ARE YOUR SOCIAL MEDIA HABITS POLARIZING YOUR POLITICAL VIEWS?

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Abstract

"I doubt I would be here if it weren't for social media, to be honest with you" (President Donald Trump. October 22, 2017)

The modern American political system displays increasing tension between both liberals and conservatives, as well as Republicans and Democrats. A growing field of research focused on the idea of political polarization has produced a variety of measures of polarization as well as theories as to why 21st century Americans may experience such polarization. Americans use of the internet and social media for political purposes raises concern that this may be a source of polarization. In addition, a scholarly consensus exists regarding the growing polarization of the U.S. Congress. The 112th Congress, was not only the most polarized Congress in modern history but also the best educated. This raises the question whether increasing polarization could be explained by increasing education levels.

This paper explores the relationship between social media use, degree of education, and political polarization in the United States. A survey will be used to collect data regarding a respondent's social media and internet use, educational background, and measures of polarization. Using this data, several Ordinary Least Squares regression models are used to evaluate the relationship between social media, education, and polarization.

While the results show significance in many of the variables, there is not enough evidence to make the claims that social media and education are significant predictors of polarization. However, when testing the effects of different news sources, increases in internet use to access political news is highly correlated with an increase in political polarization.

ON MY HONOR, I HAVE NEITHER GIVEN NOR RECEIVED
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Hannah Kip

Signature

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Introduction

"When the power to filter is unlimited, people can decide, in advance and with perfect accuracy, what they will and will not encounter" (Sunstein, 2001; Prior, 2005). There is no question that the internet and the rise of new media are powerful tools for individuals and communities to share ideas with one another. The almost infinitely wide choice of media outlets offers consumers the ability to control the information they consume and the types of people they converse with online (Bright, 2017). Americans are now turning to social media as a primary source for news, and many of the most active online communities are centered around political goals (Kansco, 2020). This trend is accompanied with a growing concern that people are using the internet to voice their extreme or polarizing views. As more people begin to do the same, their feeds are filled with political news that matches their preferences. By constantly seeing information from one viewpoint, social media consumers are likely to move further from the center and towards one end of political extremes (Kansco, 2020). As the number of available media sources increases, users are better able to match their sources with their content preferences. This ability to customize the political information a user will see raises concerns of audience fragmentation and selective exposure (Sunstein, 2001). Sunstein's proposition highlights the increasing ability to customize one's political content which creates a polarizing effect on democracy because new media users become less likely to view challenging information relative to their own viewpoint.

To address, and more importantly overcome this issue, it is necessary to identify and understand the main sources of polarization. To better understand how social media contributes to the issue, it is helpful to identify the demographic of people it has the

greatest influence on. Due to the lack of evaluation on the effects of college educated

Americans and social media, this study aims to fill a gap, analyzing the correlation

between education, frequency of social media use, political ideology, and overall

polarization in the United States.

Polarization refers to the way people think when there are two conflicting views

that drive people apart. In politics, it refers to the divergence of political attitudes to two

different extremes and creates tension between binary political ideologies and partisan

identities in a two-party system. The modern American political system displays this

increasing tension between both liberals and conservatives, as well as Republicans and

Democrats. A key contributor to this growing tension is the increase of Americans using

new media as their main source for political news. The vast majority of Americans use

social media at least once a day and a growing number of users list social media as their

number one source of news. In 2005, just 5% of American adults used a social media

platform[1], this number rose to 50% in 2011, and today 72% of the American public uses

some type of social media (Pew Research Center, 2019).

Economists and political scientists studying political polarization debate its

existence and nature. While some authors attribute the increase in polarization to social

media and the internet as a whole, others claim that social media exposes users to

multiple views and reduces polarization. Despite optimism that social media allows users

to consume more heterogenous news, there is concern that such platforms increase

polarization because of network homophily, or the tendency of people to form social

network ties to those who are similar to themselves (Bail et al., 2018; Campbell et al.,

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[1] Online architecture for producing content, annotating content produced by others, joining networks to share or view content (e.g., Facebook, Twitter, Instagram, TikTok)

2019; Zhuravskaya et al., 2020). While there is evidence to support both hypotheses, several variables may account for the differing hypotheses. The inability of researchers to agree on a definition of political polarization and other key terms may affect results. The relationship between network formation and political attitudes also creates challenges for the study of social media and political polarization since it is difficult to establish whether social media shapes political opinions or vice versa (Bail et al., 2018; Lazer et al., 2010; Centola, 2011).

A recognized scholarly consensus exists regarding a growing polarization in the U.S. Congress, and several studies show that elite polarization can increase mass political polarization (Tucker et al., 2018; Hetherington, 2001; Abramowitz & Saunders, 2008). Political awareness and public interest in elections tend to increase with growing elite polarization (Lee, 2012). The electoral connection is the fundamental structure that links constituents' preferences and legislative behaviors of their representatives (Mayhew, 1974), and offers theoretical support for why elite and mass ideological preferences are tightly connected. Given the electoral link, elite policy positions are supposed to correspond with voters' ideological preferences. As elites become increasingly polarized, the ideological positions of political parties become more clarified, and voters are better able to align their ideologies with party affiliations using these elite cues (Lee, 2012). Identifying the sources of elite polarization may be helpful in determining the sources at the general public level. The 112th Congress, in session from January 5th, 2011 to January 2nd, 2013 was the most polarized Congress in modern history, based upon the DW-Nominate scores which plot legislators on the ideological spectrum (Barber and McCarty, 2013; Kaslovsky, 2015). In addition to being the most polarized, the 112th Congress was

also the best educated, during which 72.6% of Representatives and 76% of Senators held graduate degrees (Peterson, 2012; Kaslovsky, 2015). Kaslovsky was the first to question if increasing polarization could be explained by the increasing education levels in Congress. Her results are suggestive of a relationship between higher education and ideological extremism.

Education is consistently found to increase political participation, political knowledge, civic engagement, and democratic attitudes and opinions (Hillygus, 2005). Political science research concludes that education directly influences political participation, and in many analyses with other socioeconomic factors considered, education acts as the strongest predictor of political participation. Understanding how people's sociopolitical orientations may be influenced by college education is important for understanding the sociopolitical orientations of the broader community and society's future leaders (Hastie, 2007). Current literature does not provide an explanation for the relationship between higher education and social media use, but this will soon be a critical research topic as more young Americans neglect education to pursue social media careers.

Though several studies have evaluated the role of the internet in political polarization, the literature fails to consider degree of education as a predictor variable for polarization. This study addresses this gap by analyzing the role of higher education in addition to social media use on political polarization. The next section will review current literature surrounding the current U.S. political climate, defining and measuring polarization, social media, and higher education.

Literature Review

To explore the effect of social media usage on increasing political polarization in the U.S., it is important to have a good understanding of the available literature. Research surrounding social media and its influence on politics reaches varying conclusions, which may be in part due to the varying definitions of key terms. This section uses current literature to define polarization and cover necessary background information to understand the relationship between social media and political interaction.

Current U.S Political Climate and Rise in Social Media

The current U.S. political climate highlights the growing gap between liberals and conservatives on several deep-seated issues. The 2020 election further highlighted the growing divide on issues such as the economy, racial justice, climate change, law enforcement, health care, and foreign policy. Dimock and Wike (2020) from the Pew Research Center reported that both Trump and Biden supporters believe if their opposing party wins, it would result in lasting harm to the country. The 2020 COVID-19 pandemic revealed just how persuasive this divide in American Politics is. In the early months of the pandemic, 76% of Republicans felt the U.S. was doing a good job in dealing with the coronavirus outbreak, while only 29% of those who do not identify with the Republican party felt as though the U.S. handled the outbreak well. In addition, a survey conducted by the Pew Research Center revealed the coronavirus outbreak was a central issue in the election for Biden supporters and 82% reported it was important to their vote. On the other hand, it was the least significant among six issues tested on the survey and just 24% of Trump supporters said it was very important.

According to the Pew Research Center, 72% of the public uses some type of social media. Young adults were amongst the first social media users and continue to use these sites at high levels. However, usage in older adults increased in recent years and the social media base is now more representative of the broader population. Facebook and YouTube are the most widely used platforms and their user bases are representative of the population. Facebook ranked as the third most-cited "main-source" of information for the 2016 U.S. presidential election (Liberini et al., 2018). Other popular platforms now include Twitter, Pinterest, Instagram, LinkedIn, Snapchat, and TikTok. Not only are the demographics of users expanding, but social media is now prevalent in the everyday lives of Americans with roughly 75% of Facebook users and 60% of Instagram users visiting these sites every day (Pew Research Center, 2019).

Whether social media has an effect on the polarization of Americans is studied because of its potential influence on the integrity of the countries' democracy (Sunstein, 2001; Lee, 2012). Polarization at the elite level is linked to several institutional consequences. From an institutional perspective, the stability of democracy is threatened by endangering the health of political institutions such as Congress, the courts, and the news media. Not only does polarization shape the legislative process but it continues to influence legislative outputs in Congress (Sinclair, 2006). In addition, increased polarization may lead to contentions in the judicial confirmation processes in legislatures, which in turn can undermine public confidence in the judicial branch (Lee, 2012; Binder, 2008). Finally, polarization may be linked to reduced trust in government due to the fact Americans do not like the confrontational nature of politics (Brady et al., 2006).

Defining and measuring Polarization

Standard dictionary definitions of polarization emphasize the simultaneous presence of opposing or conflicting principles, tendencies, or points of view (Fiorina and Abrams, 2008). DiMaggio et al. (1996) says that polarization can be viewed as both a state and a process. It can be simplified down to movement away from the center toward the extremes. Measuring political positions is the most direct way of measuring polarization. In the U.S., polarization is typically understood to be the separation of politics further into camps of liberalism and conservatism (Kansco, 2020; McCarty et al., 2006), which can be measured using methods of ideological self-identification and ideological identification based on issue-specific questions. Ideological self-identification is symbolic, in other words, the extent to which someone identifies themselves on an ideological continuum. Operational ideological identification based on issue-specific questions evaluates the degree to which someone supports liberal or conservative policies. While it is common to associate the terms liberal with Democrat as well as conservative with Republican, it is important to note the distinctions between the terms. Ideology is defined as a set of ideas that "explains and evaluates social conditions, helps people understand their place in society, and provides a program for social and political action" (Ball, Dagger, and O'Neill, 2016). Partisanship is a social identity that causes people to support or oppose a certain political party (Swedlow and Johnson, 2019). Partisan identification predicts preferences about a range of policy issues three times as well as any other demographic factor (Bail et al., 2018). Understanding ideology as a group identity and political polarization as a conflict of identities leads to an emphasis on "affective polarization" (Iyengar et al., 2019). Affective polarization is the tendency for a member in one group to feel positively towards those in the same group and negatively

towards those in the other group (Kansco, 2020). Using this definition for affective

polarization, one can understand affective partisan polarization to be the tendency of

Republicans or Democrats to view opposing partisans negatively and co-partisans

positively[2].

Social Fragmentation

Contemporary research in online political communication often describes what

can be referred to as the "fragmentation" thesis, which is the idea that online political

conversations are divided into a variety of groups, and that this division takes place along

ideological lines with people only communicating with those who are ideologically

similar (Bright, 2018). Numerous empirical studies on social media find evidence that

some degree of social fragmentation exists (Barberá, 2015; Conover et al., 2011;

Quattrociocchi et al., 2016).

The effects of social fragmentation cause concerns because of their consequences

for the effective functioning of society (Cornelson & Mioucheva, 2020). Economists

found that social fragmentation plays a role in limiting an individual's willingness to

contribute to public goods (Alesina et al., 1999; Algan et al., 2016). This in turn may

undermine the government's ability to coordinate collective action in a crisis. The

COVID-19 pandemic created a cooperative problem in which individuals could

contribute to the public good by staying home and taking preventative measures, or free-

ride on the contributions of others. Cornelson & Mioucheva used the COVID-19

pandemic to show that affective polarization reduces people's willingness to comply with

the social distancing measures in place during the COVID-19 crisis and that individuals

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[2] The tendency of Republicans or Democrats to view opposing partisans negatively and their co-partisans
positively

report less compliance when their state's governor comes from the other party. Theorists

of democracy also voiced concern regarding patterns of fragmentation, arguing that

exposure to a diverse range of viewpoints is crucial for developing well informed citizens

and exposure to only like-minded voices may contribute to political polarization towards

ideological extremes (Gentzkow and Shapiro, 2010; Sunstein, 2001).

Evidence of polarization in the U.S.

Studies show that Americans became increasingly polarized in recent decades.

Iyengar et al. (2012) found that in 1960, 5% of Republicans and Democrats reported that

they would "feel 'displeased' if their son or daughter married outside their political

party;" and by 2010 this number increased to roughly 50% of Republicans and 30% of

Democrats. ANES data found that the proportion of voters who vote for the same party in

both the Presidential and the House elections increased from 1972 to 2012 by 19%

(American National Election Study, 2015c). Allcott et al. (2020) conducted a study where

users deactivated Facebook for four weeks before the November 2018 midterm elections.

