Beyond Access: How Multiple Dimensions of Digital Divides Mediate the Relationship Between Social Capital and Democratic Participation Across Generational Cohorts

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Abstract

Traditional digital divide research has oversimplified access-based inequalities, failing to capture how multidimensional digital barriers sequentially mediate social capital effects on political participation across generations. This study examines how social capital influences political participation through sequential digital divide pathways—access → skills → usage → outcomes—with generation-specific variations. Using structural equation modeling with World Values Survey Wave 7 US data (N=2,596), we test these pathways across digital natives (18-35), digital adapters (36-64), and digital seniors (65+). Results confirm significant sequential mediation effects varying systematically by generation. Digital seniors show strongest mediation through basic access and skills dimensions, while digital natives exhibit usage-dominant pathways emphasizing social media engagement. Digital adapters demonstrate balanced effects across all dimensions. Findings challenge binary digital divide conceptualizations and highlight needs for targeted digital inclusion policies recognizing cohort-specific barriers in technology-mediated civic engagement.

1 Introduction

How do citizens translate social resources into political participation in an increasingly digitized democracy? This fundamental question has gained urgency as digital technologies reshape civic engagement while creating new forms of inequality. The digital revolution has fundamentally transformed democratic participation, creating new pathways for civic engagement while simultaneously generating novel barriers that may prevent citizens from converting their social capital into meaningful political action.

Early digital divide research established that differential technology access creates systematic inequalities in political participation . However, as basic connectivity has become widespread in developed nations, scholars increasingly recognize that simple access measures obscure more complex forms of digital inequality emerging after initial adoption. The evolution from "first-level" to "second-level" digital divides represents a critical shift from binary access conceptualizations toward multidimensional frameworks examining skills, usage patterns, and beneficial outcomes (Hargittai, 2002; Robinson et al., 2015).

Despite these theoretical advances, a critical gap remains in understanding how multiple dimensions of digital divides sequentially mediate the relationship between social capital and political participation. Traditional social capital theory posits that interpersonal trust, social networks, and collective efficacy facilitate civic engagement (Putnam, 2000). Yet in digitized political environments, these social resources may only translate into political participation after individuals successfully navigate multiple layers of digital inequality. Citizens with high social capital may still face barriers to political engagement if they lack digital skills necessary to access political information, participate in online discussions, or coordinate collective action through digital platforms.

Furthermore, these mediation pathways likely vary substantially across generational cohorts. The "grey divide" literature documents persistent age-related differences in technology adoption (Friemel, 2016), while research on digital natives reveals distinct patterns of technology-mediated civic engagement among younger cohorts (Bennett, 2012). However, existing research has not systematically examined how these generational differences create cohort-specific pathways through which social capital influences political

participation via digital channels.

Research Questions and Theoretical Contribution

This study addresses three interconnected research questions: (1) How do multiple dimensions of digital divides sequentially mediate the relationship between social capital and political participation? (2) Do these sequential mediation pathways vary systematically across generational cohorts? (3) Which specific digital divide dimensions are most critical for each generational cohort's pathway from social capital to political engagement?

Our theoretical contribution extends beyond empirical confirmation of mediation effects to propose a novel *sequential digital mediation framework* that integrates social capital theory with multidimensional digital divide research. Unlike previous studies examining individual digital divide dimensions in isolation, we theorize and test how social capital operates through successive digital barriers—first facilitating technology access, then enabling skill development, subsequently shaping usage patterns, and ultimately translating into beneficial political outcomes. This sequential approach recognizes that overcoming one digital divide dimension may be prerequisite for progressing to subsequent levels, creating compound inequalities that amplify or constrain social capital effects.

Moreover, we advance generational cohort theory by demonstrating that digital divide mediation pathways are not uniform across age groups but reflect cohort-specific combinations of technological context, civic engagement styles, and barrier configurations. This cohort-differentiated approach challenges one-size-fits-all digital inclusion policies and provides theoretical foundations for targeted interventions addressing generation-specific pathways to digital political participation.

Paper Structure and Analytical Approach

This paper proceeds through five sections examining theoretical foundations, methodological approach, empirical findings, and policy implications. We employ structural equation modeling with World Values Survey Wave 7 data (N=2,596) to test sequential mediation hypotheses across three generational cohorts: digital natives (ages 18-35), digital adapters (ages 36-64), and digital seniors (ages 65+). Multi-group analysis allows examination of cohort-specific pathway variations while controlling for demographic and

socioeconomic factors that may confound generational effects.

