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Disrupting echo chambers? How social media is related to social tolerance through network diversity: linked lives over a major life course event

Keith N. Hampton[a] and Kelley Cotter [b]

[a]Department of Media and Information, Michigan State University, East Lansing, MI, USA; [b]College of Information Sciences and Technology, The Pennsylvania State University, University Park, PA, USA

ABSTRACT

Existing echo chamber studies tend to focus on political attitudes within specific online platforms. We broaden this scope by examining social media use and attitudes within a real-world context that resembles an echo chamber: rural areas characterized by low racial/ethnic diversity and low social tolerance. Rural environments often lack conditions conducive to higher social tolerance due to limited cross-group interaction and lower formal education. However, the rural-to-university transition, a major life course event, typically leads to expanded social circles and increased tolerance for young adults who leave, while leaving tolerance unchanged in rural communities. This is attributed to the university experience, which fosters social mixing and education, coupled with reduced contact with former ties from the rural community. We hypothesize that social media alters these traditional trajectories. Using survey data from five cohorts of student-parent pairs, we investigate how shared use of social media platforms relates to network composition and social tolerance. We find that shared social media use constrains network diversity and tolerance among white university students, while conversely expanding ties to people of color and increasing social tolerance for their parents remaining in rural areas. These results offer new insights into the complex relationship between social media and the composition of personal networks, demonstrating how social media can both disrupt and reinforce echo chambers by linking lives across the life course.

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Introduction

Much of the existing research on echo chambers focuses on the study of how online platforms, particularly around partisan issues, contribute to political polarization (Barberá, 2020). These findings are often overgeneralized to suggest that social media constrains

CONTACT Keith N. Hampton khampton@msu.edu Department of Media and Information, Michigan State University, 404 Wilson Road, Room 409, East Lansing, MI 48824, USA

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people's broader networks, attitudes, and opinions. This interpretation overlooks the well-established idea that the composition of our personal networks, maintained both on and offline, plays a more crucial role in shaping attitudes than algorithms or fleeting interactions within media platforms (Katz & Lazarsfeld, 1955; Robertson et al., 2023).

To better understand how social media contributes to echo chambers, we must analyze the makeup of individuals' personal networks. This study expands the scope of echo chamber research by examining social media use and attitudes within networks centered in rural areas. These communities often have limited racial and ethnic network diversity and lower levels of social tolerance, mirroring the characteristics of an echo chamber. How might social media use affect the composition of people's networks in this context?

While personal networks typically evolve gradually, significant life transitions, like moving, marriage, or divorce, can trigger rapid shifts in their composition. We focus on the rural-to-university transition, a common experience for young, rural adults seeking post-secondary education. By analyzing how social media use during this transition relates to connections with racially and ethnically diverse individuals and overall social tolerance, we explore how digital platforms might strengthen or weaken echo chambers and influence attitudes linked to network diversity (Allport, 1954). We are particularly interested in how the persistence of some social ties during this transition, through shared social media platforms, might affect the network composition of those that remain in these communities.

Our research integrates egocentric network methods into the study of social media and echo chambers, recognizing the impact of major life events on network composition (Hampton & Chen, 2021; Marsden, 2018). The rural-urban transition has long been a central theme in sociology (Simmel, 1922 [1955]; Weber, 1958), with a key distinction lying in the composition of social networks. Rural residents tend to have more racially and ethnically homogeneous networks, while urban dwellers' networks are typically more diverse (Fischer, 1982). This difference has been linked to variations in attitudes, opinions, and political behavior, including levels of tolerance towards others (Allport, 1954). Historically, the rural-to-university transition has been associated with increased network diversity and greater social tolerance (Cote & Erickson, 2009). However, the internet and social media may have altered this dynamic by allowing individuals to maintain relationships despite geographic distance, fostering 'linked lives' (Hampton, 2016a). These interconnected networks, evolving together and exerting mutual influence (D. Carr, 2018), can either constrain or expand network diversity, which can, in turn, influence attitudes and behaviors.

This study compared five cohorts of student-parent pairs at different stages of the rural-to-university transition. We surveyed personal network diversity, social media use, and social tolerance. Our findings show that students with more education had more diverse networks and higher tolerance. Frequent social media use was also linked to more connections with people of color and greater tolerance. However, shared use of social media platforms by parent–child ties introduced a more complex relationship. While young adults typically expand their networks during this transition, shared social media use with parents appeared to constrain network diversity and tolerance. Conversely, for parents staying in rural areas, shared social media use contributed to contact with diverse groups and boosted tolerance. We discuss these findings in relation to mechanisms like relational persistence, boundary spanning, and structural balance, exploring how social media might disrupt or reinforce echo chambers within personal networks and rural communities.

Literature review

Tolerance

Tolerance is about respecting and accepting the rights of all individuals to fully participate in society, even when their beliefs or backgrounds differ from one's own. While previous research on social media has primarily focused on political tolerance – how people respond to differing political ideologies within their networks (Barberá, 2020) – this study examines social tolerance.

