in-person. They primarily made phone screen recordings, but also used photo, video, sound recording and writing.

Findings to be outlined in this conclusion strengthen the core argument, that our understanding of embubblement and its implications for democracy is hindered by the relative lack of qualitative research on filter bubbles and young people, and the overly simple way media exposure is often measured, which fails to consider the context (and assumes, for example, that all cross-cutting exposure is 'good'). Embubblement was operationalised not just as the extent to which participants encounter disagreement. avoiding 'echo chambers' and, online, 'filter bubbles', but whether citizens were actually open-minded to the opposing perspectives encountered – otherwise they were still

trapped in an 'epistemic bubble', a concept borrowed from social epistemology in philosophy (Nguyen, 2018).

The first main finding from this thesis concerned the impact of using this proposed 'triple filter' model of embublement rather than the standard agreeableness-only model. The standard model found there was significant embublement on average, forming at least to a degree, echo chambers, and since exposure was overwhelmingly online, filter bubbles specifically. However, when accounting for (the lack of) epistemic bubbles - that is, important context of to what extent participants were drawing opinion reinforcement from information, whether it be agreeable or disagreeable - embublement on average was healthily very minimal. Therefore, this lack of embublement finding matches the newer optimistic literature, for example a review by Fletcher and Nielsen (2018).

The second, third, fourth, and fifth main findings of this thesis were derived from regression models. Strength of partisanship positively correlated with embublement, as a medium effect. Embublement positively correlated with polarisation, but was not statistically significant, and so was rejected. Polarisation was conceptualised in two ways: as increased embublement over time, and as increased strength of partisanship over time. Embublement positively correlated with political engagement, as a small effect.

The sixth main finding of this thesis was derived from digital ethnography, specifically thick description exploring what contributes to young people's embublement? (RQ₁). Substantial embublement was observed only in a couple of instances, influenced by specific structural factors; 'socialising agents' across family, peers, education, media, and events (Smets, 2017). A typology was constructed of factors in embublement that are structural or agential. The structural factors were mainly agreeable news sites and news apps. For example, the most common of these were BBC News and Sky News. The other main structural factor was a hyperpartisan social media community, in the example of the feminist community on TikTok. Meanwhile, the main agential factor in embublement was a lack of contrasting multiple sources. The most notable example was a participant doing research on Ghana's ex-Prime Minister Kwame Nkrumah. There was little opposition voice provided, on such a controversial figure.

Overall, the typology called for narrower concerns with specific mediums and affordances, notably TikTok's 'For You' feed, which contribute to a significant degree of embublement and radicalisation of some individual citizens. Indeed, there were several observations about the influence of specific mediums, and beyond Twitter. The first observation conceptualised news apps, for example Sky News then BBC News apps, as 'walled gardens' that prevent exposure to other sources. Next were in-built, personalised news tabs, for example on smart phones then the web browser Microsoft Edge, as in-built embublement risks. They work to supply agreeable news to the user before the user can even seek out other sources, due to these tabs being on home screens and delivering push notifications, even when unsolicited.

Next, education's impact on embublement is influenced by teachers' political neutrality. There is a risk of homogeneity via political bias from disproportionately left-leaning teachers in the UK. For example, one teacher covered progressive causes even in a Spanish class, meanwhile a politics teacher provided news articles to read from across the political spectrum and encouraged students' own interpretations. Political literacy teaching by those who are highly trained and politically neutral is ideal. Another specific medium that can contribute to embublement is communication via family. There was a hierarchy of households, in terms of households being worst to best for healthy political socialisation. Some people have apolitical families offering little political socialisation, homogeneous households offering biased political socialisation, then heterogeneous households offering heterogeneous political socialisation.

Even the young women in that TikTok community, for example, reported having politically heterogeneous parents, affording her some heterogeneous political socialisation. Podcasts were covered, for example, Sky News's ClimateCast and Wondery's British Scandal. Podcasts generally were suggested to be a high embublement risk, for disproportionately politically invested young people, given a podcast's highly personal and niche nature, and their long lengths. Lastly, Google search was observed as a route for citizens to 'go down the rabbit hole.' This was the case with the participant who researched Ghana's ex-Prime Minister Kwame Nkrumah,

and followed links to increasingly overtly ideological, perhaps conspiratorial sources. This analysis shows the importance of examining diverse mediums and affordances.

Methods Evaluation

The novel methodology is worth reflecting on. Overall, the rigour yet richness of the data was as hoped. The amount of data generated meant that the planned larger sample may not have been viable anyway, with only one researcher to do the data analysis. Indeed, the substantial amount of work required from participants for data collection may have contributed to few participating for the full ten months. Nonetheless, the many novel methodological changes, covered in the methods chapters, resulted in more nuanced data analysis. For example, previous studies did not tend to capture the magnitude of any disagreement encountered. The gradated agreeableness measure, plus the qualitative analysis afterwards, accounted for this nuance. There was a case of a homogeneous feminist community on TikTok where a commenter critiqued the promotion of feminist books, because they were not trans inclusive – disagreement, but still feminist, from her perspective.