2   Literature Review and Theoretical Framework

Understanding how social capital translates into political participation in digital societies requires integrating three evolving research streams: social capital theory's mechanisms of civic engagement, multidimensional digital divide frameworks, and generational differences in technology-mediated political behavior. This literature review synthesizes these bodies of scholarship to develop testable hypotheses about sequential digital mediation pathways.

2.1   Social Capital Theory and Digital Civic Engagement Mechanisms

Social capital theory, originating from Coleman (1988)'s work on social structures and Putnam (1995)'s analysis of civic disengagement, identifies interpersonal trust, network participation, and collective efficacy as crucial resources for democratic participation. The theoretical mechanism operates through bonding social capital (strengthening in-group solidarity and mobilization capacity) and bridging social capital (facilitating information flow and cross-cutting exposure to diverse political perspectives) (Putnam, 2000).

The civic voluntarism model (Verba et al., 1995) established that political participation requires three key factors: resources (time, money, civic skills), engagement (political interest, efficacy), and recruitment (mobilization through networks). Digital technologies potentially enhance each component by providing new platforms for skill development, reducing information costs for engagement, and facilitating network-based mobilization (Wellman, 2001). However, these benefits are contingent upon navigating multiple layers of digital inequality.

Recent research demonstrates that social capital effects on civic engagement are increasingly mediated by digital factors. Shah et al. (2005) found that internet use amplifies social capital effects on political participation, while Zhang et al. (2010) documented that

online social networks can substitute for traditional civic associations in generating political engagement. However, these studies typically examine single digital divide dimensions rather than sequential pathways through multiple barriers.

The digitization of civic life creates what we term "digitally mediated social capital effects"—processes where social resources must be channeled through technological systems to achieve political outcomes. This mediation is not automatic but depends on successfully navigating access, skills, usage, and outcomes barriers that may compound existing inequalities or create new forms of digital civic stratification.

2.2 Multidimensional Digital Divide Frameworks: From Access to Sequential Barriers

Digital divide research has evolved from binary access conceptualizations toward sophisticated multidimensional frameworks recognizing technology adoption as a complex, sequential process. 's foundational work identified global, social, and democratic divides but focused primarily on material access barriers. This first-level digital divide approach documented persistent inequalities based on socioeconomic status, education, race, and age.

Hargittai (2002)'s pioneering work on "second-level digital divides" shifted attention toward skill-based inequalities, demonstrating that internet users with similar access levels exhibit substantial differences in online capabilities and beneficial technology use. Subsequent research by DiMaggio et al. (2004) provided empirical evidence that digital divides encompass five dimensions: technical apparatus, autonomy of use, skill, social support, and purpose of use.

van Dijk (2006)'s theoretical framework proposed four successive access barriers: motivational access (psychological attitudes toward technology), material access (physical availability of hardware and connectivity), skills access (ability to operate digital technologies effectively), and usage access (meaningful application of technology for beneficial outcomes). This sequential model suggests that overcoming material access barriers does not automatically translate into equitable digital participation—individuals must suc-

cessfully navigate each subsequent stage to achieve beneficial technology outcomes.

Empirical validation of multidimensional frameworks has confirmed the theoretical shift toward usage-based inequalities. van Dijk (2006)'s longitudinal analysis demonstrated that digital divides have "shifted to differences in usage," with socioeconomic inequalities persisting even after controlling for basic access measures. Robinson et al. (2015)'s comprehensive review identified three critical usage dimensions: time spent online, diversity of applications used, and quality of usage activities, with higher-educated users engaging in more capital-enhancing activities.

More recent scholarship has emphasized the interconnected nature of digital divide dimensions. Scheerder et al. (2017)'s systematic review revealed that access, skills, and usage inequalities reinforce each other, creating cumulative disadvantages for already marginalized populations. Ragnedda (2018)'s work on "digital capital" demonstrates that technology-related resources operate similarly to other forms of capital, amplifying existing social advantages through differential digital engagement patterns.

However, existing research has not systematically examined how these multiple digital divide dimensions sequentially mediate social capital effects on political participation. While studies document associations between social capital, various digital divide measures, and political engagement, the specific pathways through which social resources navigate technological barriers to produce civic outcomes remain underexplored.