Facebook deactivation reduced news knowledge and significantly reduced polarization of

views on policy issues.

In addition to becoming increasingly polarized, Republicans and Democrats are

becoming increasingly hostile. Gentzkow (2016) reports that as of 2008 nearly 50% of

Americans classified members of the other party as "selfish", a number that increased

roughly 20% from 1960 (Cornelson and Miloucheva, 2020). Lelkes, Sood, and Iyengar

(2017) used U.S. survey data to study the impact of access to broadband internet on

political hostility. They found that broadband availability and internet access increases

partisan hostility and segregation in the consumption of partisan media (Lelkes et al.,

2017; Zhuravskaya et al., 2020). However, they do not have enough data to make a direct link between the internet and political polarization. President Barack Obama discussed the role of social media in the 2016 election and stated, "the capacity to disseminate misinformation, wild conspiracy theories, to paint the opposition in wildly negative light without any rebuttal – that has accelerated in ways that much more sharply polarize the electorate and make it very difficult to have a common conversation" (Remnick, 2016).

Conflicting views on Social Media's contribution to Polarization

The role of social media on the formation of political beliefs became a popular research topic as social media platforms became more and more prevalent. This is because the rise in social media platforms raises concerns about how political opinions are formed and their impact on democracy (Campbell et al., 2019). The overall consensus in studies of information consumption from social media is that these platforms increase user exposure to new information, including ideologically diverse opinions and misinformation (Bakshy et al., 2015). Many authors attribute political polarization to the rise of social media and the internet as a whole because it creates "echo chambers" (Hindman, 2008; Pariser, 2011).

Even if social media does increase exposure to like-minded news only, it is not clear what impact it has on political polarization. More recent literature argues social media doesn't increase polarization and in fact may reduce it because it exposes users to different opinions and leads to less narrow political views (Boxell et al., 2017; Barberá, 2015). In the study done by Boxell et al., researchers found that the increase in polarization is largest among the groups who are least likely to use social media, which argues against the hypothesis that social media is a main driver of increasing polarization.

The literature is inconclusive on the issue and provides arguments and evidence that support both sides of the debate.

The extent to which misinformation shared on social media platforms effects user political beliefs is another highly debated research topic (Allcott & Gentzkow, 2017; Guess et al., 2017). This pattern of conflicting empirical evidence may be explained by different conceptualizations of "misinformation" and "polarization" (Tucker et al., 2018). Though there are many studies defining these two terms, the varying definitions of key terms accounts for varying hypothesis in literature around social media and politics. The differences between false information, misleading information, and hyper partisan information can be blurry. In addition to an inconsistent definition of terms, different characteristics of social media platforms may contribute to affective polarization but deactivate ideological polarization (Tucker et al., 2018).

How Social media differs from Traditional media outlets

Certain features of social media platforms distinguish them from traditional media outlets (newspapers, radio, and TV) and may affect politics in different ways. Two of the most important distinguishing factors of social media are low barriers to entry and user-generated content (Zhuravskaya et al., 2020). Both of these factors are linked to the spread of disinformation.

Low Barriers to Entry. Low entry barriers allow widespread political information and makes gatekeeping the spread of disinformation much less effective (Zhuravskaya et al., 2020). It also makes it more difficult for politicians and businesses to hide potentially harmful information (Silfry, 2011). By providing a platform for marginalized groups, conspiracist groups, and everyone else with an opinion about

politics, social media can be used to spread extremist ideas, increasing their reach and potentially their influence (Zhuravskaya et al., 2020). Low barriers to entry also vastly increase the choice of news sources available and easily allows users to tailor their sources to their preexisting preferences. This can give rise to "echo chambers" and in turn, lead to increased polarization.

The spread of misinformation and fake news are costs that come with sharing information on social media and there is well-documented evidence of widespread false news stories online. Social media users can re-post, share, and copy content created by others which can lead to a spread of misinformation at unprecedented speed. Vosoughi, Roy, and Aral (2018) studied the spread of false stories on Twitter between 2006 and 2017, and demonstrated that false stories were spread significantly faster, to a broader number of users, and had a larger number of reshares than stories that were true (Zhuravskaya et al., 2020). Allcott and Gentzkow (2017) confirmed the spread of 115 pro-Trump and 41 pro-Clinton false stories on Facebook during the 2016 election. They showed that 15% of survey respondents recalled seeing fake stories and 8% recalled seeing a fake story and acknowledged they believed it (Zhuravskaya et al., 2020; Allcott and Gentzkow, 2017).

Other studies conducted around the 2016 Presidential election confirmed that false political stories constituted a significant share of all news consumption (Grinberg et al., 2019; Guess et al., 2018; Guess et al., 2019). Guess, Nagler, and Tucker (2019) found that both partisanship and age were important predictors in false-news sharing activity, and that users over 65 years old shared 7 times as many false-news articles than younger Facebook users. The authors found that fake stories were more likely to reach rightwing

users and only some extreme right-leaning users' feeds were dominated by fake stories. They emphasize that the overall the spread of fake news is highly concentrated and is a rare behavior on social media platforms.

User-Generated Content. The second differentiator of social media platforms is how it allows users to generate and share their own content which is linked to the spread of disinformation and an increase in street protests. By allowing horizontal flows of information between users, social media may facilitate coordination between people and make it easier to organize collective actions such as street protests (Zhuravskaya et al., 2020). Ferguson and Molina (2019) show that Facebook is associated with a higher number of street protests across the globe, and that the association is stronger in counties with greater widespread internet access.

User-generated content can also alter the way citizens and politicians interact. As briefly discussed above, elite polarization can increase mass political polarization (Tucker et al., 2018; Hetherington, 2001; Abramowitz & Saunders, 2008). Politicians adopted the use of social media as a campaign tool because of its low cost, ability to recruit volunteers and receive contributions, and its accessibility to all candidates (Petrova et al., 2020). In fact, today, 80% of heads of states around the world are using Twitter to communicate with their constituencies. These politicians are using the platforms to share content that is more personal and may include information about their lives outside of the political world. Petrova et al. (2020) found that opening a Twitter account in regions with high and low levels of Twitter penetration resulted in an increase in donations for politicians not elected to Congress before. The low cost of creating

automated accounts or using anonymous accounts enables the manipulation of online

content and may lead to political persuasion (Zhuravskaya et al., 2020).

Politicians themselves may of course create disinformation or contribute to its

spread and while they may not be the largest sharers of disinformation, they may have

some of the greatest influence (Mele et al., 2017). Barrera et al. (2020) shows that on

average, the use of alternative facts[3] increases political support for politicians,

irrespective of fact checking. Political statements based on alternative facts are highly

persuasive and fact checking is ineffective in undoing their effect (Barrera et al., 2020).

Before the 2016 election, Donald Trump and his campaign staff repeatedly circulated

wrong unemployment numbers and made false claims about the U.S. homicide rate being

at its highest in several decades (Barrera et al., 2020). Allcott and Gentzkow (2017) show

that pro-Trump fake news stories were shared 30 million times on Facebook.

An advantage for politicians to use social media platforms vs. traditional media

outlets is their ability to micro-target (i.e., the tracing of dynamic behavioral patterns,

interests, and networks) (Liberini et al., 2018). Politicians are able to personalize their

campaigns and target voters who may be decisive in the outcome of elections. Online

campaigns that targeted gender, location, and political ideology had a significant effect in

persuading undecided voters to support Trump in the 2016 election. The effect of micro-

targeting using Facebook was strongest. Facebook ranked as the 3rd most cited "main

source" of information for the 2016 election. Facebook began classifying U.S. users in

terms of political orientation in 2016 (Liberini et al., 2018). The data collection done by

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[3] Statements on key policy issues that directly or indirectly contradict real facts (Barrera et al., 2020)

social media companies is used to target specific groups of users and could make future manipulations even more effective.

Data Collection

Researchers began studying potential threats and major risks associated with social media services which include security flaws and privacy issues. From an economics perspective, the problem is modeled as a trade-off between disclosing information and gaining access to the social media service (Bonneau and Preibusch, 2010). The data security issues in today's era include not only the traditional issues of personal privacy, but also the analysis and research of people's data, which leads to the targeted prediction of user's state and behavior (Zhang, 2018). For example, by studying users spending habits, social media sites are able to post more relevant advertising information. This practice is also used to analyze a person's political information. Many media scholars including Cohen (2008) argue that popular websites such as Facebook, YouTube, and Google lead to the commodification of their users in diverse ways. These interactive media technologies transformed their "audiences" into "users" and are able to commodify these "users" through extensive surveillance. This surveillance enables web service providers and social media sites to render user information to third parties who then perform precisely targeted marketing activities. Social media sites are able to generate revenues by providing meaningful information to advertisement companies through data collection and mining.

Echo Chambers

Sunstein (2001) argues that one of the potential costs of social media is its ability to create echo chambers which prevent people from learning about opinions different

from their own. Recent research concludes that this is true, and people are more likely to be exposed to online political content ideologically closer to their own political views than to opposing political views (Zhuravskaya et al., 2020). A study using data on the sharing behavior of over 10 million Facebook users concludes that people do encounter less political content aligned with opposing ideologies than with their own (Bakshy et al., 2015). They show this to be true due to Facebook's algorithm of presenting news feeds to users and the tendency for users to only share content aligned with the political ideology of their friends. Similarly, a study examining the tweets in the six weeks leading up to the 2010 U.S. Congressional midterm elections shows that political retweets are highly segregated along partisan lines with low connections between left and right-wing users (Conover et al., 2011).

Echo chambers emerge when social networks become fragmented into different groups of people along ideological lines (Bright, 2017). These groups become defined through patterns of communication; when members communicate relatively frequently with one another they form a group. When a space is fragmented and contains echo chambers, there will be weak communication between groups and strong communication within groups (Garcia et al., 2015). A space that isn't fragmented will show patterns of between group communication. Echo chambers cannot take place at the group level because the identification of echo chambers requires measurement of within group communications relative to between group communications (Bright, 2017). As social media networks become increasingly important for shaping political viewpoints, the relevance of the echo chamber thesis will continue to grow. (Bright, 2017) goes into greater detail about the echo chamber thesis.

Higher Education

Political behavior research consistently observes a positive relationship between education and political engagement (Hillygus, 2005). Hillygus details three explanations linking education with political participation: (1) the civic education hypothesis; (2) the social network hypothesis; and (3) the political meritocracy hypothesis. The civic education hypothesis is based on the belief that education provides the necessary skills to become politically engaged and the knowledge to understand democratic principles. It also suggests that additional years of education will continue to equip citizens with skills and information that eases the costs of political engagement (Hillygus, 2005). Of course, not all formal schooling is expected to teach these skills equally as well as others. For instance, a computer science class or biology class are unlikely to encourage political activity. Schooling that includes a civic or social science curriculum will impart the skills necessary to be active in politics (Levine and Lopez, 2004).

The social network hypothesis offers an alternative explanation for the relationship between education and participation in politics. This hypothesis is based on the belief that education works as a social sorting mechanism, and those with higher levels of education are more likely to be found closer to the center of politically important social networks. The third explanation, the political meritocracy hypotheses, suggests that intelligence leads to educational attainment, not the other way around. In other words, intelligence rather than education is what determines political sophistication.

In addition to linking education with political engagement, researchers found a positive relationship between education and ideological consistency. In his 1976 empirical study, George Bishop found that better educated groups respond in a more

consistent ideological fashion. Furthermore, the results of his study revealed that the issue of government power, an issue which divides Republicans from Democrats, is the greatest difference across educational groups (Bishop, 1976). However, his results are not enough to support an inference of causality, and it is possible that ideologically consistent individuals choose to complete more education rather than the other way around. Baldassarri and Gelman (2008) also tested the relationship between highly educated individuals and ideological consistency by looking for varying levels of partisanship between subgroups of educational levels. Their data revealed a positive relationship between higher education and ideological consistency across the issues of the economy, morality, civil rights, and foreign policy than those with less education (Baldassarri and Gelman, 2008). These studies indicate that more education leads to more consistent ideological opinions (Kaslovsky, 2015). It is important to note that existing research cannot identify a causal relationship between education and ideological preferences because the research does not account for non-random self-selection. It is possible that more ideologically consistent individuals choose to complete more education or that these individuals' underlying beliefs encourage them to join a job market that requires postsecondary degrees (Kaslovsky, 2015).

Social science studies show that the university-educated are more liberal than those who have not attended university (Mintz, 1998; Hillygus, 2005; Hastie, 2007). Early research indicated that students became more 'liberal' as they progressed through their degree and found strong changes in social liberalism from freshman to senior year. Those with a college education tend to be more liberal in terms of greater tolerance, support for civil liberties, and openness to non-traditional social and moral views, rather

than in terms of economic and social welfare views (Baer and Lambert, 1990; Mintz, 1998; Hastie 2007). Hastie (2007) suggests that there are two key explanations for the impact of education: (1) self-selection, where students choose the discipline that best reflects their beliefs and values; and (2) socialization, where students adopt the beliefs and values predominant in their chosen area of study. The issue of whether education's effects are long lasting or if people are vulnerable to attitude change when they encounter new situations is of great significance when studying sociopolitical orientation. The "impressionable years" hypothesis holds that people in their late teens and early 20s are most vulnerable to belief system change. The climate and circumstances these individuals are exposed to during this time "have a profound impact on their thinking throughout their lives" (Krosnick and Alwin, 1989). This hypothesis is a possible explanation for finding greater liberalism amongst college students. The other explanation is socialization, where sociopolitical orientations are influenced by experiences during their college education (Hastie, 2007).