Another observation that validates this new methodology involved a tweet from a *Guardian* columnist, who was being sarcastic about right-wing activist Laurance Fox. Previous research would label this hyperpartisan interaction as either reinforcing or challenging a participant's beliefs, depending on their ideology. However, thanks to the novel self-reported, gradated agreeableness and trust ratings, the participant was able to indicate that they simply did not have an opinion on the topic, and did not consider the *Guardian* journalist to have a clear opinion on it. Hence, this was actually very neutral, healthy exposure, unlikely to reinforce the participant's opinions either way, because neither journalist nor activist were deemed by the participant to have clear opinions there. Discussion later on in this chapter will explore ways of refining the methods further, but for now the methodology has sufficed to make clear contributions to the literature.

Broader Contributions to the Literature

Political Communication

The findings make broader contributions that tie back to areas mentioned throughout the thesis, primarily in the fields of political communication, political socialisation, and young people's politics. First of all, this research can inform schools and young people's political literacy and engagement organisations to have a focus not only on promoting engagement, but equally on avoiding embubblement and specifically epistemic bubbles (Nguyen, 2018).

Epistemic bubbles are filters that may make us automatically dismiss opposing sources even if we do get exposure to them, especially for stronger partisans invested in clear political opinions. Hence this research offers the recommendation of possibly teaching more overt psychology and epistemology to foster epistemic humility. Explicit warnings are recommended, on how increased partisanship can warp perceptions of reality in line with pre-existing beliefs, and foster thinking that can lead us to assume the best of our political in-group and the worst of the other. It is not intuitive to grasp that our perceptions of reality are subjective and bias-prone, so we should appreciate that, before being encouraged to take strong stances on important issues.

This thesis provides to the philosophy literature -- particularly social epistemology -- an empirical operationalisation of epistemic bubbles, which had only been used there as metaphors. With this study's integration of the epistemic bubble into the political communication literature, it would be ideal for epistemic bubbles to attain some prominence akin to echo chambers and filter bubbles. Indeed, it is recommended to socialising agents with influence on the public discourse, such as news media, that they promote awareness of epistemic bubbles rather than fixating on echo chambers and filter bubbles. Epistemic bubbles are far more important to be wary of because, again, there is little point seeing disagreement if it uncritically reinforces one's opinions against it. Therefore, a practical recommendation for schools and NGOs that teach political literacy is to take heed of the triple filter model of embubblement coined by this thesis,

and introduce a focus on epistemic bubbles more than filter bubbles and echo chambers. One outcome of this research was the creation of a practical teaching tool to help with taking this new approach, introduced later in the chapter. More generally there is a recommendation to increase political literacy provision in the UK, given that even amongst students from grammar schools, there was no evidence of fact checking using opposing sources, even when researching controversial topics.

This thesis also speaks to the literature mentioned on young men in particular being radicalised via far-right content on YouTube. No evidence for this was found. It could be argued though that such a user would not participate in such a study due to self-presentation concerns. Again, only 28 percent of young people use YouTube for news (Ofcom, 2018). This matches the findings on a lack of radicalisation, despite broader worries about hyperpartisan media online that targets young people, for example BuzzFeed and Vice (Dennis & Sampaio-Dias, 2017).

Another contribution relates to the hybrid media system literature, which gains a rich, agent-centric perspective on how digital natives navigate endless interconnected mediums (Chadwick, 2013). The main insight is perhaps that the young participants did this in a way that is not as exciting and novel as one might expect. They used few mediums; a selected news site or app, or scrolled through a social media feed, and fairly passively in a way that is not much more active than engagement with older media such as TV or newspapers. This predominantly reflected muted agency, whereby citizens are fed an ideology by the system and passively act out their role within it. The clearest example of this was one participant who would submit almost hour-long video of them scrolling through their Instagram feed solidly.

Participants are sometimes closer to creative constitutive agency, where agents work to change the system, albeit within it (Berenskoetter, 2020). This is because of some choice of sources, and some political engagement, primarily 'liking' content. The clearest example of this was one participant whose exposure was almost exclusively composed of Instagram posts, several jokes from the comedy panel show *Have I Got News for You*. Those jokes are often critical of the government. The participant commonly 'liked' these posts. What might explain why some participants utilise such

agency, while offers do not, are the different levels of willingness to be publicly self-expressive about politics, as detailed in the continuum of participation (Dennis, 2016).