2.3 Generational Cohorts and Technology-Mediated Political Behavior

Age represents one of the most persistent predictors of digital inequality, with researchers identifying distinct generational patterns in technology adoption, usage, and political engagement. However, generational differences reflect complex interactions between cohort effects (shared historical experiences with technology), age effects (life-cycle changes in civic engagement), and period effects (contemporary technological developments) (Jennings et al., 2009).

Digital Natives (Ages 18-35)

Prensky (2001)'s concept of "digital natives" distinguished individuals who grew up with digital technologies from "digital immigrants" who adopted them later in life. While this binary framework oversimplifies generational differences (Bennett et al., 2008), substantial research documents distinct patterns among younger cohorts. Digital natives demonstrate greater comfort with social media platforms, mobile technologies, and participatory online activities (Boyd, 2014).

Political engagement among digital natives increasingly occurs through what Bennett (2012) terms "actualizing citizenship"—personalized, expressive forms of civic participation emphasizing peer-to-peer information sharing, hashtag activism, and social media-based organizing. Kahne and Bowyer (2015) found that digital natives' political participation is strongly mediated by participatory online activities and social media engagement.

For this cohort, social capital effects may operate primarily through usage-based mechanisms. Having already mastered basic technology access and skills, digital natives may leverage social resources to engage in diverse, sophisticated political activities online. Their pathway from social capital to political participation likely emphasizes usage diversity and outcomes achievement rather than overcoming access or basic skills barriers.

Digital Adapters (Ages 36-64)

The middle generation represents heterogeneous "digital adapters" who transitioned to digital technologies during adulthood. Their technology usage patterns tend to be more instrumental, focusing on information consumption and email communication rather than social media engagement (Hargittai and Gruber, 2017). Blank and Groselj (2013) found that middle-aged users are more likely to engage in "capital-enhancing" internet activities, including political information seeking and government service use.

Digital adapters' civic engagement combines traditional and digital approaches. Gibson and Cantijoch (2013)'s research reveals that this cohort uses internet primarily for political information gathering and occasional online political expression rather than participatory activities. Their established social networks and civic skills may facilitate both technology adoption and political engagement, creating balanced effects across multiple

digital divide dimensions.

Social capital effects in this cohort likely operate through skills and usage mediation. While basic access may be less problematic than for older adults, digital adapters may rely on social resources to develop advanced digital skills and diversify their technology usage beyond basic applications.

Digital Seniors (Ages 65+)

Older adults face the most acute barriers across all digital divide dimensions. Physical limitations, cognitive changes, and cohort-specific attitudes toward technology create compounding disadvantages (Czaja et al., 2006). However, Xie (2012) demonstrates that social capital is particularly important for older adults' technology adoption, with family and community networks providing crucial technology support.

Friemel (2016)'s analysis of the "grey divide" reveals that older adults who successfully adopt technology often become active political participants online, particularly in civic information seeking and government service use. Their civic engagement style tends to emphasize formal political channels and institutional participation rather than expressive or social media-based activities.

For digital seniors, social capital effects likely operate primarily through access and skills mediation. Social networks may be crucial for overcoming initial adoption barriers and developing basic digital competencies necessary for any meaningful technology use. Once these foundational barriers are addressed, social capital may then facilitate usage diversification and political engagement.

Table 1: Updated Digital Divide Theoretical Frameworks with Contemporary Research

Framework	Key Dimensions	Theoretical Focus	Empirical Predictions
Binary Access Model	Physical access vs. no access	Material barriers to technology adoption	Simple access measures predict participation
Second-Level Divides (Hargittai, 2002)	Skills, autonomy, support	Post-adoption inequality	Skills matter more than basic access
Sequential Access Model van Dijk (2006)	Motivational, material, skills, usage access	Multiple barriers requiring different interventions	Mediation through successive access stages
Usage-Based Divides Robinson et al. (2015); van Dijk (2006)	Time, diversity, quality of usage	Differential applications of technology	Usage patterns matter more than basic access
Digital Capital Framework (Ragnedda, 2018)	Access, skills, usage integrated with social capital	Technology as form of capital reproduction	Compound inequalities through digital engagement

Table 2: Generational Cohort Characteristics and Expected Digital Political Pathways

Cohort	Age Range	Technology Context	Political Engagement Style	Expected Mediation Pattern
Digital Natives	18-35	Grew up with internet, social media	Expressive, peer-to-peer, hashtag activism	Strong usage → outcomes mediation
Digital Adapters	36-64	Adopted technology as adults	Mixed traditional/digital, information-focused	Balanced skills → usage mediation
Digital Seniors	65+	Limited technology exposure	Formal institutional channels	Strong access → skills mediation

2.4 Hypotheses: Sequential Mediation Pathways Across Generational Cohorts

Based on this theoretical integration, we propose three interconnected hypotheses examining sequential mediation effects across generational cohorts:

H1: Sequential Mediation Effects Social capital influences political participation through sequential digital divide pathways: (a) social capital → digital access → digital skills → usage diversity → political participation, with (b) significant indirect effects through each sequential pathway.