Unlike political tolerance, which centers on political beliefs and behaviors, or moral tolerance, which relates to private beliefs and behaviors (e.g., sexual preference), social tolerance concerns characteristics assigned at birth, such as race, ethnicity, and language (Vogt, 1997). We are particularly interested in social tolerance of the white majority in rural areas of the U.S. towards people of color, identifiable by differences in skin color, language, ethnicity, and national origin.

Social tolerance is a cornerstone of democratic societies and is linked to various positive outcomes. Societies with higher levels of social tolerance experience less conflict (van Doorn, 2014), more frequent helping behaviors (Hampton, 2016b), lower crime rates, and a better quality of life (Stebbins, 1988). Furthermore, tolerant individuals report greater life satisfaction (Crowley & Walsh, 2021).

Rural (in)tolerance

To understand how social tolerance might change in rural areas, we draw on established theories explaining variations in tolerance. Rural areas in the U.S. often exhibit higher levels of intolerance compared to urban and suburban populations (Tuch, 1987), making them ideal for observing shifts in the factors that contribute to intolerance.

The *contact hypothesis* posits that interacting with diverse individuals under conditions of equal status, cooperation, and shared goals, can increase social tolerance (Allport, 1954). While friendships with diverse individuals can foster tolerance (Pettigrew, 1998), simply having strong ties with people from different backgrounds may not effectively cultivate tolerance. A rare strong tie with someone from another group may be perceived as an exception rather than representative of the group as a whole, limiting its impact on broader attitudes (Putnam, 2000).

Rural areas often lack the conditions conducive to higher social tolerance. Limited racial and ethnic diversity, fewer opportunities for cross-group interaction, and a social structure emphasizing close kinship ties (Fischer, 1982) can all hinder its development. The contact hypothesis suggests that the composition of our networks directly predicts our levels of tolerance. In this context, low network diversity creates an echo chamber due to limited social mixing. Like living in a homogeneous rural area, if social media use constrains exposure to diverse relationships, lower social tolerance is the likely outcome.

The *learning hypothesis* proposes that tolerance can be fostered through education that instills tolerant values or through general intellectual growth and expanded cognitive skills (Vogt, 1997). Education can promote cultural knowledge, potentially weakening the influence of intolerant community and family values (Peri, 1999). Even passive media consumption (broadcast and internet) has been linked to increased cultural

knowledge (Chen, 2015). However, rural areas often face barriers to both formal education and diverse media, due to factors like geographic isolation, limited socioeconomic resources, and lower educational expectations within families (Byun et al., 2012).

Linked lives and major life events

While rural areas often have lower levels of tolerance, major life course transitions, such as moving away for university, can increase social mixing and education, leading to greater tolerance. These major life events disrupt existing social networks, altering old connections and fostering new ones.

The life course perspective helps us understand how relationships evolve in response to these changes (Elder, 1994). Network scholars use this perspective to understand how individuals form and dissolve ties throughout their lives and to identify the factors that influence network composition during transitions (Marsden, 2018; Vacchiano et al., 2024). We use this perspective to investigate how social media shapes networks during the transition from rural areas to university.

For rural students, going to university often involves moving away from home and having less contact with their existing social ties (Kirkpatrick Johnson et al., 2005). However, the university environment offers opportunities for learning and diverse interactions, fostering new connections and greater social tolerance. In the past, limited contact with rural communities after this transition meant that newfound knowledge and network diversity didn't substantially influence tolerance back home (P. Carr & Kefalas, 2009).

However, social media may be changing this dynamic. If, as Hampton (2016a) suggests, social media allows for both the *persistence of existing relationships* and *increased awareness of social ties*, it could reshape the networks of both those who leave and those who stay. This could either reinforce existing ties and limit exposure to new perspectives, or it could expose individuals to new people and new ideas.

Shared social media and linked lives

A key concept within the life course perspective is 'linked lives', which emphasizes how attitudes and values are transmitted across generations, and how children's attitudes may converge or diverge from their parents' (D. Carr, 2018). Digital media, especially social media, can help maintain connections during major life events, extended the influence of linked lives (Hampton, 2016a).

Using the same social media platforms – *shared social media use* – facilitates 'vicarious involvement' in others' experiences through posts and images, potentially leading to shared perspectives (Leonardi, 2018). This increased awareness has been linked to shared knowledge of political issues (Hampton et al., 2017), shared experiences of psychological distress (Hampton, 2019), and awareness of major life events in others' lives (Shin & Hampton, 2021).

Previous research shows shared social media use can change the structure of organizational networks (Leonardi, 2018). Similarly, social media-enabled awareness and the persistence of linked lives may facilitate changes in the composition of personal networks. Two key processes may be at play:

- *Boundary spanning*: Social media might increase the prevalence of 'boundary spanners' by connecting people across different life stages. These individuals bridge distinct social circles characterized by structural or cultural differences (Burt, 1992). During transitions like moving to university, persistent ties to people back home can act as bridges between the homogeneous rural community and the more diverse university environment. As Simmel (1922 [1955]) noted, this bridging can create competing pressures on individuals due to the differing norms and values across social circle (Pescosolido & Rubin, 2000), potentially leading to changes in attitudes.
- *Network Balance*: Conversely, the persistence of social ties through social media might encourage 'network balance'. Balance theory suggests that people seek structural (and cognitive) consistency within their networks (Heider, 1958), meaning new ties are formed or avoided based on existing relationships. A strong, persistent connection, such as that between parent and child, could hinder the formation of new ties during a major life event like moving, limiting network diversity and attitudinal change.