It was said that the thesis would speak to the topic of disinformation. The low, healthy embubblement levels suggests that the young participants are not in homogeneous bubbles where disinformation could thrive, away from contestation (Zimmer, Scheibe, Stock & Stock, 2019). Indeed, the only piece of alleged disinformation identified was observed in a hyperpartisan community on TikTok. It was the video about clothing brands allegedly using US prison labour, by disproportionately black prisoners. A quick Google search by the researcher revealed that fact checking outlets contend the claims as outdated. The claims matched the community's views against corporations and racism, so the participant found it entirely agreeable and trustworthy. This richly captured the problem with misinformation and embubblement of citizens from specific platforms' hyperpartisan communities.

The thesis provides to the political communication literature an amendment to selective exposure theory, on our preference for opinion reinforcement. All participants demonstrated a preference for opinion reinforcement over non-opinion reinforcement, but crucially even if the opinion reinforcement was drawn from disagreeable sources, when they are equally distrusted. Previously opinion reinforcement was only operationalised as coming from agreement. The thesis does this in the context of the current rapidly-evolving media ecology, rather than in the lab or single mediums and with partisan adults. A lot of dystopian themes from the Brexit and Trump era were listed, as themes this thesis might speak to, such as the traditional rules of politics being ripped up, decreasing political etiquette, 'post-truth', anti-globalisation, the rise of the 'open' and 'closed' cultural cleavage, newer online media, 24/7 political hostility online, and polarisation. These did not manifest as themes in the findings, which is good news.

The proposed typology of factors in embubblement is a contribution to the field and one that I hope researchers in political communication can make use of or expand in their own studies. It uniquely condenses qualitative analysis of embubblement into a typology of (i) types of agency, alongside (ii) the structural and agential media engagements within those types of agency that are likely to increase or decrease embubblement. It

considers many newer platforms and affordances, such as TikTok's Duet feature, which have not yet received much coverage in political communication literature, nor in rich qualitative analysis. It painted a picture far from the worst-case scenario. Nonetheless, clear areas for improvement were identified. Actors within the types of organisations mentioned should reflect on what could be done to minimise their contributions to embublement. It is difficult for a researcher to, for example, recommend that news organisations not have a 'walled garden' news app, when that is in large part the point of having a news app, to generate more revenue by monopolising attention that way. Nonetheless, organisations do sometimes choose to make changes on moral grounds, or could be regulated to make such changes.

Young People's Politics

The thesis provides a holistic, micro-level account of young people's exposure and engagement. It promised to better diagnose exactly what in young people's information environment inhibits or enables their political engagement. What was notable was the lack of political engagement beyond mere exposure to political communication. There were almost no self-expressive forms of engagement such as posting or sharing political content, by 'civic instigators' in the terms of Dennis' continuum of participation (Dennis, 2016). There were only a few, less self-expressive, 'likes' from a couple of participants, as 'contributors.' This is despite most of the sample being strong partisans. This is unlikely to be a methodological artifact of simply not wanting to reveal political opinions in the research, given the anonymity provisions in place and the fact that these participants were self-selected to be accepting of this level of observation by a researcher.

'Liking' content embodies diffuse 'individual action frameworks', rather than 'collective action frameworks' within traditional political organisations as expected of young people (Bennett & Segerberg, 2012). There was a lot of 'active listeners' though, people who followed politics and did fewer public forms of engagement such as boycotting or volunteering. Others were 'passive listeners' who sought exposure but did not engage at

all, some were or were intermittently lowly 'avoiders' who did neither. An interesting point about the continuum of participation that this study does raise is that people do not only move up through the continuum. The TikTok radicalisation vignette illustrates how people can dramatically cut their engagement with politics and put themselves back to square one.

One factor that predicted increased engagement was embublement. A positive correlation was found in the quantitative analysis, one which is backed up by recent cross-national surveys by Vaccari and Valeriani (2021). This highlights the 'democratic dilemma' of a citizen's political engagement and openness to other perspectives being negatively correlated, therefore the need for political literacy teaching on being able to still think critically about one's own political side. The most interesting inhibitor of engagement was shown by the one participant who deleted their TikTok account to reset the personalisation algorithms after feeling that they were radicalising her. It illustrates the risk that schools or political literacy and engagement organisations run if they do not also focus on preventing embublement. A young person may feel the need to severely cut their engagement with politics, possibly after it has had negative effects on their wellbeing too.

The thesis also promised to contribute to the debate around the campaign for votes at 16. One of the arguments against lowering the voting age is that young people are not yet capable enough to vote, and are not responsible enough, in terms of fulfilling a key requirement in the ability to be a roundly informed voter. This thesis gave examples of some under 18-year-olds who are able to avert embublement and soberly consider differing views, as prospective responsible voters.