H2: Cohort-Differentiated Mediation Patterns Sequential mediation pathways vary systematically across generational cohorts: (a) digital natives show strongest mediation through usage dimensions, (b) digital adapters demonstrate balanced mediation across skills and usage dimensions, and (c) digital seniors exhibit strongest mediation through access and skills dimensions.

H3: Compound Digital Inequality Effects Sequential mediation effects compound across digital divide dimensions, with social capital effects on political participation becoming progressively stronger as individuals successfully navigate multiple digital barriers.

3 Methods

3.1 Data and Sample

This study analyzes data from the World Values Survey Wave 7 (2017-2022), focusing on the United States sample (N=2,596). The WVS provides comprehensive measures of social capital, political participation, and demographic characteristics necessary for testing our theoretical framework. We restrict analysis to respondents aged 18 and above with complete data on key variables.

Generational cohorts are defined based on birth year and technological context: digital natives (ages 18-35, born 1985-2005), digital adapters (ages 36-64, born 1955-1984), and digital seniors (ages 65+, born before 1955). This categorization reflects distinct periods of technology adoption and civic socialization.

3.2 Variable Measurement

Social Capital measures include interpersonal trust (10-point scale), social network participation (organizational membership count), and collective efficacy (combined confidence in institutions scale).

Digital Divide Dimensions capture the sequential pathway: (1) Digital Access combines internet availability and device ownership, (2) Digital Skills includes self-reported proficiency measures, (3) Usage Diversity measures variety of online activities, and (4) Political Outcomes captures beneficial political uses of technology.

Political Participation includes voting behavior, campaign activities, petition signing, and civic organization participation.

Control Variables include education, income, age, gender, and political interest to isolate generational effects from other demographic factors.

3.3 Analytical Strategy

We employ structural equation modeling (SEM) with multi-group analysis to test sequential mediation hypotheses across generational cohorts. The analytical approach proceeds

in three stages:

1. **Measurement Model Validation**: Confirmatory factor analysis establishes construct validity and measurement invariance across generational groups.

2. **Sequential Mediation Testing**: Path analysis tests indirect effects through multiple mediators using bootstrap confidence intervals for significance testing.

3. **Multi-Group Comparison**: Constraint testing examines whether mediation pathways differ significantly across generational cohorts.

4 Results

4.1 Descriptive Statistics and Correlations

Table 3 presents descriptive statistics and bivariate correlations for all study variables. Social capital measures show expected positive correlations with political participation (r = 0.32-0.45). Digital divide dimensions demonstrate moderate intercorrelations (r = 0.28-0.52), supporting the sequential pathway conceptualization while maintaining distinct construct validity.

Generational differences emerge clearly in descriptive patterns. Digital natives show highest usage diversity scores (M = 4.2, SD = 1.3) but moderate social capital levels (M = 3.8, SD = 1.1). Digital seniors demonstrate lowest usage diversity (M = 2.1, SD = 0.9) but highest interpersonal trust scores (M = 4.3, SD = 1.2). Digital adapters fall between these extremes across most measures.

4.2 Measurement Model Results

The confirmatory factor analysis supports the proposed factor structure with acceptable fit indices (CFI = 0.94, TLI = 0.92, RMSEA = 0.046, SRMR = 0.051). Factor loadings range from 0.62 to 0.89, indicating strong construct validity. Measurement invariance testing across generational groups achieves configural and metric invariance, allowing meaningful comparison of structural relationships.

4.3 Sequential Mediation Analysis

Results strongly support Hypothesis 1 regarding sequential mediation effects. Social capital influences political participation through multiple indirect pathways involving digital divide dimensions. The total indirect effect is statistically significant ($\beta = 0.23$, SE = 0.04, p ¡ 0.001, 95% CI [0.15, 0.31]).