Overall, evidence that college education is responsible for shifting students towards more liberal views and attitudes is limited. It may be the case that college education is more attractive to the more intellectual and those with a high level of concern about the world's problems. Mintz (1998) examined whether those who attended university changed significantly in their attitudes compare to high school graduates who did not attend university. His findings reveal that those who attended university were significantly different than their peers in terms of higher political efficacy, political interest, and support for competitive economic policies.

Theory

This study builds upon the work of Kansco (2020) who uses several hypotheses and models to understand the relationship between social media use, age, and political polarization. Following the studies by Kansco (2020), Iyengar et al. (2012), and Gentzkow (2016) This study uses two measures of political polarization: affective partisan polarization and ideological commitment. Affective partisan polarization is measured by using two of the questions in the survey, each asking respondents to give a feeling thermometer to the Democratic and Republican parties. The questions ask respondents to manipulate a slider on a scale of 0-100 to which they rate their feelings of each party. The difference between the respondents two answers is calculated to get the variable of affective polarization. A measure of ideological commitment is calculated using a 7-point ideological scale. A number 0-3 is assigned to the respondent based off their answer to the 7-point scale. This number reflects how far a respondent is from the "moderate" category, those with more ideologically extreme views can be considered more "polarized". Affective partisan polarization can be understood at an individual level, whereas ideological commitment is only polarizing assuming there are roughly equal amounts of people on the other end of the spectrum (Kansco, 2020). Though this may not be the case in the sample in this study, it is an important variable as it creates an opportunity to analyze the differences between respondents who are "Slightly Liberal" and those who are "Extremely Liberal". Affective partisan polarization and ideological commitment will be the two dependent variables used in this study.

Kansco examines seven OLS models in his study to fully understand the relationships between ideological commitment and affective partisan polarization, social

media use and polarization, and age of social media users on polarization. In the U.S. the links between ideological identification and partisanship are clear, extremely conservative people are likely Republicans and extremely liberal people are likely to be Democrats. Though it is important to consider that some ideologically extreme respondents may rate both parties a zero. For this reason, Kansco examines the relationship between the two dependent variables to evaluate whether ideological commitment is associated with affective partisan polarization. His model showed that higher degrees of ideological commitment are indeed associated with higher levels of affective partisan polarization. This supports the hypothesis that those who are ideologically committed and identify as extremely liberal or conservative are likely to feel strongly about their partisanship as well. Support of this hypothesis can be found in existing literature that American's ideology and partisanship are closely related. For the purposes in this study, the analysis excludes this model as it already has empirical support.

Modifications

This study follows Kansco's models closely while making modifications suggestive by his results. Kansco includes two demographic variables, age and gender, in each of his models except for in models six and seven where he excludes age to enable a breakdown in polarization by each age group. He makes notes that recent literature suggests that internet use might play little to no role in political polarization, but these claims are based on using age as a proxy for social media use. His results suggest that additional variables may be required than just using age. This study adds the independent

variable of education in all but two of the models in order to examine the effect of a
respondent's degree of education on polarization.

The first hypothesis examines the three measurements of social media use: times a
day, time per day, and political activity, with a respondent's measurement of affective
partisan polarization. This hypothesis also examines the same three measurements of
social media use with a respondent's ideological commitment as the dependent variable.
This variable measures the degree to which a respondent considers themselves committed
in either direction, it does not distinguish between the two parties. The results in
Kansco's study did not provide substantial evidence for the claim that social media use
leads to affective partisan polarization or ideological commitment, however, they do
show social media use as more closely associated with polarization than age. He suggests
that closer examination of the effects of social media use on polarization may be required
to draw conclusions rather than simply using age as a proxy. Models one and two in this
study include education as a predictor variable. The results of these models will
determine if the degree of a respondent's education is a significant factor in polarization
from social media use.

The second hypothesis allows a breakdown of social media use and polarization
by different degree of education. In order to examine the effects of social media use on
polarization by different degrees of education, education needs to be removed from the
model. Models three and four will follow the same structure as models one and two but
will remove education from the equation. It is expected that respondents with higher
degrees of education will be more politically polarized and ideologically committed. This

hypothesis is based upon evidence that education leads to increased political participation, political knowledge, and civic engagement.

The third hypothesis focuses on measuring the sources respondents get their political news rather than respondents social media use. To examine the effects that consumption of political news from different sources might have on the dependent variables, models five and six are used. The hypothesis predicts that greater internet use to access political news has the greatest positive association to affective polarization and ideological commitment. This hypothesis is modeled based on theories that emphasize high-choice media environments, in which the internet offers the most amount of choice and will likely be the most polarizing source.

Empirical Models

The six models used in this study are as follows:

$$Affective\ Partisan\ Polarization_i = B_0 + B_1 Age_i + B_2 Gender_i + \quad\quad [1]$$
$$B_3 Education_i + B_4 TimesADay_i + B_5 TimePerDay_i +$$
$$B_6 PoliticalActivity_i + \varepsilon_i$$

$$Ideological\ Commitment_i = B_0 + B_1 Age_i + B_2 Gender_i + B_3 Education_i + \quad [2]$$
$$B_4 TimesADay_i + B_5 TimePerDay_i + B_6 PoliticalActivity_i + \varepsilon_i$$

$$Affective\ Partisan\ Polarization_i = B_0 + B_1 Age_i + B_2 Gender_i + \quad\quad [3]$$
$$B_3 TimesADay_i + B_4 TimePerDay_i + B_5 PoliticalActivity_i + \varepsilon_i$$

$$Ideological\ Commitment_i = B_0 + B_1 Age_i + B_2 Gender_i + \quad\quad\quad [4]$$

$$B_3 TimesADay_i + B_4 TimePerDay_i + B_5 PoliticalActivity_i + \varepsilon_i$$

$$Affective\ Partisan\ Polarization_i = B_0 + B_1 Age_i + B_2 Gender_i + \quad [5]$$

$$B_3 Education_i + B_4 Internet_i + B_5 Radio_i + B_6 Newspaper_i +$$

$$B_7 Television_i + \varepsilon_i$$

$$Ideological\ Commitment_i = B_0 + B_1 Age_i + B_2 Gender_i + B_3 Education_i + \quad [6]$$

$$B_4 Internet_i + B_5 Radio_i + B_6 Newspaper_i + B_7 Television_i + \varepsilon_i$$

where affective partisan polarization is a measure of polarization calculated by the

difference in thermometer ratings of the Democratic and Republican parties, and

ideological commitment is a measure of how ideologically extreme respondents identify

as.

- **Age:** Age groups (18-24, 25-34, 35-44, 55+)

- **Gender:** Male, Female, Non-Binary, Prefer Not to Say

- **Education:** Highest degree of school respondent has completed. Options
  include: Highschool graduate or the equivalent, Some college credit,
  Associate degree, Bachelor's degree, Master's degree, Professional
  degree, and Doctorate degree

- **Social Media Use (Times a day):** Number of times respondent uses
  social media on average day. Options range from "Not every day" to 10+
  times a day"

- **Social Media Use (Time per day):** Amount of time respondent uses social media on an average day. Options range from "Less than 30 minutes" to "3+ hours"

- **Social Media Use (Political Activity):** Ratio variable coded as scale 0-4 measuring respondents' political activity on social media. Calculated as the number of "Yes" responses to question 13

- **Political News (Internet):** How often a respondent uses the internet to access political news. Options range from "Never" to "Daily"

- **Political News (Television):** How often a respondent uses television to access political news. Options range from "Never" to "Daily"

- **Political News (Newspaper):** How often a respondent uses the newspaper to access political news. Options range from "Never" to "Daily"

- **Political News (Radio):** How often a respondent uses the radio to access political news. Options range from "Never" to "Daily"

This section outlines the construction of six models based on those proposed by Kansco (2020) and includes modifications that build upon his results. By adding education as a predictor variable, the models provide a reflection of dynamic between a respondent's degree of education and their political polarization. In the following section, the dataset used to estimate the models is described including descriptions on the dependent and independent variables as well as specification of the data sources used to accumulate the dataset.

<center>**Data**</center>

This section discusses the data sources and variables used in the models, as well as the models' advantages and limitations. It defines and establishes the role of each variable in the analysis. This study references the ANES data set[4] which is the basis of many studies on affective polarization. The main data source is an online survey that is designed to measure respondent's level of education, political ideology, and their social media engagement.

Dataset

To quantify polarization, this study uses two different measures: affective partisan polarization[5] and ideological commitment. This study follows Iyengar et al. (2012), Gentzkow (2016), and Boxell et al. (2017) by using the ANES thermometer ratings of parties and ideologies to capture people's feelings towards those on the other side of the political spectrum. The ANES data set introduces a thermometer rating of both political parties, in which the difference between these two ratings is used as the measure of affective political polarization. A survey is used in this study that includes the same thermometer ratings to measure affective political polarization. The survey is constructed to make connections between respondent's level of education, social media use, and political ideology. The survey asks 15 questions including various demographic questions and questions specific to the respondent's social media engagement and political involvement (see Appendix A for survey questions). Each of the questions and their responses are worded to be as free of bias as possible.

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[4] American National Election Studies Time series studies from Presidential elections. These datasets can be accessed at https://electionstudies.org/data-center/2020-time-series-study/

[5] The tendency for a member in one group to feel positively towards those in the same group and negatively towards those in the other group

It is important to the study that a diverse sample is reached with varying demographics and levels of education. Varying levels of education will allow for the cross-sectional analysis of education on polarization. Amazon mechanical turk service is used to issue the survey because mechanical turk users tend to be diverse and may be limited to the United States. Additionally, mechanical turk users are likely to be digitally literate and familiar with Internet and social media (Kansco, 2020). This study uses a sample of 301 respondents.

The first few questions are general demographic questions, followed by two questions regarding level of education and the prevalence of politics during a respondent's education. Level of education is an important variable in this study because it will allow for a cross-sectional analysis on education and polarization. Because education is consistently found to increase political participation and political knowledge, it is anticipated that the higher the level of education of a respondent and their engagement on social media will have an additive effect on their degree of affective polarization. A regression analysis is used to compare the independent variable of social media use to the dependent variables of affective partisan polarization and ideological commitment. Then, the covariate of education will be used to understand the effects of higher education on political extremism.

Dependent Variables

This study uses two variables to measure political polarization, affective partisan polarization and ideological commitment. Affective partisan polarization is calculated using two of the questions in the survey, each asking respondents to rate their feelings towards the Democratic and Republican parties, respectively. Each question gave a slider

answer tool representing a scale of 0-100 in which respondents could manipulate (Shown in Figure 1). The variable of affective partisan polarization is calculated as the difference between the respondent's two answers. Therefore, the range of affective partisan polarization is 0-100 with higher values indicating higher polarization. The second measure of polarization, ideological commitment, is based off a respondent's answer to the 7-point ideological scale. A variable is added to the dataset which assigns a respondent a number 0-3 to represent how far they place themselves from the middle, "Moderate", category. Those who identify as "Extremely Conservative" or "Extremely Liberal" will be assigned a value of three and are considered more polarized than those in the middle. Affective partisan polarization is the primary measure in this study because it can be understood at an individual level. Whereas ideological commitment is polarizing contingent that there are roughly equal amounts of people who identify at the other end of the spectrum (Kansco, 2020). These two measurements are the dependent variables tested in the study.