While pinpointing the precise mechanism is beyond the scope of this paper, the social media induced persistence and awareness of ties during major life events likely has a significant impact on network structure and composition. Importantly, the contact hypothesis suggests that changes in network composition, especially increased connections with people of color, can strongly influence social tolerance (Allport, 1954).

Networks not platforms

The common narrative surrounding social media emphasizes its potential to create echo chambers, limiting exposure to diverse viewpoints and hindering tolerance. However, this generalization mainly stems from research focused on political polarization only within specific platforms (Barberá, 2020).

While there's a long tradition of studying echo chambers in personal networks related to political discussion (Eveland & Appiah, 2021), research on social media's role in echo chambers hasn't focused on personal networks or types of tolerance beyond the political. This oversight neglects the well-established finding that media's direct impact on attitudes is limited without considering interactions within personal networks (Katz & Lazarsfeld, 1955). The composition of our personal networks, particularly the lack of diversity (homophily), significantly shapes our attitudes and opinions (McPherson et al., 2001).

Therefore, to understand echo chambers in the context of social media, we need to examine broader personal networks, not just interactions on platforms (Hampton & Chen, 2021). While some studies have linked social media use to increased network diversity, particularly in terms of socioeconomic status (Chen, 2013; Hampton et al., 2011), they haven't directly investigated how this affects attitudes. Given the established link between social tolerance and network composition (Allport, 1954), exploring attitudes towards diverse groups within this framework can offer valuable insights into the relationship between social media and echo chambers.

Social media and tolerance

Research on the link between internet use and social tolerance is limited. Robinson et al. (2002) found that early U.S. internet users expressed slightly higher tolerance towards people of color but attributed this to pre-existing differences rather than internet use itself. Lu and Yu (2020) found contrasting trends: countries with higher internet use had lower national tolerance levels, yet individual users within those countries displayed higher tolerance. Seebruck (2013) provides evidence that higher tolerance among internet users may not be solely due to selection bias, finding that Japanese Internet users were more likely to have a foreign friend and had higher levels of tolerance toward foreigners.

Building on this research, we study social media use within peoples' personal networks, focusing on how social media may link lives across the life course. We use a life course perspective, a case study of student-parent pairs during the rural-to-university transition – a period of significant network change. This transition allows us to observe changes within networks that initially have lower diversity and tolerance, resembling the characteristics of an echo chamber.

Following Allport (1954), we conceptualize network diversity as having connections to people of different races and ethnicities, and social tolerance as having accepting attitudes towards them (see Appendix A in the online supplementary materials for alternative definitions and measures). Based on previous work, we hypothesize (Figure 1):

H1. Rural students with more years of university education will have greater personal network diversity.

H2. Higher network diversity will be associated with higher social tolerance.

H3. Individuals remaining in rural areas (parents in our sample) will have lower network diversity.

H4. Frequent social media use will be associated with higher network diversity.

We also examine the role of shared social media platform use between existing ties, parents and children, during the rural-to-university transition, expecting both limiting and expanding effects due to the ways these platforms help maintain relationships and increase awareness of others' lives:

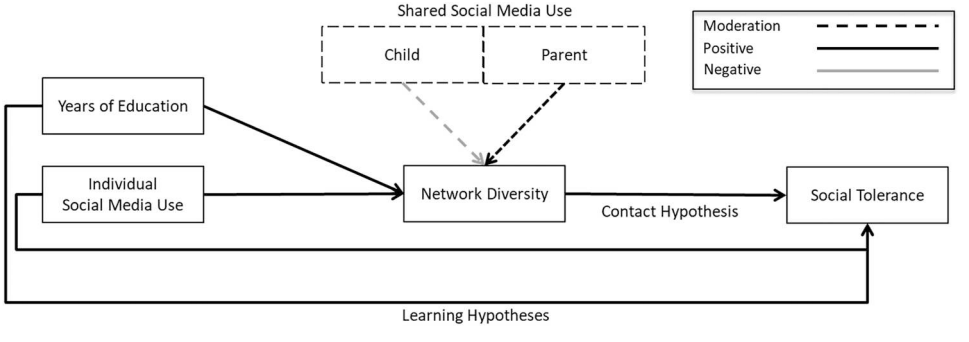

Figure 1. Social media use and social tolerance over the rural-to-university transition.

H5. Shared social media use between rural students and existing ties (parents) will limit the diversity and social tolerance of students' networks.

H6. Conversely, shared social media use will be associated with more diverse networks and higher social tolerance for those (parents) remaining in rural areas.