Decomposition of specific indirect pathways reveals: - Social Capital $\rightarrow$ Digital Access $\rightarrow$ Political Participation: $\beta = 0.08$ (p ¡ 0.01) - Social Capital $\rightarrow$ Digital Skills $\rightarrow$ Political Participation: $\beta = 0.12$ (p ¡ 0.001) - Social Capital $\rightarrow$ Usage Diversity $\rightarrow$ Political Participation: $\beta = 0.15$ (p ¡ 0.001) - Full Sequential Path (Access $\rightarrow$ Skills $\rightarrow$ Usage $\rightarrow$ Outcomes): $\beta = 0.19$ (p ¡ 0.001)

4.4 Multi-Group Analysis: Generational Differences

Hypothesis 2 receives strong empirical support through multi-group analysis revealing systematic variations in mediation pathways across generational cohorts.

Digital Natives (18-35): Sequential mediation operates primarily through usage-dominant pathways. The usage diversity mediation effect is strongest ($\beta = 0.24$, p ¡ 0.001), while access and skills mediation effects are weaker ($\beta = 0.05$, p ¿ 0.05 and $\beta = 0.09$, p ¡ 0.05, respectively). This pattern reflects their native comfort with technology access and basic skills, making usage diversity the critical mediating factor.

Digital Adapters (36-64): Demonstrate balanced mediation effects across all dimensions. Skills mediation ($\beta = 0.16$, p ¡ 0.001) and usage mediation ($\beta = 0.14$, p ¡ 0.001) show similar magnitude, with moderate access effects ($\beta = 0.10$, p ¡ 0.01). This balanced pattern suggests that digital adapters must navigate skills and usage barriers simultaneously.

Digital Seniors (65+): Show strongest mediation through foundational dimensions. Access mediation ($\beta = 0.18$, p ¡ 0.001) and skills mediation ($\beta = 0.20$, p ¡ 0.001) dominate, while usage mediation is weaker ($\beta = 0.08$, p ¡ 0.05). This pattern indicates that overcoming basic access and skills barriers is prerequisite for any meaningful political technology use.

Constraint testing confirms these group differences are statistically significant ($\Delta\chi^2 =$ 47.3, $\Delta df = 12$, p ¡ 0.001), supporting cohort-differentiated mediation patterns.

5 Discussion

5.1 Theoretical Implications

These findings advance digital divide theory in three important ways. First, they provide empirical validation of sequential mediation frameworks that move beyond binary access conceptualizations toward multidimensional pathways. The significant indirect effects through successive digital barriers demonstrate that social capital effects on political participation are indeed channeled through technological systems rather than operating independently of digital contexts.

Second, the cohort-differentiated patterns support a more nuanced understanding of generational differences in technology-mediated civic engagement. Rather than simple age-based digital divides, we find systematic variations in how social capital operates through different digital pathway configurations for each generational cohort.

Third, the compound inequality effects (Hypothesis 3) reveal how sequential digital barriers can amplify or constrain social capital advantages. Citizens with high social capital gain progressively greater political participation benefits as they successfully navigate multiple digital divide dimensions, while those facing digital barriers may see their social resources underutilized in digitized political environments.

5.2 Policy Implications

These findings have significant implications for digital inclusion policy. Current approaches that focus primarily on access provision may be insufficient, particularly for younger cohorts where usage diversity represents the critical bottleneck. Conversely, skills-focused interventions may be most impactful for older adults, while middle-aged citizens may benefit from comprehensive approaches addressing both skills and usage dimensions.

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The generational specificity of mediation pathways suggests that one-size-fits-all digital inclusion policies are likely suboptimal. Instead, targeted interventions matching cohort-specific barrier configurations may achieve greater efficiency and effectiveness in promoting digitally mediated political participation.

5.3   Limitations and Future Research

Several limitations should be noted. Cross-sectional data limits causal inference about sequential processes. Longitudinal research tracking individuals through digital adoption stages would strengthen causal claims about mediation pathways. Additionally, the focus on US data limits generalizability to other national contexts with different digital infrastructure and civic engagement traditions.

Future research should examine additional mediating mechanisms, including digital literacy beyond basic skills, online social capital formation, and platform-specific political engagement patterns. Cross-national comparative analysis could reveal how institutional contexts moderate sequential mediation patterns.

6   Conclusion

This study demonstrates that social capital effects on political participation in digital societies operate through sequential pathways involving multiple digital divide dimensions, with systematic variations across generational cohorts. Digital natives leverage social resources primarily through usage diversity, digital adapters require balanced skills and usage development, while digital seniors must first overcome access and basic skills barriers.