Figure 1: Affective Partisan Polarization Sliders
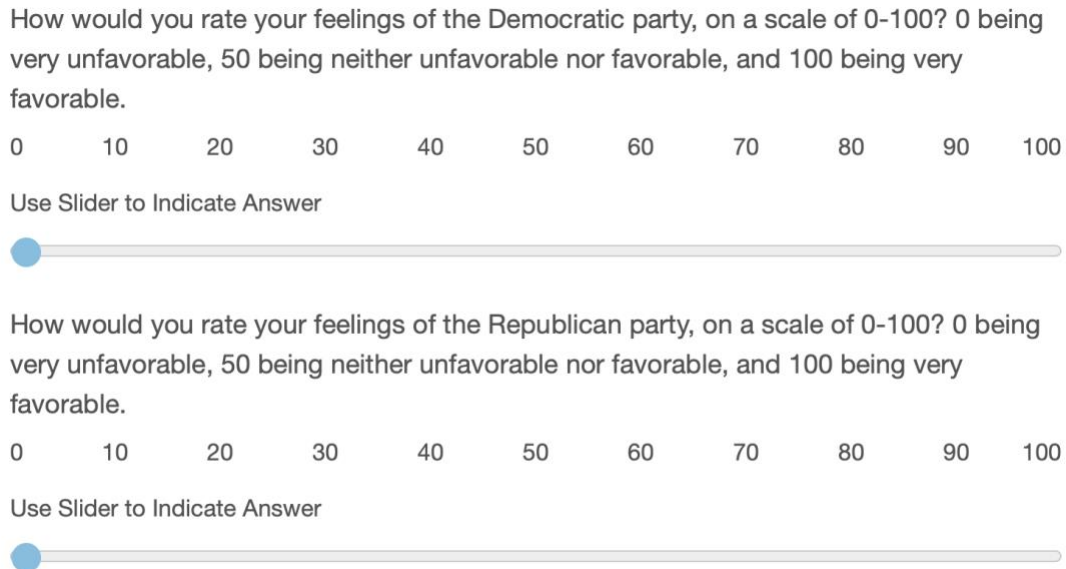
Source: Qualtrics Survey Creator

- **Affective Partisan Polarization:** Measured as the difference between two

  feeling thermometers which measure a respondent's feelings towards the

  Democratic and Republican parties. The scales range is 0-100, with 0

  being unfavorable and 100 being favorable, therefore Affective Partisan

  Polarization has a range 0-100

- **Ideological Commitment:** Measured as the distance from the "Moderate"

  category on a 7-point ideological scale. Respondents are assigned a

  number 0-3 to represent how far they place themselves from the middle,

  therefore Ideological Commitment has a range 0-3

Independent Variables

The questions in the mechanical turk survey are designed to produce multiple

measures of social media use including general social media use and more politically

focused use. There are three categories of independent variables: demographics, social media use, and political news consumption.

Demographic components. Amazon mechanical turk service provides the country where a respondent's IP address is located and their percentage of successful HITs, so the demographic variables need to be included in the construction of the survey itself. The demographic variables include a respondent's age group, gender, level of education, partisanship, ideology, and interest in politics. For each of the demographic variables, dummy variables are created to represent each of the answer choices, in other words, new variables for each answer choice are created and encoded 0 or 1. A summary of the respondent demographics is shown in Table 1, followed by a description of each of the variables. Graphs of the individual demographic variables can be located in Appendix B.

Table 1: Demographic Summary

Age	#	Gender	#	Level of Education	#	Partisanship	#
18-24	19	Female	89	Highschool graduate	21	Democrat	128
25-34	154	Male	207	Some college credit	25	Republican	68
35-44	85	Non-Binary	2	Associate degree	24	Independent	101
45-55	25	Prefer not to say	3	Bachelor's degree	170	Other	4
55+	18			Master's degree	54		
				Professional degree	4		
				Doctorate degree	3		

Source: Author's Calculations

- **Age:** Age groups (18-24, 25-34, 35-44, 55+)

- **Gender:** Male, Female, Non-Binary, Prefer Not to Say

- **Education:** Highest degree of school respondent has completed. Options include: Highschool graduate or the equivalent, Some college credit,

Associate degree, Bachelor's degree, Master's degree, Professional

degree, and Doctorate degree

- **Ideology:** 7-pt ideological scale. "Extremely Liberal" to "Extremely

  Conservative"

- **Partisanship:** Respondent's partisan identity as either Democrat,

  Republican, Independent, or Other

- **Interest in Politics:** Respondent's level of interest in politics. Options

  include: "Not at all interested", "Not very interested", "Somewhat

  interested", and "Very interested"

Social Media Use components. There are four variables used to measure social

media activity. The first variable is the age group in which a respondent began using

social media, this is to examine possible associations between political socialization from

a young age on social media and political polarization (Kansco, 2020). The number of

times per day a respondent accesses social media as well as the amount of time a

respondent spends on social media on an average day are both recorded. The fourth

variable is a measure of a respondent's political activity while using social media. To

measure political engagement on social media, the survey asked respondents if they used

social networking sites to follow online news sources, follow politicians or political

parties, see what their friends think about political issues, and to join groups for more

information on political issues. Respondents were asked to respond "Yes" or "No" to

each of the four scenarios and these four dummy variables were used to code a 0-4 scale

measuring how politically active a respondent is on social networking sites. For each of

the variables described below, with the exception of Social Media Use (Political

Activity), dummy variables are created to represent each of the answer choices. There are two respondents who reported that they do not use social media.

- **Age Start:** Age group that respondent began using social media in. Age groups: 13 or younger, 14-17, 18-21, 22-25, 26-29, 30-40, 40-50, 50 or older

- **Social Media Use (Times a day):** Number of times respondent uses social media on average day. Options range from "Not every day" to 10+ times a day"

- **Social Media Use (Time per day):** Amount of time respondent uses social media on an average day. Options range from "Less than 30 minutes" to "3+ hours"

- **Social Media Use (Political Activity):** Ratio variable coded as scale 0-4 measuring respondents' political activity on social media. Calculated as the number of "Yes" responses to question 13

Political News Consumption Components. This group of variables is designed to examine how respondents use various sources of political news. Respondents are asked how frequently they use the internet, television, newspaper, and radio to access political news. A variable was added by asking the respondents to identify their most important source of political news in order to place more weight into one source. It is predicted that those who choose the internet as their most important source will tend to be more politically polarized.

- **Political News (Internet):** How often a respondent uses the internet to access political news. Options range from "Never" to "Daily"

- **Political News (Television):** How often a respondent uses television to access political news. Options range from "Never" to "Daily"

- **Political News (Newspaper):** How often a respondent uses the newspaper to access political news. Options range from "Never" to "Daily"

- **Political News (Radio):** How often a respondent uses the radio to access political news. Options range from "Never" to "Daily"

- **Most Important Source of Political News:** Respondent's most important source of political news. Options include Newspaper, Television, Radio, Internet, and Other

Summary Statistics

Summary statistics for the dependent variables and one independent variable are displayed in Table 2. Social Media Use (Political Activity) is the only independent variable with summary statistics as it is the only non-binary independent variable.

Table 2: Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Affective Partisan Polarization	301	30.236	27.5	0	100
Ideological Commitment	301	1.631	1	0	3
Political Activity	301	2.99	1.389	0	4

Source: Author's Calculations

Multicollinearity

A correlation matrix is used to check for multicollinearity amongst the independent variables. The matrix shows strong correlation between respondents who are somewhat interested in politics and those who are very interested in politics. In addition, there is strong correlation between the gender variables, male and female. Both of these correlations are likely to be caused by the use of dummy variables. For example, the relationship is strong between the male and female variables because respondents who are not male are very likely to be female. In order to avoid multicollinearity within the regression models, one of the dummy variables in each category will be left out of the model.

Advantages and Limitations

The data used in this analysis provides the study with several key advantages as well as limitations. The dataset allows the analysis to expand Kansco's (2020) models by including level of education as a predictor variable of polarization. His results were suggestive that additional variables may be required than simply just using age as a proxy to examine the effects of social media use on polarization. Level of education is added to the study because of the relationship between higher education and increased political participation. It is anticipated that respondents with a higher degree of education will be more polarized than respondents with less of an educational background.

Using mechanical turk to distribute the survey is advantageous to the study because it provides access to an entire group of respondents with access to the internet. The mechanical turk survey is distributed entirely online and is the only method of accessing this survey. It is likely that respondents are active on some type of social media

platform because of their access to the internet. This dataset is useful to examine the effects of social media use and political activity online, however, is disadvantageous when attempting to examine differences of polarization between those with access to the internet and those without access.

The sample size of 301 participants should give the study a large enough scope to make analysis on political polarization based on a respondent's level of education and social media use. The data collected in the study done by Kansco is compared with the 2016 ANES data and results are relatively consistent. Kansco fielded a sample size of 298 participants while the 2016 ANES data has a sample size of 2889 participants and was distributed in person, not via internet. Because of the consistency in results between Kansco and the 2016 ANES data set despite sample size, the sample size in this study should provide similar results. However, it is possible that more accurate analyses could be made with a larger sample size.

Results

This section presents and explores the results of the Ordinary Least Squares regression analysis. Prefacing the results are a series of graphs and box plots examining how some of the different groups of respondents are affectively polarized and ideologically committed. These will allow a basic examination of how age, gender, partisanship, education, and interest in politics play a role in polarization in this study. In addition, this section discusses the processes that are implemented to achieve the final model and results.

The main focus of this study is understanding the role of social media use and the level of education of social media users in predicting political polarization. The six models present an understanding of the role of education, time spent on social media, and political activity on social media in causing polarization. The analysis tests various hypothesis under each category of independent variables. First, the coefficients for social media use (times a day, time per day, and political activity) are expected to be statistically significant and positive. This would indicate that greater use of social media leads to increased affective political polarization and ideological commitment. This is the expected relationship given evidence of network homophily and echo chambers present in social media. Echo chambers prevent people from learning about opinions different from their own and people are more likely to be exposed to online political content ideologically closer to their own political views.

Second, the coefficients for different degrees of education are expected to be positive. Higher degrees such as Bachelors, Masters, Professional, and Doctorate degrees are expected to be statistically significant. It is expected that respondents with higher

degrees of education will be more polarized than those without higher education. This hypothesis is based upon evidence that education directly influences political participation. Research also finds a positive relationship between education and ideological consistency, which is why higher degrees of education are expected to correspond with higher ideological extremism.

Finally, the coefficients for the news sources respondents get their political news from are expected to be positive with the internet being the strongest predictor of affective partisan polarization and ideological commitment. In addition to the internet being the most significant of the news sources, it is expected that as the frequency of internet use increases polarization also increases. In other words, a respondent who uses the internet daily will be more polarized than someone who uses the internet once a month to access political news. The internet is expected to be the most polarizing news source because it offers a high-choice environment which gives users the most amount of choice when it comes to viewing political news. It is likely that users, even those with extreme or uncommon beliefs, will find a website or platform that matches their political views when using the internet for political news.

By constructing six different models, the analysis aims to explore several aspects of social media use including general time spent on social media as well as political engagement. The models aim to add to the literature by exploring level of education as a predictor variable for political polarization. To examine how some of the different groups of respondents in this study are affectively polarized, Figures 2-7 display a series of box plots based on age groups, gender, partisanship, education, and interest in politics. Figure 8 will show a density graph of the respondent's political activity on social media.

Following Figures 2-8, the results of the regression analysis for each model will be displayed and discussed.

Figure 2: Polarization by Age Group
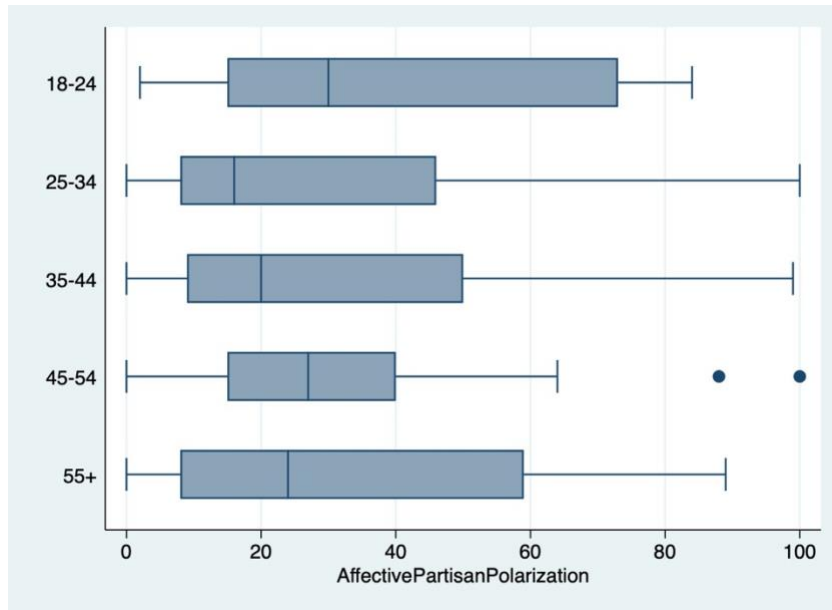
Source: Author's Calculations

Figure 2 shows the affective partisan polarization of respondents by age group. The range of responses in this box plot is very similar to the plot presented by Kansco measuring age against Affective Partisan Polarization. The youngest age group, 18-24, has the highest mean and widest range of response, and the 25-34 age group has the lowest mean. The only two age groups with a score of 100, which indicates a complete preference for one party over the other, are the 25-34 and 45-54 age groups. In addition to the age of respondents, the survey also asks what age respondents began using social media sites. Figure 3 shows affective partisan polarization by age start. Respondents who report that they do not use social media sites have the highest mean of affective partisan polarization, it is important to keep in mind this average is based upon two responses.

There are three age start groups that have a perfect score of 100: 14-17, 18-21, and 40-50. There does not seem to be a clear pattern between the age in which respondents began using social media and their affective partisan polarization.