Method

Case study

Young people transitioning from rural areas to universities can be a challenging population to identify (Stuber, 2011). To overcome this, we utilized a case study approach focused on the networks of students enrolled at one large, public, Midwestern university with a mandatory two-year on-campus housing requirement, ensuring their relocation to an urban setting. We identified rural students based on their zip code at the time of application, using the USDA's (2019) definition of less than 250 households per square mile (2.59 sq km). To eliminate potential confounding due to intergenerational influence of education on social mixing and tolerance, the sample was restricted to first-generation students (neither parent had completed post-secondary education). The university registrar identified 3081 eligible students.

Eligible students were invited to participate in a web-based survey hosted on Qualtrics (April 2018; with an additional invitation in August 2018 for incoming students) and incentivized with a $10 gift card. To ensure confidentiality, an internal university unit managed all communication and survey administration. After completing the survey, students provided contact information for one parent, who was invited to participate in a parallel survey. Recognizing potential limitations in home internet access, we offered parents the choice between online and paper surveys. We expect minimal response bias from variation in administration (Stern et al., 2014), and only a small number of parents opted for the paper version.

The student response rate was 32%, and the parental response rate reached 51%, resulting in a total of 501 student-parent pairs. These response rates are consistent with averages for online surveys of post-secondary students (M. Wu et al., 2022) and exceed thresholds where nonresponse bias is typically a concern (Fosnacht et al., 2017).

Focusing on majority group attitudes towards racial and ethnic minorities, we restricted our analysis to 439 white, non-Hispanic US citizen parent–child pairs (878 participants). The sample included five cohorts representing different stages of the rural-to-university transition, from new high school graduates (cohort 0) to those nearing graduation (cohort 4). Our sample mirrored prior research findings regarding gender and political ideology in this population (Gimpel & Reeves, 2024; USDA, 2022), with a majority identifying as females (71% of students, 77% of parents) and a disproportionate right-of-center leaning (43% of parents and 33% of students).[1]

Measures

We measured social tolerance using a revised Bogardus Social Distance Scale (Bogardus, 1933; Parrillo & Donoghue, 2005), a validated measure of tolerance towards diverse

groups, including those based on race and ethnicity (Raden, 1998). Participants were asked, 'We would like to know your feelings towards certain groups of people. Think of each group as a whole, and not the best or the worst member(s) that you have encountered'. They were presented a list of thirty racial, ethnic, and religious groups (e.g., Canadians, Jamaicans, Jews, etc.) and indicated their level of acceptance on a 7-point scale ranging from 'exclude from the United States' (6) to 'would marry' (0). Our analysis focuses on a subset of thirteen groups representing people of color relative to white Americans. Higher social distance score indicates lower social tolerance ($M = 1.55$, SD = 1.51).[2]

We assessed network diversity using a variation on the personal network resource generator (van der Gaag & Snijders, 2005). Participants indicated 'whether or not you have a personal relationship with someone' from each of the groups taken from the social distance scale ($M = 3.89$, SD = 3.19).[3]

Individual social media use was assessed by asking participants to indicate their use of six popular platforms (Facebook, Twitter, Instagram, Snapchat, LinkedIn, Pinterest) using a 7-point Likert scale (0 = never to 6 = several times a day). The platform with the highest reported usage served as an indicator of overall social media engagement ($M = 5.23$, SD = 1.55).

We calculated a shared use score for each parent–child pair based on the number of social media platforms they both used ($M = 2.21$, SD = 1.48). (For a detailed explanation of the shared use measurement and alternative measures, please refer to the online supplementary materials, Appendix B).

Analysis

We used a multilevel path model using Mplus v.8.9 and maximum likelihood estimation to analyze the nested data structure of our student-parent pairs. This approach is appropriate due to the interdependence within families. We modeled student cohort year, shared social media use, and the interaction between year and shared social media on the intercept, and as a random slope differentiating the parent/child on network diversity. Previous research indicates that gender and political ideology may confound the relationship between network diversity and tolerance, with men having more diverse networks, more conservative individuals reporting lower tolerance, and children tending to be less conservative than their parents (Cote & Erickson, 2009). To address these potential issues, we controled for several factors in our model:

- *Parent status* was included as a predictor for political ideology.
- *Gender* was used as a predictor of political ideology and network diversity.
- *Political ideology* was considered at both individual and contextual (between-level) levels as predictors of social distance.
- *Parental education* was controlled as a proxy for family socioeconomic status and a potential confounder, as two-thirds of parents reported some formal post-secondary training, although not completion of a university degree (range 0–4 years, $M = 1.26$, SD = 0.97).

Findings

Network diversity and education

Our findings confirm the expectation (H1) that students with more university experience have more diverse networks, specifically in terms of connections with people of color. As detailed in Table 1, rural, white, female students who were not social media users and were just beginning university (cohort 0) reported knowing an average of 1.91 individuals from different racial/ethnic backgrounds. Male students reported significantly more diverse networks, averaging almost one (0.95) more connection ($p < 0.001$). Each additional year at university was associated with having connections to 0.42 more racial/ethnic groups ($p < 0.01$). This means that graduating seniors (cohort 4) tended to have social networks that included 1.68 more racial/ethnic groups than incoming students.