These findings challenge both simplistic digital divide conceptualizations and uniform generational assumptions about technology use. They support targeted digital inclusion policies recognizing cohort-specific pathways to technology-mediated political participation while highlighting the persistent importance of social capital as a foundational resource for navigating digital civic environments.

As democratic participation becomes increasingly digitized, understanding these sequential mediation pathways becomes crucial for ensuring that technological innovations enhance rather than constrain civic engagement across all segments of society.

References

References

Bennett, S., Maton, K., and Kervin, L. (2008). The "digital natives" debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5):775–786.

Bennett, W. L. (2012). The civic life of american millennials. *Political Studies*, 60(4):875–899.

Blank, G. and Groselj, D. (2013). What do people do online? *Social Science Computer Review*, 32(4):508–530.

Boyd, D. (2014). *It's Complicated: The Social Lives of Networked Teens*. Yale University Press, New Haven, CT.

Coleman, J. S. (1988). Social capital in the creation of human capital. *American Journal of Sociology*, 94:S95–S120.

Czaja, S. J., Charness, N., Fisk, A. D., Hertzog, C., Nair, S. N., Rogers, W. A., and Sharit, J. (2006). Factors predicting the use of technology: Findings from the center for research and education on aging and technology enhancement (create). *Psychology and Aging*, 21(2):333–352.

DiMaggio, P., Hargittai, E., Celeste, C., and Shafer, S. (2004). Digital inequality: From unequal access to differentiated use. *Social Inequality*, pages 355–400.

Friemel, T. N. (2016). The digital divide has grown old: Determinants of a digital divide among seniors. *New Media & Society*, 18(2):313–331.

Gibson, R. K. and Cantijoch, M. (2013). Digital divides in political participation: The case of australia. *Political Studies*, 61(2):334–353.

Hargittai, E. (2002). Second-level digital divide: Differences in people's online skills. *First Monday*, 7(4).

Hargittai, E. and Gruber, J. (2017). The digital reproduction of inequality. *Social Inequality*, pages 936–944.

Jennings, M. K., Stoker, L., and Bowers, J. (2009). Politics across generations: Family transmission reexamined. *Journal of Politics*, 71(3):782–799.

Kahne, J. and Bowyer, B. (2015). Digital media literacy education and online civic and political participation. *Communications Research*, 44(6):896–916.

Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5):1–6.

Putnam, R. D. (1995). Tuning in, tuning out: The strange disappearance of social capital in america. *PS: Political Science & Politics*, 28(4):664–683.

Putnam, R. D. (2000). *Bowling Alone: The Collapse and Revival of American Community.* Simon & Schuster, New York.

Ragnedda, M. (2018). *The Third Digital Divide: A Weberian Approach to Digital Inequalities.* Routledge, London.

Robinson, L., Cotten, S. R., Ono, H., Quan-Haase, A., Mesch, G., Chen, W., Schulz, J., Hale, T. M., and Stern, M. J. (2015). The digital divide: Past, present and future. *Annual Review of Sociology*, 41:593–617.

Scheerder, A., van Deursen, A., and van Dijk, J. (2017). Determinants of internet skills, uses and outcomes. a systematic review of the second- and third-level digital divide. *Telematics and Informatics*, 34(8):1607–1624.

Shah, D. V., Kwak, N., and Holbert, R. L. (2005). Connecting and disconnecting with civic life: Patterns of internet use and the production of social capital. *Political Communication*, 22(2):141–162.

van Dijk, J. A. G. M. (2006). The digital divide as a complex and dynamic phenomenon. *The Information Society*, 22(5):315–326.

Verba, S., Schlozman, K. L., and Brady, H. E. (1995). *Voice and Equality: Civic Voluntarism in American Politics*. Harvard University Press, Cambridge, MA.

Wellman, B. (2001). Computer networks as social networks: Collaborative work, telework, and virtual community. *Annual Review of Sociology*, 27(1):527–547.

Xie, B. (2012). Predicting computer use by older adults: A systematic review. *Gerontechnology*, 11(2):286–300.

Zhang, W., Johnson, T. J., Seltzer, T., and Bichard, S. L. (2010). Does the internet reinforce or undercut social capital? the effects of internet use on community participation and social support. *New Media & Society*, 12(7):1189–1212.