Figure 3: Affective Partisan Polarization by Age Start
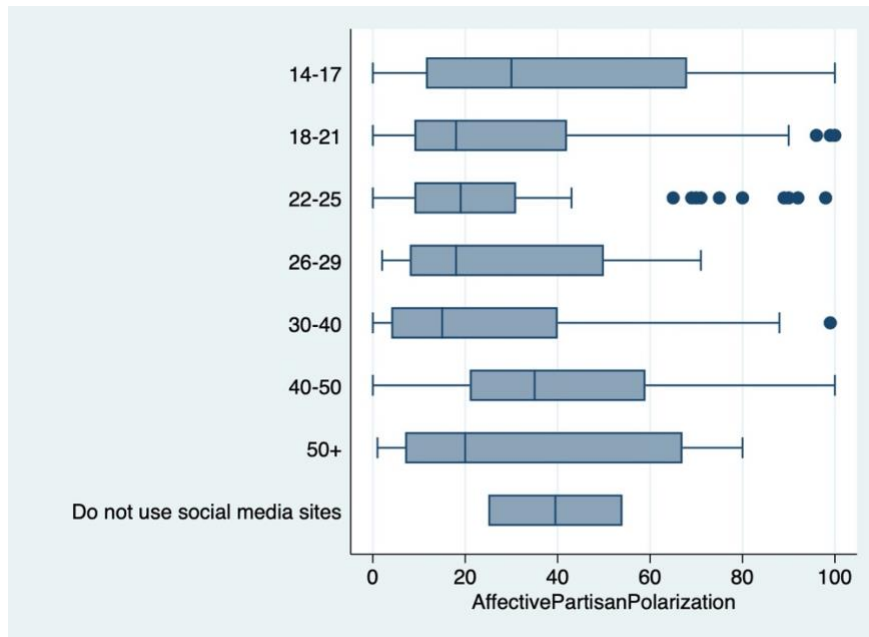
Source: Author's Calculations

Figure 4 displays affective partisan polarization by gender. Consistent with the data used by Kansco, Females in the dataset are slightly more polarized than males. While the Non-binary group has the highest mean, this is based upon two responses in which one score is a 1 and the other is 92. There are three females and one male whose affective partisan polarization score is 100. Figure 5 shows polarization by partisanship. The Independent category has the lowest mean which should come as no surprise because if a respondent chooses to identify as Independent over one of the parties is it likely that they do not have strong feelings toward one or the other. In this dataset, the mean of affective partisan polarization within those who identify as Democrat is 20-pts higher

than those who identify as Republican. Both Democrats and Republicans reported scores of 100.

Figure 4: Affective Partisan Polarization by Gender
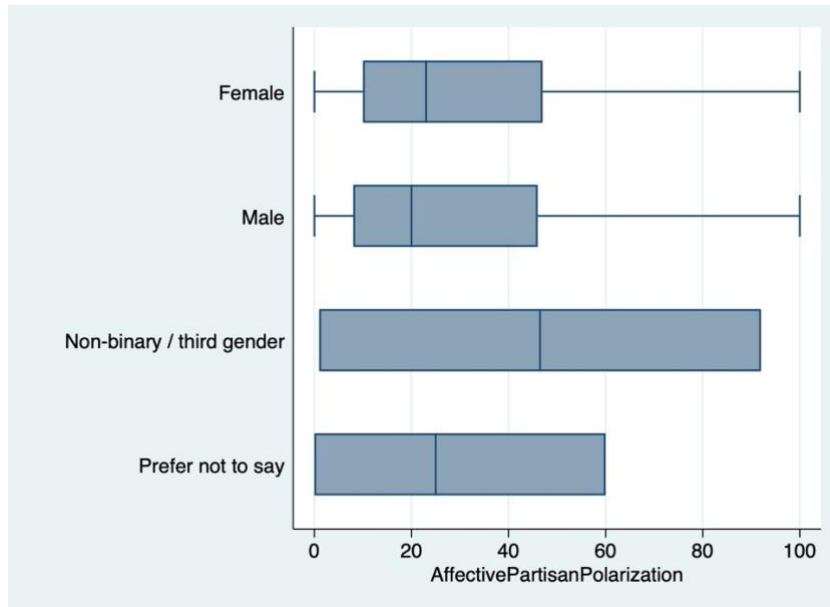
Source: Author's Calculations

Figure 5: Affective Partisan Polarization by Partisanship
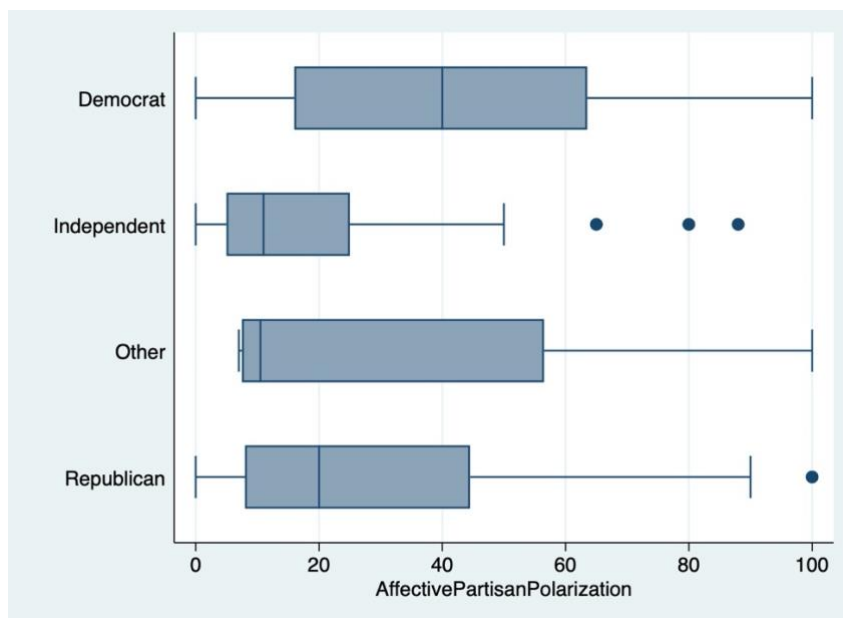
Source: Author's Calculations

Figure 6: Affective Partisan Polarization by Degree of Education
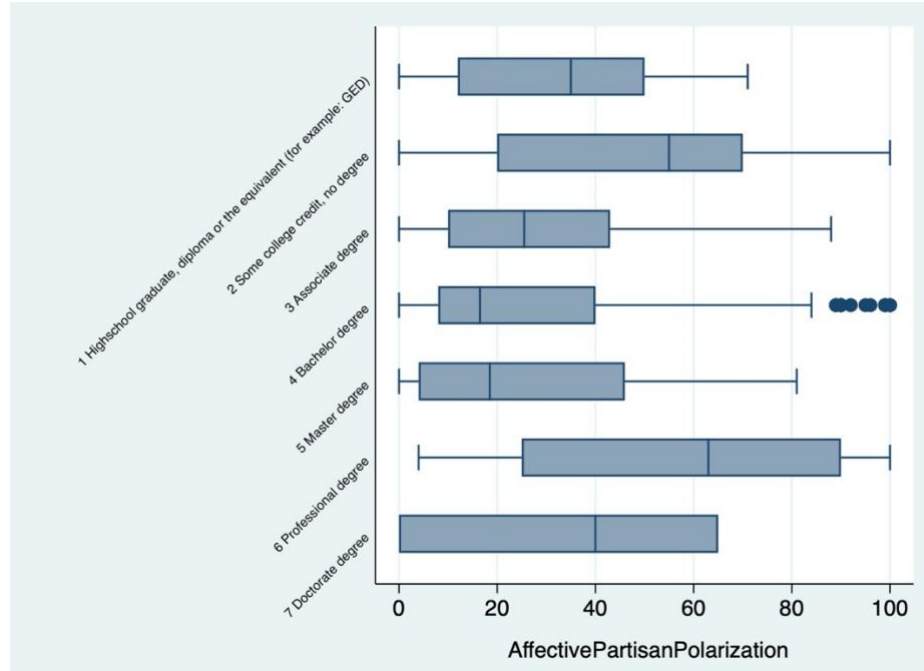
In Figure 6, affective partisan polarization by degree of education is measured. The mean of respondents with a High school diploma or some college credit is surprisingly high. Respondents with a Professional degree appear to be the most polarized with the highest mean of all the groups. Two respondents with a bachelor's degree, one with a Professional degree, and one with some college credit have a score of 100. There does not appear to be a consistent pattern between the degree of education and affective partisan polarization. The breakdown of affective partisan polarization by interest in politics is shown is Figure 7. Respondents who are very interested in politics have the highest mean and widest range of affective partisan polarization. This is likely because those who are very interested in politics may hold strong opinions on both parties. All four scores of 100 are between the somewhat interested and very interested groups. It is not surprising that those who are not at all interested in politics are the least

polarized group. Overall, the trend appears that as interest in politics increases, level of polarization also increases. The data is again consistent with the data used by Kansco.

Figure 7: Affective Partisan Polarization by Interest in Politics
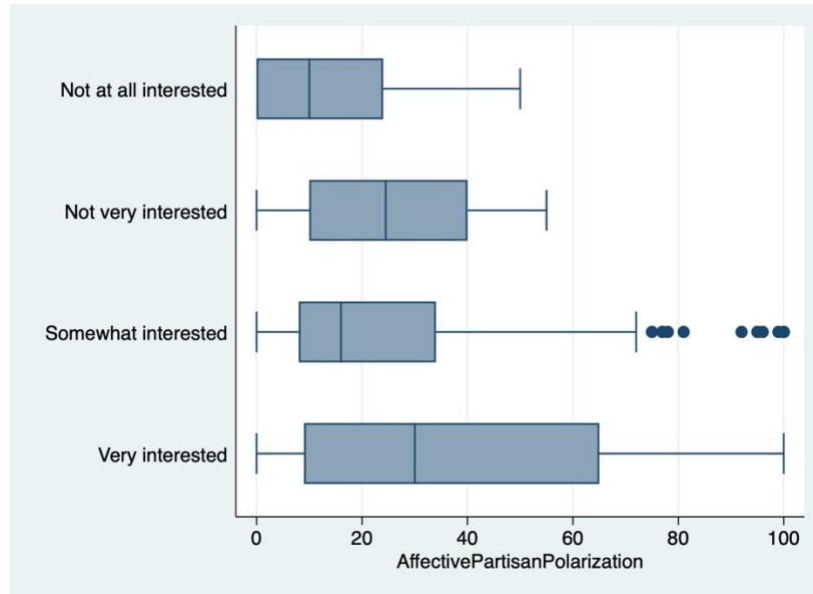
Source: Author's Calculations

Finally, Figure 8 displays a density graph of the respondent's social media use for political activity. Respondents are assigned a value of 0-4 based upon their responses to a series of four questions regarding their political activity on social media. If a respondent answered "Yes" to each of the four questions they receive a score of four to represent high political activity. The graph shows that the majority of respondents (over 50%) are highly politically active on social media.

Figure 8: Density Graph of Political Activity on Social Media
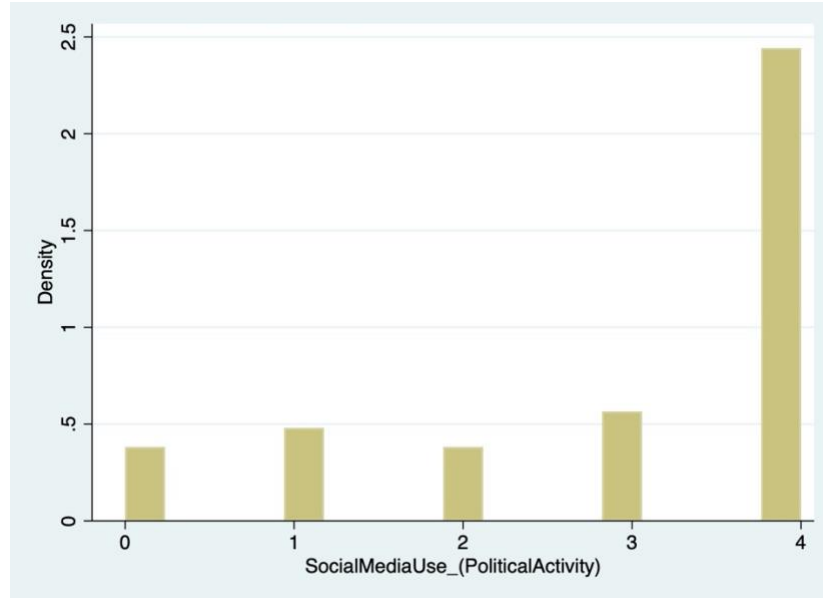
Source: Author's Calculations

Regression Analysis

This subsection provides an evaluation of the six ordinary least squares regression models. Models one and two are designed to examine the associations between the three measures of social media use and the two dependent variables, affective partisan polarization and ideological commitment. Models three and four examine the breakdown of social media use and polarization by each degree of education. Finally, models five and six examine which sources of political news are the most polarizing.

Model 1

Diagnostic testing of the initial regression of model one using affective partisan polarization as the response variable indicated the need for corrective measures. Due to the presence of heteroscedasticity amongst the residuals, the model will include the robust standard errors to correct for heteroscedasticity. A test for multicollinearity amongst independent variables confirms there is no presence of multicollinearity. The

results for model one are shown in Table 2. In addition to explaining approximately 17% of the variance in affective political polarization, several of the variables are statistically significant with 99% confidence. However, the results of model one in Table 2 illustrate that the coefficient signs do not consistently match the anticipated results hypothesized.