Students entering university had networks that were generally less diverse than their parents, with parents reporting an average of 0.64 more ties to people of color. As we hypothesized (H3), parents who did not experience the transition to university had less diverse networks than their children who had been at university longer. However, we found an unexpected trend: a significant negative association between the length of time children spent at university and the racial/ethnic diversity of their parents' networks (−0.93, $p < 0.001$). In other words, the longer children had been in university, the fewer connections their parents had with people of color – on average, 0.51 fewer ties per year. This diverging trend in parent–child racial/ethnic network diversity is shown in Figure 2.[4]

Social media and network diversity

As we hypothesized (H4), using social media frequently is linked to more connections with people of color. Compared to frequent users (those using social media several

Table 1. Multi-level path model, predicting social distance through ties to people of color.

	Conservative	People of color	Social distance
Within-level (individual)			
Intercept	4.01***	Between intercept	0.66**
Parent	1.09***	parent-slope	0.53***
Female	−0.50**	−0.95***	
Social media frequency (0-6)		0.16*	
Conservative (0-9)			0.11**
Ties to people of color (0-13)			−0.07***
Between-level			
Intercept		2.85***	
Student education (0-4)		0.42**	
Shared social media (0-6)		0.36*	
Shared social media * student edu		−0.15**	
Parent (slope)			
Intercept		0.64**	
Parent education (0-4)		0.56***	
Student education (0-4)		−0.93***	
Shared social media (0-6)		−0.34***	
Shared social media * student edu		0.24***	
Conservative context (intercept)			0.16**
Within-level R2	0.08	0.06	0.12
Between-level R2	n/a	0.26	0.09

Unstandardized coefficients. ***$p < 0.001$, **$p < 0.01$, *$p < 0.05$.

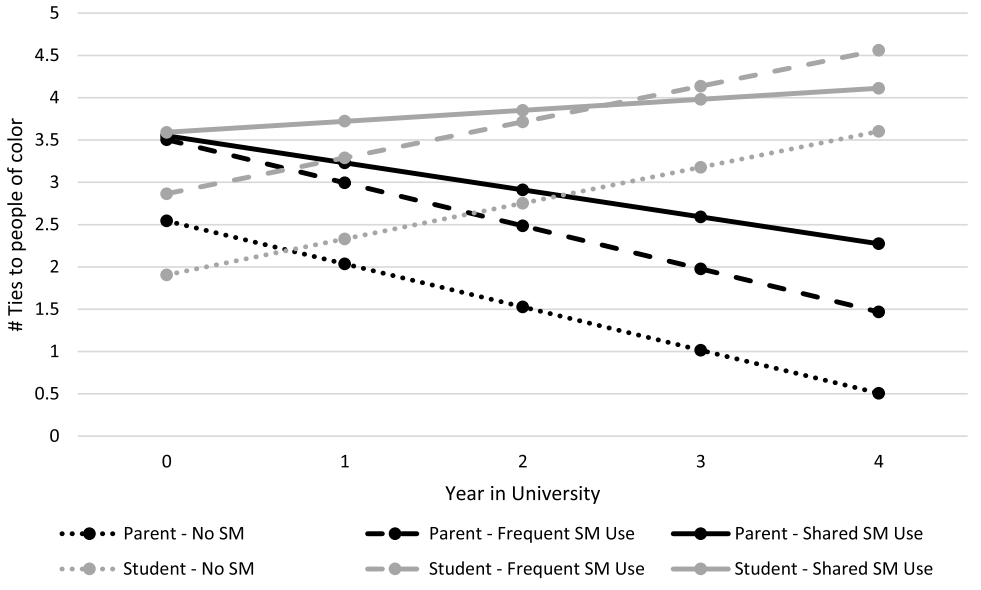

Figure 2. Social ties to people of color by year student in post-secondary education.

times a day), individuals who don't use social media report an average of about one (0.96) fewer connections to people from different racial/ethnic groups (0.16, $p < 0.05$). This relationship is shown by dashed lines in Figure 2, indicating that both rural parents and their children who use social media tend to have more racially and ethnically diverse networks.

Our findings also support our hypotheses (H5/H6) about the contrasting ways that shared social media use (0.36, $p < 0.05$) affects the network diversity of students and parents (parent slope: −0.34, $p < 0.001$) during the rural-to-university transition (intercept: −0.15, $p < 0.01$; parent slope: 0.24, $p < 0.001$).

As shown in Figure 2 (solid line), there is no substantive difference in network diversity before university between parents who frequently use social media and those who also share platforms with their children. However, before starting university, children who shared platforms with a parent reported greater network diversity than other incoming students. The average number of ties to different racial/ethnic groups in these students' networks (3.6 ties, assuming they share two platforms with a parent) was similar to that of parents who frequently used social media and/or shared platforms with their children. Sharing social media platforms with parents before the transition to university appears to give students greater access or awareness of the diversity within their parents' networks. This early exposure increases the diversity of young adults' personal networks even before they leave for university.