Political Socialisation

What is contributed to the political socialisation literature is a holistic political socialisation perspective on the filter bubble narrative, which is absent so far. This study contained analysis of age, period, and cohort (APC), and socialising agents (Neundorf &

Smets 2017). It is worth reflecting on the structural factors of class, gender, and ethnicity. Ethnicity and gender were only clearly relevant with regard to one participant, a young woman of South Asian ethnicity who was in a hyperpartisan TikTok community covering both minority and feminist issues. Again, it is beneficial that people of apparently marginalised identities can find representation and community online. This is however not ideal from an embublement perspective owing to the risk of embublement. It is also easy to see feminism and minority advocacy as only beneficial, so can you really have too much? That would be compared to more questionable hyperpartisan content such as anti-vax, for instance. Clearly, it was too much for the particular participant. It should be noted that there were a few other South-Asian women in the sample, where this problem did not occur and demographics were not clearly relevant to their exposure, so as always this analysis cannot be generalised.

TikTok have since claimed that they have improved the algorithm to better diversify content served, referencing cases of young women seeing harmful content relating to self-harm and eating disorders (Logrieco et al, 2021). Whether this has worked and translates to political content generally is not known. If not, that would be a strong recommendation. Otherwise, it is something that could be imposed by lawmakers and regulators. In the critical literature on algorithms there is a push for algorithmic transparency and accountability (Marian, 2023). The concerning findings about a hyperpartisan TikTok 'rabbit hole' further supports these calls.

Regarding class, almost all participants were from grammar schools, with a couple from somewhat selective religious schools. Though the participants were overall not embubbled, the fact that even highly educated, high socioeconomic status citizens did not demonstrate one instance of using an opposing source to contrast the same information, is unfortunate. Maybe class does not have much effect on political literacy and the situation is poor across the board due to the UK's limited political literacy provision, as a cohort effect on present day young people.

Recommendations for Further Research

It would be useful if future research could accommodate a bigger sample size. Given the vast qualitative work that this methodology requires, the qualitative contribution of each participant could perhaps be scaled down, to less than 10 months, to scale-up the project. It is also possible to slim down the research by making it quantitative only. What has been done successfully when teaching during a single lesson is providing students with a simple Excel spreadsheet ([in appendices](#)) in which they enter agreeable and trustworthy ratings for a limited but quick sample of the political communication they encounter (currently five pieces), in this case when asked to browse their usual news sources or social media feeds, then and there on their devices. The spreadsheet automatically calculates their embublement levels, under the standard agreeableness-only model (for an echo chamber/filter bubble), then the triple filter model (accounting for an epistemic bubble). The qualitative data of what exactly is consumed is lost, and therefore the specific contributors to embublement and how these might be rectified and by whom. Nonetheless, this demonstrates how the method can be made less privacy invading, and also less burdensome for participants and the researcher.

This offers a potential option for using the method with participants such as journalists and politicians who may be less tech-savvy, busier and more concerned with self-presentation and privacy. They could be interesting participants because if we accept that the population en masse are not embubbled, there may still be a problem if the national discussion is led by such opinion leaders who may be embubbled due to their strong partisanship and political interest. These actors could still have a radicalising effect on their audiences. It would also be interesting to use this method with older people, to check for generational differences in embublement, perhaps due to the different mediums they use for exposure to, or doing, political communication. Given older people are more likely to rely on older non-interactive (lean-back) media such as TV and newspapers, the greater self-selection of a particular show or newspaper may lead to increased embublement, without online incidental exposure. Then again, traditional media's point-counterpoint format may avert embublement.

It is worth noting that during the class where participants filled in the spreadsheet, the same findings emerged as described earlier in the thesis. The extent one is embubbled is equal to, or almost always lower, under the proposed triple filter model, compared to agreeableness-only models of embubblement. It reaffirms the importance of this thesis integrating the epistemic bubble into the political communication literature, as the participants are not partisanly trusting of agreement and distrusting of disagreement. Generally their exposure and perspective were more moderate. The slimmed-down approach I used in class suggests a way forward for using the spreadsheet as a quick and easy political literacy tool for schools, also political literacy and engagement NGOs.

More generally, it is recommended that future research builds on the exploration of a wider range of mediums and affordances. Given the growing evidence against the idea of filter bubbles being widespread, it would be too easy for political scientists to view the topic of filter bubbles as a closed case; we can all move on to the next topical issue.

These findings showed how specific mediums and affordances, primarily TikTok's 'For You' feed, can still have an impact, at the micro-level, on some individuals.

Embubblement has to be measured accurately and conceptualised proportionately, but an issue does not have to be endemic to warrant our attention.

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