Results matching hypothesis. While testing the three different measure of social media use only "Times a day" and "Political Activity" are statistically significant. "Times a day 5-10" and "Times a day 10+" are both statistically significant at a p-value less than 0.01. When a respondent accesses a social media platform 5-10 or 10+ times a day they experience an increase in their affective political polarization. In addition to being statistically significant, the coefficients for these variables are relatively large, indicating a strong relationship to affective partisan polarization. The coefficients for these two variables are 16.225 and 25.198, respectively. In other words, if a respondent uses social media 5-10 times a day their affective partisan polarization increases by an average of 16.225 points and if they use it 10+ times a day their polarization increases by an average of 25.198 points.

Results not matching hypothesis. "Political activity" is also statistically significant at a p-value less than 0.01 however, a respondent's political activity on social media is negatively correlated with affective partisan polarization which comes as a surprise. For every increase of "political activity" (0-4) there is an expected decrease in affective partisan polarization by 3.795 points. Also, though the number of times a respondent accesses a social media platform is significant, the amount of time a respondent uses social media platforms on an average day is not significant in predicting polarization. This may indicate inherent differences between the two measures, or there

may be an issue with the selection of answer choices. In addition, having some college credit is statistically significant at the 0.1 level when examining affective partisan polarization. Respondents with some college credit with no degree experience an average increase of 13.845 points of affective partisan polarization.

Table 2: Model 1 - Linear regression

Affective Partisan Polarization	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age 18-24	3.746	8.835	0.42	.672	-13.645	21.137	
Age 25-34	-3.24	6.024	-0.54	.591	-15.097	8.618	
Age 35-44	-1.31	6.122	-0.21	.831	-13.36	10.741	
Age 55+	.972	8.829	0.11	.912	-16.408	18.353	
Gender Male	-1.068	3.336	-0.32	.749	-7.634	5.498	
Gender Prefer not say	-7.263	16.983	-0.43	.669	-40.692	26.167	
Gender Non-binary	12.22	34.808	0.35	.726	-56.299	80.738	
Some college credit	13.845	7.454	1.86	.064	-.827	28.517	*
Associate degree	-3.893	7.094	-0.55	.584	-17.858	10.071	
Bachelor's degree	-2.439	5.417	-0.45	.653	-13.102	8.224	
Master's degree	-2.685	6.027	-0.45	.656	-14.549	9.179	
Professional degree	20.665	16.473	1.25	.211	-11.762	53.092	
Doctorate	1.941	13.736	0.14	.888	-25.097	28.98	
Times a day 2-5	3.114	3.76	0.83	.408	-4.287	10.515	
Times a day 5-10	16.225	5.197	3.12	.002	5.995	26.456	***
Times a day 10+	25.198	6.549	3.85	.000	12.305	38.09	***
Time per day 1-2 hours	.44	3.633	0.12	.904	-6.711	7.591	
Time per day 2-3 hours	-3.193	5.33	-0.60	.55	-13.686	7.3	
Time per day 3+ hours	-10.683	7.74	-1.38	.169	-25.919	4.553	
Political Activity	-3.795	1.204	-3.15	.002	-6.164	-1.425	***
Constant	37.11	8.532	4.35	0	20.316	53.904	***

Mean dependent var		30.236	SD dependent var			27.500
R-squared		0.175	Number of obs			301.000
F-test		3.579	Prob > F			0.000
Akaike crit. (AIC)		2832.447	Bayesian crit. (BIC)			2910.297

*** p<.01, ** p<.05, * p<.1
Source: Author's Calculations

Model 2

      Model two examines the relationship of the three measures of social media use with ideological commitment as the response variable. Diagnostic testing of the initial regression of model two using ideological commitment as the response variable indicated no need for corrective measures. A Breusch-Pagan test failed to reject homoscedasticity of the residuals. In addition, a test for multicollinearity amongst independent variables confirms there is no presence of multicollinearity. Results are shown in Table 3. The variables in this model are not as significant when predicting ideological commitment compared to predicting affective partisan polarization. The variables explain approximately 11% of the variance in ideological commitment and are only significant at the 90% confidence level. Coefficients are not comparable to model one because ideological commitment is on a 0-3 scale whereas affective partisan polarization is a 0-100 scale.

      Results matching hypothesis. Of the three measures of social media use in this model, only "Time per day 2-3 hours" is significant in predicting ideological commitment. "Time per day 2-3 hours" is significant at a p-value 0.1 and its coefficient is 0.369 which is relatively large on a 0-3 scale.

      Results not matching hypothesis. The only other significant variable in this regression is having an associate degree, however, the coefficient is negative which means having an associate degree decreases a respondent's ideological commitment by 0.533. The results of this model are even less convincing than those of model one.

Table 3: Model 2 - Linear regression

Ideological Commitment	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age 18-24	.405	.31	1.30	.193	-.206	1.015	
Age 25-34	.231	.222	1.04	.299	-.205	.667	
Age 35-44	.16	.23	0.70	.487	-.292	.612	
Age 55+	.519	.318	1.64	.103	-.106	1.145	
Gender Male	-.107	.126	-0.84	.4	-.356	.142	
Gender Prefer not say	-.388	.635	-0.61	.542	-1.637	.861	
Gender Non-binary	.083	.715	0.12	.908	-1.325	1.49	
Some college credit	-.089	.291	-0.30	.761	-.663	.485	
Associate degree	-.533	.299	-1.78	.076	-1.122	.056	*
Bachelor's degree	.256	.232	1.10	.273	-.202	.713	
Master's degree	.33	.264	1.25	.212	-.189	.849	
Professional degree	.659	.537	1.23	.221	-.399	1.716	
Doctorate	.462	.653	0.71	.479	-.822	1.747	
Times a day 2-5	-.035	.159	-0.22	.825	-.349	.279	
Times a day 5-10	.099	.203	0.49	.625	-.3	.499	
Times a day 10+	.271	.23	1.18	.24	-.182	.723	
Time per day 1-2 hours	.162	.152	1.07	.287	-.137	.462	
Time per day 2-3 hours	.369	.202	1.83	.068	-.028	.766	*
Time per day 3+ hours	.185	.26	0.71	.476	-.326	.696	
Political Activity	-.017	.046	-0.37	.715	-.108	.074	
Constant	1.189	.32	3.71	0	.559	1.82	***

Mean dependent var		1.631	SD dependent var		1.000
R-squared		0.114	Number of obs		301.000
F-test		1.807	Prob > F		0.020
Akaike crit. (AIC)		858.721	Bayesian crit. (BIC)		936.571

*** p<.01, ** p<.05, * p<.1

Source: Author's Calculations

Model 3

The difference between model three and model one is that model three does not have education as a confounding variable. This was chosen so that model three could be broken down by the different degrees of education. Similar to model one, diagnostic testing indicated the presence of heteroscedasticity, therefore the robust standard errors are used in the regression. A test for multicollinearity amongst independent variables confirms there is no presence of multicollinearity. The results of model three, broken down by degree of education, can be seen in Table 4.

Results matching hypothesis. The variance in affective partisan polarization is best explained by the model when a respondent has either some college credit, an Associate degree, or a master's degree. In addition to "Age 35-44" and "Age 55+" being statistically significant in predicting affective partisan polarization for respondents with some college credit, "Times a day 5-10" and "Times a day 10+" are significant at a p-value 0.1. The coefficients for these two variables are large which represent a strong relationship with affective partisan polarization, however, the standard errors are also large which represent irregularities or inconsistency within the data which can be explained by too small of a sample size. The model for respondents who have associate degrees also show "Times a day 10+" as significant at a p-value of 0.05. Again, the model may reflect inconsistency in the data due to a small sample size thus provoking large standard errors. Several variables are significant at a p-value 0.01 for respondents with a master's degree. "Age 55+" has a negative relationship with affective partisan polarization for those with a master's degree, however, this variable was positively correlated for respondents with some college credit. Due to the inconsistency, age may

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not be a significant variable in predicting affective partisan polarization.

      Results not matching hypothesis. In terms of the three measures of social media, increases in the number of times a respondent accesses a social media platform per day are positively associated with affective partisan polarization, however, increases in the amount of time spent on social media are negatively associated. The sample sizes per each degree of education are a limiting factor in this study. The category with the largest sample size is "bachelor's degree" and the variables in this model are not statistically significant and only explain 10% of the variance in affective partisan polarization. In addition, the results for respondents who have a Professional degree, or a Doctorate are not reliable because of their small sample sizes and should be reevaluated with a larger sample. Therefore, it is hard to conclude whether higher degrees of education have a significant effect on polarization due to the limitations of the dataset.

Table 4: Model 3 – Linear Regression by Degree of Education
Affective Partisan Polarization

Variable Coef (Std. Error)	(1) High School Graduate (n=21)	(2) Some College Credit (n=25)	(3) Associate Degree (n=24)	(4) Bachelor's degree (n=170)	(5) Master's degree (n=54)	(6) Professional Degree (n=4)	(7) Doctorate Degree (n=3)
Age 18-24	-46.879 (51.936)	23.372 (35.533)		4.621 (12.813)	-6.577 (8.587)	62.5 (0)	
Age 25-34	-9.058 (35.235)	-4.705 (14.646)	2.96 (19.611)	-.511 (8.97)	-12.192 (7.913)	42 (0)	
Age 35-44	-3.932 (28.289)	46.593* (21.98)	-15.721 (15.031)	-2.465 (9.486)	-7.89 (6.588)		
Age 55+	15.262 (28.97)	53.188** (18.129)	30.349 (28.623)	11.039 (18.792)	-26.066*** (6.591)		
Gender Male	-.671 (15.826)	-18.286 (13.691)	12.586 (11.742)	-1.586 (4.991)	1.616 (7.189)		
Gender Prefer not say				-15.941 (12.585)	26.321* (13.228)		
Gender Non-binary				8.092 (41.478)			
Times a day 2-5	.7 (29.185)	14.62 (15.423)	-12.289 (17.55)	1.454 (4.97)	2.599 (8.772)		18.333 (0)
Times a day 5-10	70.756*** (17.788)	32.79* (18.302)	12.895 (25.241)	11.98* (7.109)	19.576* (11.344)		
Times a day 10+	-7.512 (41.811)	55.376* (27.526)	48.032** (21.417)	15.706 (10.318)	50.48*** (12.591)		
Time per day 1-2 hours	3.762 (20.976)	7.043 (28.292)	-6.31 (17.404)	-3.37 (4.65)	-.172 (9.554)		
Time per day 2-3 hours		22.763 (21.006)	-83.709* (41.458)	3.717 (7.511)	-15.877* (9.203)		
Time per day 3+ hours	3.718 (54.304)	29.175 (27.111)		-7.266 (10.917)	-41.349*** (13.43)		
Political Activity	-6.378 (5.186)	-9.343 (5.466)	7.657 (4.88)	-3.74** (1.769)	-4.009 (3.792)	-13.5 (0)	21.667 (0)
_cons	51.55 (44.794)	27.675 (17.097)	4.033 (18.696)	36.32*** (12.176)	41.569*** (14.7)	58 (0)	-21.667 (0)
Observations	21	25	24	170	54	4	3
R-squared	.438	.566	.585	.103	.531	1	1

Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1

Source: Author's Calculations

Model 4

Model four breaks down the results of social media use on ideological extremism by each degree of education. There is no need for corrective measures within this model. The results of model four, broken down by degree of education, are shown in Table 5.

Results not matching hypothesis. The results show that the models for respondents who are either a High School graduate, have some college credit, or have their Associate degree best explain the variance in ideological extremism. The results for the models for respondents who have a Professional or Doctorate degree are again inconclusive due to a small sample size. In addition, "Age 55+" is the only statistically significant variable in all of these models and is only significant at a p-value 0.1. The three measures of social media use broken down by respondent's degree of education are not significant when predicting ideological extremism. This may be again due to the small sample size of respondents.