However, this pattern changes after the transition begins. As Figure 2 illustrates, parents who share social media platforms with their children report more connections with people of color compared to parents who don't share platforms or don't use social media (H6). For instance, after one year of university, parents sharing two platforms with their child have, on average, 0.24 more connections to people in diverse racial/ethnic groups than those who frequently use social media but don't share platforms (and

1.20 more connections than non-users). By the fourth year, this difference widens to 0.81 more ties than social media users not sharing platforms (and 1.77 more than non-users).

In contrast, students who shared social media platforms with a parent during their university years have less diverse networks, on average, compared to students who use social media but do not share platforms (H5). While students sharing platforms with a parent initially have more diverse networks (0.43 *more ties* to diverse groups than students who don't share platforms, and 1.39 more than non-users), this reverses by the end of the fourth year. At that point, they have an average 0.45 *fewer ties* to people of color compared to other social media users, though still 0.51 more than non-users.

Social tolerance

Supporting the contact hypothesis (H2), our findings reveal a significant, direct, and positive relationship between social tolerance towards racial/ethnic minorities and the number of ties to people of color (-0.07, $p < 0.001$). For each standard deviation increase in diverse ties (approximately 3 different racial/ethnic groups) social distance scores decrease by 0.22, indicating greater social tolerance.

Our findings also support the learning hypothesis, but only when conceptualized as an indirect relationship through network diversity.[5] On average, graduating seniors reported having 1.70 more ties to people of color compared to incoming students (assuming no social media use), which was associated with 0.12 lower social distance (higher tolerance).

As we hypothesized (H4), we also find a possible indirect relationship between frequent social media use and social tolerance. Individuals who use social media more reported lower social distance because they had more connections with people of color. The difference in social distance scores between those who never use social media and those who use it several times a day is approximately 0.07.

Shared social media use and social tolerance

Consistent with our hypotheses (H5/H6), Figure 3 shows the contrasting ways that shared social media use relates to social distance for parents and students throughout their university years. Students entering university who share social media platforms with a parent show greater social tolerance (lower social distance) compared to those who don't share platforms or those who don't use social media (a 0.12 difference on the social distance scale relative to non-users). However, as students spend more time at university, this initial boost diminishes relative to other students. The difference in social distance scores between entering and graduating students was 0.12 for both frequent social media users and non-users. In contrast, for those sharing social media with a parent, the difference was only 0.04.

Third and fourth year students who shared platforms with parents report slightly lower tolerance (higher social distance) than peers who use social media without having shared platforms with a parent. Graduating students who share social media platforms with a parent have an average 0.45 fewer ties to racial/ethnic groups, resulting in social distance scores that are a modest 0.03 higher than students who do not share platforms. Shared social media use may initially foster tolerance by exposing students to their

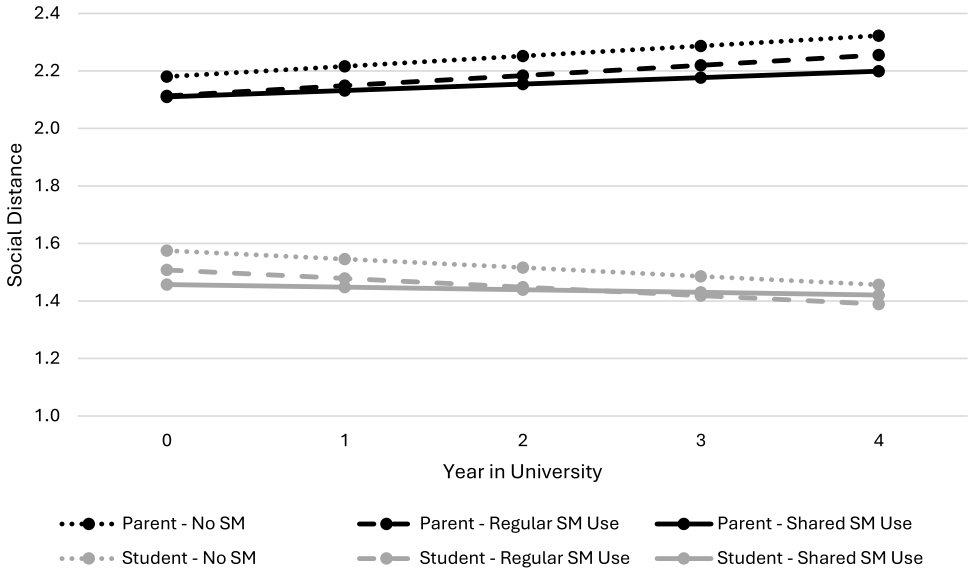

Figure 3. Social distance in relation to ties to people of color by year student in post-secondary.

parents' diverse networks, but ultimately limits the development of social tolerance as students' networks become constrained in additional diversity over time.

As students' progress through university, their parents tend to report fewer ties to people of color, leading to lower social tolerance. While parents who share social media platforms with their children initially show similar tolerance levels to other parents who use social media, a gap emerges over time. Specifically, relative to their peers, parents of graduating seniors who share social media platforms with their children report higher tolerance (lower social distance scores) compared to both other social media users (0.06 gap) and non-users (0.12 gap). Thus, shared social media use partially counteracts the decline in racial and ethnic diversity and social tolerance observed in parents as their children progress through university.