Table 5: Model 4 – Linear Regression by Degree of Education
Ideological Commitment

Variable Coef (Std. Error)	(1) High School Graduate (n=21)	(2) Some College Credit (n=25)	(3) Associate Degree (n=24)	(4) Bachelor's degree (n=170)	(5) Master's degree (n=54)	(6) Professional Degree (n=4)	(7) Doctorate (n=3)
Age 18-24	.868 (1.994)	-.308 (1.71)		.316 (.414)	1.139 (1.105)	-2.25 (0)	
Age 25-34	.595 (1.295)	.761 (1.268)	-.265 (.856)	.106 (.303)	.115 (.516)	-1 (0)	
Age 35-44	.035 (1.246)	1.287 (1.211)	.116 (.719)	.181 (.319)	-.366 (.551)		
Age 55+	1.66 (1.635)	1.979 (1.461)	.261 (1.103)	.912* (.537)	-.144 (.658)		
Gender Male	-.09 (.823)	-1.06 (.762)	.422 (.458)	-.179 (.167)	-.099 (.32)		
Gender Prefer not say				1.053 (1.024)	.382 (1.081)		
Gender Non-binary				-.061 (.725)			
Times a day 2-5	-.519 (1.154)	-.041 (.899)	-.678 (.608)	.029 (.201)	.486 (.386)		1 (0)
Times a day 5-10	-.319 (1.408)	1.5 (1)	1.288 (.866)	-.042 (.26)	.579 (.442)		
Times a day 10+	.165 (1.73)	.958 (1.31)	.989 (.97)	.218 (.312)	.56 (.501)		
Time per day 1-2 hours	1.16 (.926)	1.218 (1.025)	-.105 (.669)	-.07 (.195)	-.047 (.413)		
Time per day 2-3 hours		1.498 (1.11)	-1.051 (1.657)	.256 (.256)	.238 (.457)		
Time per day 3+ hours	-1.205 (2.295)	.643 (1.196)		.2 (.333)	.163 (.616)		
Political Activity	-.091 (.205)	-.139 (.306)	.099 (.207)	-.012 (.061)	.134 (.142)	-.25 (0)	1 (0)
_cons	1.222 (1.337)	.489 (1.408)	.649 (.874)	1.631*** (.352)	.984 (.745)	4 (0)	-1 (0)
Observations	21	25	24	170	54	4	3
R-squared	.525	.461	.56	.068	.225	1	1

Standard errors are in parentheses
*** p<.01, ** p<.05, * p<.1*
Source: Author's Calculations

Model 5

  Models five and six focus on measuring the sources respondents get their political news from rather than their social media use. The association between the frequency respondents use the internet, television, radio, and newspaper to access political news and their affective political polarization are examined in model five. The robust standard errors are used in model five to correct for the presence of heteroscedasticity. A test for multicollinearity amongst independent variables confirms there is no presence of multicollinearity. Results for model five are shown in Table 6. The variables in this regression account for approximately 12.7% of the variance in affective partisan polarization. Several variables are significant at the 95% confidence level and one is significant at the 90% confidence level.

  Results matching hypothesis. Daily internet consumption is significant at a p-value of .05 and coefficient 10.57. Respondents who consume their political news on the internet daily will have an average increase of 10.57 points in affective partisan polarization. This coefficient is relatively large which represents a strong connection with affective partisan polarization and is consistent with the hypothesis which predicts internet is the most polarizing source for political news. Daily consumption of television for political news is the next most polarizing source and is significant at a p-value 0.1. The coefficient for daily television consumption is 10.109 which again represents a strong connection with affective partisan polarization. Radio consumption for political news is significant at a p-value 0.05 for both "few times a week" and "daily". The coefficients for both these variables are negative which means respondents who use the radio to access political news will experience a decrease in affective partisan polarization. Another statistically significant variable in this regression is "some college credit" with a

very high coefficient of 18.369. Respondents with some college credit but have not yet

earned a degree are the most correlated with affective partisan polarization.

Table 6: Model 5 - Linear regression

Affective Partisan Polarization	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age 18-24	8.108	8.272	0.98	.328	-8.175	24.392	
Age 25-34	-2.681	5.732	-0.47	.64	-13.964	8.603	
Age 35-44	-1.004	5.96	-0.17	.866	-12.736	10.729	
Age 55+	.278	9.231	0.03	.976	-17.892	18.448	
Gender Male	-.772	3.583	-0.22	.829	-7.826	6.281	
Gender Prefer not say	-6.155	17.737	-0.35	.729	-41.07	28.76	
Gender Non-binary	16.564	40.579	0.41	.683	-63.315	96.443	
Some college credit	18.369	7.509	2.45	.015	3.587	33.15	**
Associate degree	1.102	6.864	0.16	.873	-12.41	14.614	
Bachelor's degree	-.049	5.436	-0.01	.993	-10.749	10.651	
Master's degree	.417	6.089	0.07	.945	-11.569	12.404	
Professional degree	28.09	18.208	1.54	.124	-7.753	63.932	
Doctorate	1.691	16.217	0.10	.917	-30.233	33.614	
Newspaper – few times a week	-2.936	4.259	-0.69	.491	-11.318	5.447	
Newspaper - daily	-8.174	5.304	-1.54	.124	-18.616	2.267	
Television – few times a week	.326	4.545	0.07	.943	-8.62	9.272	
Television - daily	10.109	5.207	1.94	.053	-.14	20.359	*
Radio – few times a week	-7.897	3.709	-2.13	.034	-15.198	-.596	**
Radio - daily	-9.433	4.679	-2.02	.045	-18.644	-.222	**
Internet - few times a week	4.201	4.289	0.98	.328	-4.243	12.644	
Internet - daily	10.57	4.711	2.24	.026	1.296	19.844	**
Constant	26.401	7.189	3.67	0	12.249	40.554	***

Mean dependent var		30.236	SD dependent var	27.500
R-squared		0.127	Number of obs	301.000
F-test		2.768	Prob > F	0.000
Akaike crit. (AIC)		2851.373	Bayesian crit. (BIC)	2932.929

*** p<.01, ** p<.05, * p<.1
Source: Author's Calculations

Model 6

        Model six examines the same independent variables as model five but uses ideological commitment as the dependent variable. The results show different relationships between the predictor variables and ideological commitment than with affective partisan polarization. Overall, the variables explain 13% of the variance in ideological commitment. Results are shown in Table 7.

        Results not matching hypothesis. The results show that internet consumption for political news is not a significant variable when predicting ideological commitment. Similar to model five, radio consumption for political news is statistically significant at a p-value 0.05 and has a negative coefficient. Several other variables are significant in this model, including daily newspaper consumption for political news which has a positive relationship with ideological commitment. Having a Master or Professional degree are both significant when predicting ideological commitment. "Master's degree" is significant at a p-value 0.05 and has a relatively large coefficient of 0.515. "Professional degree" is only significant at p-value 0.1 but has a large coefficient of 0.911. Finally, "Age 18-24" is significant at a p-value 0.1 and has a coefficient of 0.554.

Table 7: Model 6 - Linear regression

Ideological Commitment	Coef.	St. Err.	t-value	p-value	[95% Conf	Interval]	Sig
Age 18-24	.554	.309	1.79	.074	-.055	1.163	*
Age 25-34	.317	.22	1.44	.151	-.116	.751	
Age 35-44	.183	.228	0.80	.423	-.266	.631	
Age 55+	.513	.315	1.63	.105	-.107	1.133	
Gender Male	-.09	.128	-0.70	.483	-.342	.162	
Gender Prefer not say	-.4	.615	-0.65	.515	-1.611	.81	
Gender Non-binary	-.08	.718	-0.11	.911	-1.493	1.332	
Some college credit	.034	.288	0.12	.906	-.533	.602	
Associate degree	-.464	.298	-1.56	.121	-1.051	.123	
Bachelor's degree	.362	.232	1.56	.12	-.095	.819	
Master's degree	.522	.26	2.01	.046	.01	1.033	**
Professional degree	.911	.541	1.68	.093	-.153	1.976	*
Doctorate	.515	.65	0.79	.428	-.764	1.795	
Newspaper - Few times a week	.124	.162	0.76	.445	-.195	.442	
Newspaper - Daily	.339	.192	1.77	.078	-.038	.717	*
Television - Few times a week	.027	.168	0.16	.872	-.304	.358	
Television - Daily	-.037	.206	-0.18	.86	-.443	.37	
Radio Few times a week	-.074	.146	-0.51	.611	-.363	.214	
Radio - Daily	-.37	.173	-2.14	.033	-.71	-.03	**
Internet – Few times a week	-.097	.19	-0.51	.609	-.471	.277	
Internet - Daily	.269	.199	1.35	.177	-.123	.661	
Constant	.955	.323	2.96	.003	.32	1.591	***

Mean dependent var		1.631	SD dependent var		1.000
R-squared		0.130	Number of obs		301.000
F-test		1.993	Prob > F		0.007
Akaike crit. (AIC)		855.187	Bayesian crit. (BIC)		936.744

*** p<.01, ** p<.05, * p<.1

Source: Author's Calculations

Summary

Overall, the various measures of social media use are significant when predicting affective partisan polarization, most importantly "Times a day". The significant variables are not consistent between predicting affective partisan polarization and ideological commitment. Additionally, the results do not suggest that higher degrees of education result in increased affective partisan polarization nor ideological commitment. However, when breaking down social media use by degrees of education the sample sizes are too small to draw meaningful conclusions. Too small of sample sizes lead to inconsistency in data and large standard errors of coefficients. Model five which examines the sources respondents use for political news shows that the internet is the most polarizing source when predicting affective partisan polarization, but not when it comes to ideological commitment. The next section will discuss the conclusions that are suggestive by the results as well as possible areas for improvement.

Conclusion

The purpose of this study is to fill a gap in existing data on social media use and political polarization. While current literature addresses social media use and political polarization, the relationship between the two is still being evaluated. Due to the lack of evaluation on the effects of college educated Americans and social media, this study analyzes the correlation between education, frequency of social media use, and overall polarization in the United States. A unique survey is issued through Amazon mechanical turk that asks for information regarding demographics, social media use, educational background, and political leanings. The mechanical turk survey is distributed entirely online which automatically prohibits accessing respondents without internet access. Because the respondents have access to the internet it is likely that they are active on some type of social media platform. When examining the effects of social media use on polarization it is useful to sample from people with access to the internet, however, the data used in this study is not useful to examine the differences in polarization between those who have internet access and those who do not.

The first hypothesis is evaluated by using three measures of social media use in order to examine the effects they may have on political polarization. The results of models one and two do not provide substantial evidence to conclude that social media use contributes to affective partisan polarization or ideological commitment. The only significant and positively associated variable with affective partisan polarization is "Times a day". "Political Activity", which measures how politically active a respondent is on social media, is statistically significant but with a negative coefficient when predicting affective partisan polarization. When the same three measures of social media

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use are used to predict ideological commitment, only "Time per day" is significant. The results do not show a consistent or significant relationship between the measures of social media use and the two measures of polarization.

Recent literature on polarization uses evidence of older people becoming more polarized than younger people to suggest that internet use is not the reasoning behind increasing polarization (Kansco, 2020; Boxell et al, 2017). The results from the study done by Kansco show that social media use is more closely associated with polarization than age and that further examination of the effects of social media use should be done using more than just age as a proxy. To contribute to the literature, this study examines the effects of an individual's degree of education on their political polarization. Hypothesis two examines social media use and the dependent variables by breaking down respondent's degree of education. The results do not suggest any clear relationship between higher degrees of education and higher levels of polarization. In fact, none of the three measures of social media use were statistically significant when predicting ideological commitment. Due to small sample sizes, the results also report large standard errors of the coefficients which can represent inconsistency in the data. The sample size for respondents with a Professional and Doctorate degree are too small to draw any accurate or significant conclusions. Further evaluation on the effects of higher education and political polarization should be done with a large enough sample size.

The final hypothesis focuses on measurements of the sources that respondents get their political news from. It is hypothesized that greater internet use will be the most associated with higher levels of affective partisan polarization and ideological commitment. Also included in these models as options for political news is television,

radio, and newspaper. The results of model five support the hypothesis that the internet is most predictive of higher levels of affective partisan polarization compared to other sources for political news. Daily internet use for political news is highly correlated with affective partisan polarization and is statistically significant at a p-value less than 0.05. However, accessing political news on the internet is not statistically significant with ideological commitment. While the hypothesis suggests that accessing political news on the internet is associated with higher levels of political polarization, it could be true that those who are polarized for some other reason are the people who actively use the internet for political news (Kansco, 2020). People who hold extreme enough political opinions may find that the internet is the only source that provides news which aligns with their preferences.

Overall, there is little evidence in this study that supports the claim that social media use and political polarization are significantly correlated. There may be other factors of a respondent's social media use that are overlooked in this study, but at least the amount of time spent on social media itself is not a significant predictor. In addition, there is not significant evidence that higher degrees of education are associated with increased political polarization. The sample size in this study is a limitation when exploring polarization by degree of education because there are only four respondents with a Professional degree and three with a Doctorate degree.

With that being said, there is room for improvement in this study. A larger sample size should be gathered to explore the effects of education on polarization because the small sample size in this study reflects inconsistent data and large standard errors. Also, diagnostic testing of the models proved slightly concerning. The residuals in each of the

models graphically showed some skewness and kurtosis. More careful examination of the data and diagnostic tests may improve the accuracy of the results while maintaining the OLS assumptions.

There is little evidence to conclude that social media use or higher education are significant predictors of political polarization. However, the results of model 5 provide evidence to support that using the internet as a source for political news is associated with higher levels of political polarization. Although the nature or cause of this association are out of the scope of this study, the results bring attention to a connection between an individual's internet use for political activity and their level of affective partisan polarization.

Appendices

Appendix A

1. What is your age?
   a. 18-24
   b. 25-34
   c. 35-44
   d. 45-54
   e. Over 55
2. What is your gender?
   a. Female
   b. Male
   c. Other
   d. Prefer not to say
3. What is the highest degree or level of school you have completed? If currently enrolled, highest degree received.
   a. Highschool graduate, diploma or the equivalent (for example: GED)
   b. Some college credit, no degree
   c. Associate degree
   d. Bachelor's degree
   e. Master's degree
   f. Professional degree
   g. Doctorate degree
4. How prevalent would you say politics were in your education?
   a. Never discussed politics
   b. Sometimes discussed politics
   c. Politics were a big part of my education
5. Where would you place yourself on this scale, or haven't you thought much about this?
   a. Extremely Liberal
   b. Liberal
   c. Slightly Liberal
   d. Moderate; middle of the road
   e. Slightly Conservative
   f. Conservative
   g. Extremely Conservative
   h. Have not thought much about this
6. Generally speaking, which of the following best describes you?
   a. Democrat
   b. Independent
   c. Republican
   d. Other

7. Around what age did you begin using social media sites such as Twitter or Facebook?
    a. 10-13
    b. 14-17
    c. 18-21
    d. 22-25
    e. 26-29
    f. 30-40
    g. 40-50
    h. 50+
    i. Do not use social media sites
8. How many times a day do you look at social media sites such as Twitter or Facebook?
    a. Not everyday
    b. Once a day
    c. 2-5 times a day
    d. 5-10 times a day
    e. 10+ times
9. On an average day, how much time do you spend on social media sites such as Twitter or Facebook?
    a. Less than 30 minutes
    b. 30-60 minutes
    c. 1-2 hours
    d. 2-3 hours
    e. 3+ hours
10. How interested are you in politics?
    a. Very interested
    b. Somewhat interested
    c. Not very interested
    d. Not at all interested
11. How often do you…
    a. Read political content in a newspaper?
        i. Daily
        ii. A few times a week
        iii. A few times a month
        iv. A few times a year
        v. Never
    b. Watch political news on television?
        i. Daily
        ii. A few times a week
        iii. A few times a month
        iv. A few times a year
        v. Never
    c. Listen to political news on the radio?

        i.   Daily

       ii.   A few times a week

      iii.   A few times a month

      iv.   A few times a year

       v.   Never

    d. Use the internet to access political news?

        i.   Daily

       ii.   A few times a week

      iii.   A few times a month

      iv.   A few times a year

       v.   Never

12. Which type of media is most important to you for accessing political information?

    a. Newspaper

    b. Television

    c. Radio

    d. Internet

    e. Other

13. Do you use social networking sites to…

    a. Follows one or more online news sources?

        i.   Yes

       ii.   No

    b. Follow any politicians or political parties?

        i.   Yes

       ii.   No

    c. See what your friends think about political issues?

        i.   Yes

       ii.   No

    d. Join groups for more information about political issues?

        i.   Yes

       ii.   No

14. How would you rate your feelings of the Democratic party, on a scale of 0-100? 0 being very unfavorable, 50 being neither unfavorable nor favorable, and 100 being very favorable.

15. How would you rate your feelings of the Republican party, on a scale of 0-100? 0 being very unfavorable, 50 being neither unfavorable nor favorable, and 100 being very favorable.
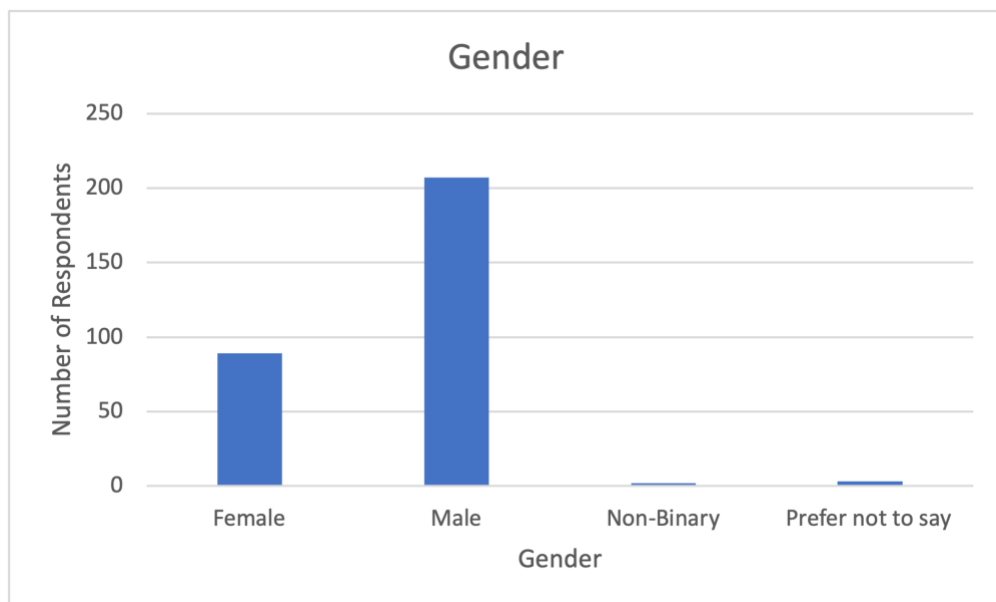
Appendix B

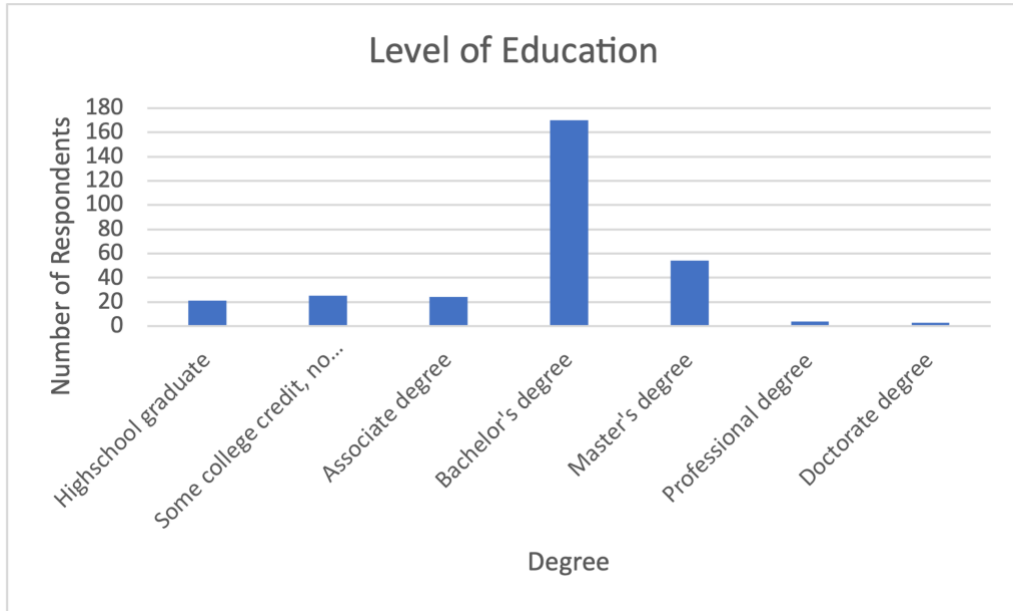*Figure 6.1* Bar Graph the Age of Respondents
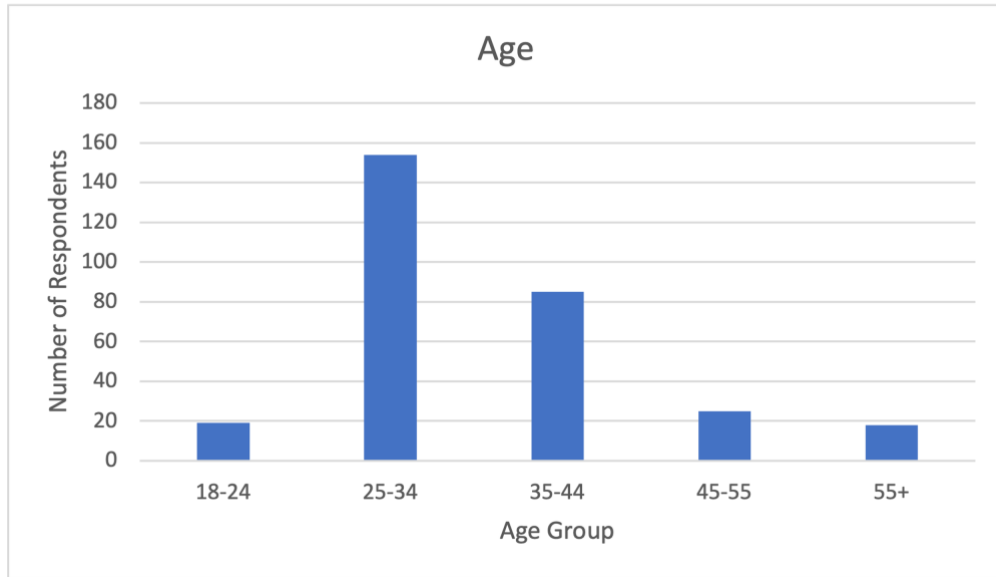
Source: Author's Calculations
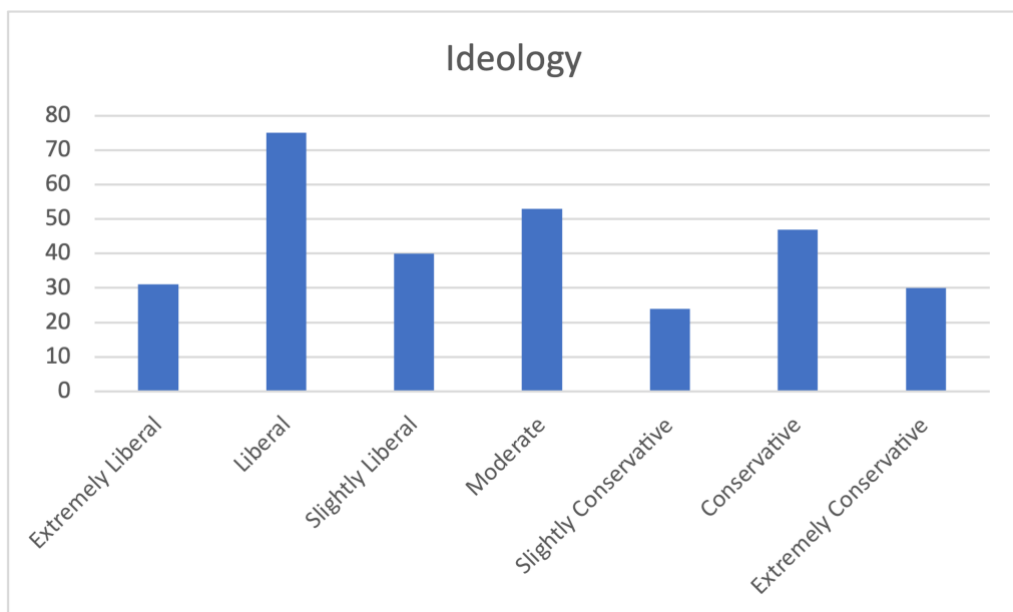
Figure 6.2 Bar Graph of the Gender of Respondents

Source: Author's Calculations

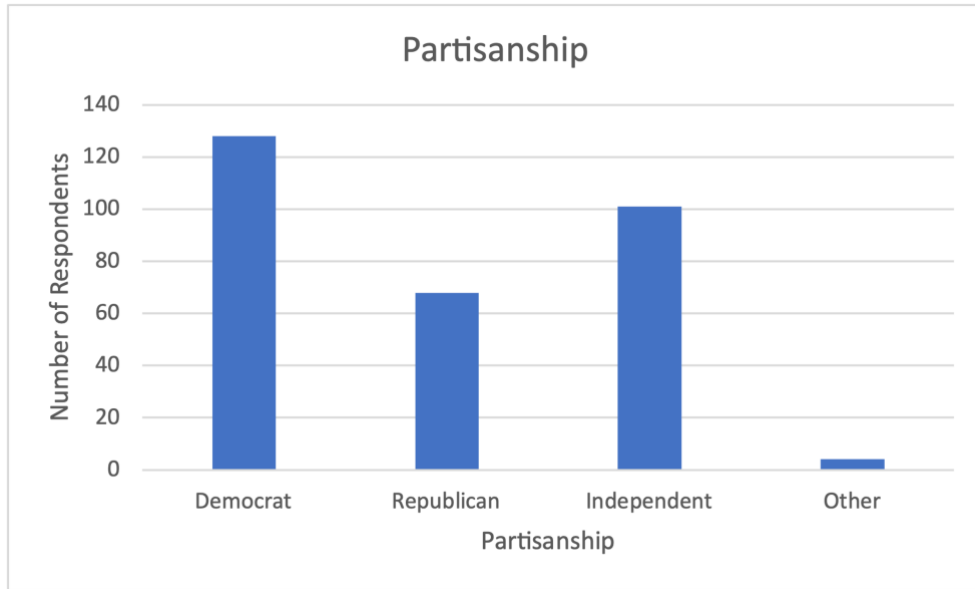*Figure 6.3* Bar Graph of the Level of Education of Respondents

Level of Education

Source: Author's Calculations

Figure 6.4 Bar Graph of the Ideology of Respondents

Ideology

Source: Author's Calculations

Figure 6.5 Bar Graph of the Partisanship of Respondents

Source: Author's Calculations

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