Discussion

This study offers a new perspective on echo chambers. We go beyond simply analyzing interactions on online platforms and explore how social media use is intertwined with personal network composition and attitudes. Specifically, we examine how sharing social media platforms influences network diversity and social tolerance in parent–child pairs during a major life course event, young adults transitioning from rural areas to university. This approach allows us to investigate the complex relationship between social media, network composition, and attitudes in a real-world setting of social change.

Our findings support the contact hypothesis. Students who spent more time at university had more racially and ethnically diverse networks, which led to greater social tolerance. Frequently using social media was directly associated with more diverse networks and greater tolerance. Students who shared social media platforms with a parent reported more diverse networks and higher tolerance when entering university, likely because they

had higher exposure or awareness of diversity within their parents' networks. However, this advantage diminished over time. In later years, students who frequently used social media but didn't share platforms with their parents had more connections to people of color and greater tolerance. This suggests that sharing social media with parents might limit changes in both network composition and tolerance for rural students attending university.

In the past, when young people moved away to university, the people they left behind in their rural communities generally did not experience increases in racial/ethnic network diversity or social tolerance. However, our results suggest a different outcome for rural parents who share social media platforms with their children. These parents showed greater diversity and tolerance compared to other rural parents experiencing the same transition. This implies that shared social media use during this transition provides a unique window into their children's changing social circles, allowing parents to form new connections and potentially break down existing echo chambers.

Persistent and pervasive networks

Historically, echo chambers formed wherever homogeneous social bonds clustered (Hampton & Wellman, 2021). Industrialization, urbanization, and technology eroded these closed networks, leading to networks that are 'less densely knit, less local, less tightly bounded, more diverse, and more fragmented' (p. 289). However, our findings suggest that social media, by linking lives across the life course, might increase embeddedness across personal networks. Paradoxically, this can both limit and expand network heterogeneity.

We proposed several mechanisms to explain how shared social media use might influence network composition during major life events like the rural-to-university transition. Social media fosters relationship persistence and awareness of network resources, linking lives and altering how individuals encode and recall network members (Hampton, 2016a). Ties maintained through social media during major transitions can act as boundary spanners between networks. In our study, this bridging occurs between relatively homogeneous rural networks and the more diverse networks formed through post-secondary education. This, along with the tendency for balance within social networks (Heider, 1958), might explain why students who shared social media with parents had more diverse networks before university. By seeing their parents' connections on social media, they may incorporate those people into their own networks. Maintaining structural balance in networks during transitions involves adopting new and letting go of old ties. While not all triadic relationships achieve balance, awareness of their children's networks on social media might encourage parents to adopt some of their children's new connections, while persistent parental networks might hinder students from forming some new ties.

Rural networks and social tolerance

Our findings suggest that when social media links lives during major life course events, it can change the composition of networks. In our study, there is evidence that young people who left rural areas for university, but retained an important tie through social

media had less diverse networks and lower social tolerance than some of their peers. Given that we focus only on one tie (to a parent), these effects might be considerably stronger if we were to consider that social media allows people to maintain connections with other family and friends. While we don't know the effects of this wider network dynamic, we anticipate a modest long-term impact on young peoples' social tolerance, becuase of other social forces. Few students return to rural communities after university (P. Carr & Kefalas, 2009). Most will stay in cities, which foster social tolerance through additional social mixing. As higher education helps advance them into the middle-class, they will likely feel less competition with people of color for jobs and other resources, further increasing tolerance (Cote & Erickson, 2009).

However, the impact on rural areas could be more significant. Our findings suggest that when young people leave for university, their parents' networks gradually become less racially and ethnically diverse. This might be because parents experience their own life transition ('empty nest') when their children leave home. This often leads to changes in priorities and in daily activities. In rural areas, childcare centers and schools may be network hubs where parents regularly encounter people of color (Cox et al., 2021; Small, 2009). As parents become less involved with these institutions, they might have fewer routine interactions with people of color. There may also be a preference for maintaining ties that have more homophily along dimensions of race or ethnicity. While social media use, particularly sharing platforms with their children, seems to partially offset this decline, at first glance, it would appear to be a modest boost that is inadequate to prevent a looming precipice for intolerance once children leave.

However, while racial and ethnic diversity may decrease in the networks of rural parents over time, this is not the case for other types of diversity. Our supplemental analysis (see online supplementary material, Appendix A) supports previous research (McDonald & Mair, 2010) that finds that occupational diversity and ties to the middle class continue to increase over time (e.g., due to routine commercial and professional interactions with doctors, lawyers, etc.). Consistent with Cote and Erickson (2009), we find that this type of socioeconomic diversity within networks is also linked to higher social tolerance. In contrast to previous studies (Chen, 2013; Hampton et al., 2011), we did not find that frequent social media use, or shared social media use, increased or moderated this type of diversity. Therefore, the decline in parents' *overall network diversity* might not be as severe as suggested by our initial findings. In fact, for those parents who use social media, especially those who share platforms with children who have left for university, the boost in connections to people of color might be sufficient to increase tolerance over time.

Our study focused on the relationship between one parent and one child who left for university. We don't know how shared media use might affect other relationships during this transition. However, if the effects are similar, these dynamics could have broader implications for network structures. A combination of heterogeneous bridging between different social groups and local balancing within personal networks could reduce polarization and spread tolerance with a local community (Srinivasan, 2011; Y. Wu et al., 2023). Thus, shared social media use during major life events can disrupt echo chambers, a conclusion that contrasts sharply with research that focuses on interactions within social media platforms alone. Yet, in our example, the potential long-term impact of such a trend is limited by the low and decreasing enrollment of rural students in universities (National Student Clearinghouse, 2024).

Limitations

Our analysis has some limitations that we have been asked to address. First, it relies on cross-sectional data, we compared different individuals across cohorts instead of following the same participants over time. While this design was more practical than following a group of students over five years, it limits our ability to establish causality. It's possible that there is some reverse causation, such as intolerant individuals actively avoiding diverse groups (Pettigrew, 1998). We also did not have a control group to study the networks of young people who did not leave. Therefore, our interpretation of findings related to changes over time should be taken with caution.

Second, this is a case study focused on one major life event at one university, and as such we cannot make clear claims about generalizability. Indeed, most echo chamber research uses a case study approach, although usually limited in focus to one social media platform, rather than a specific contexts. We cannot attest to how well our sample represents the broader population of rural students transitioning to university. However, the experience of the rural-to-university transition is expected to be relatively consistent across rural areas (Cote & Erickson, 2009). Nevertheless, our sample, drawn from a Midwestern university with relatively low racial/ethnic diversity, may underestimate the potential impact of diverse social contact on observed relationships. Stronger effects might be found at universities with greater diversity. The overrepresentation of women in our sample, which reflects the larger trend of young women being more likely to leave rural areas for higher education (USDA, 2022), and the prominent role of mothers in support networks (Wellman & Wortley, 1990), may mask important gender differences that need further investigation.

Third, measuring social tolerance inherently raises concerns about social desirability bias, where people may provide responses they believe are more acceptable rather than their true beliefs. While we attempted to minimize this by ensuring participant confidentiality and keeping researchers blind to their identities, it is possible that responses on our tolerance measure were somewhat muted. However, we believe social desirability bias is less of a concern in our measure of network composition. Therefore, while our findings regarding intolerance might be conservative, we don't anticipate any systematic bias that would do more than underestimate the strength of the relationships in our model. It's also worth noting that the political climate during data collection (middle of the first Trump presidency) might have actually encouraged more open expression of intolerant views (Bursztyn et al., 2020).

Fourth, as with any survey research, our study may not have captured all the factors that could influence the relationships we observed, potentially contributing to omitted-variable bias. Network analysis typically focuses on structure, largely ignoring the role of individual agency. Personality traits like introversion and extroversion, often viewed as superfluous in network scholarship, could affect both social media use and network diversity. Additionally, unobserved factors like variation in social support (which is connected to network composition) might influence rural student graduation rates, potentially introducing a sampling bias into our findings.

Finally, our focus on shared social media platform adoption and our survey methodology limited our ability to analyze the specific content exchanged between parents and children and how different platforms might influence awareness or network composition.

Additionally, our measure of shared social media use, as detailed in Appendix B of the online supplementary material, has limitations that may over or underestimate contact as a result of shared social media. While further investigation of these factors could help identify specific mechanisms related to network diversity and tolerance, we suspect that the ways social media fosters these outcomes vary significantly across individuals and the life course, making traditional approaches to differentiating media use challenging (Hampton & Chen, 2021).

We also explored an alternative hypothesis related to conservative ideology. Some argue that universities diminishe conservative values and increase acceptance of people of different races, ethnicities, and nationalities through 'liberal indoctrination', or simply by 'learning about diversity'. While we couldn't directly assess curriculum or students' majors, we conducted an ad hoc analysis to see if longer university attendance correlated with lower conservatism. Our findings confirm that students and families with more conservative views tend to be less tolerant (Table 1). However, we found no evidence that rural students become less conservative with more years of university education. In other words, our results do not suggest that universities necessarily instill liberal ideology in conservative rural students, and that this accounts for higher social tolerance.

Notes

1. Political ideology was measured on a 10-point scale (recoded 0-9); 1 being 'left' and 10 being 'right'. The modal response for both students (19%) and parents (36%) was the center of the scale ($M = 4.14$, $SD = 2.39$).
2. The thirteen groups included Dominicans, Japanese, Africans, Koreans, Mexicans, Filipinos, Indians (from India), Chinese, Haitians, Vietnamese, African Americans, Jamaicans, and Arabs.
3. We expect the phrase 'personal relationship' captures ties of varying strength, as opposed to 'close relationship,' which would bias towards strong ties, or 'know anyone,' which might include interactions that didn't develop into ties (Lin & Dumin, 1986).
4. Figures 2 and 3 are based on female, mean political ideology, parent education of high school or less, use of social media multiple times per day, and two shared social media platforms.
5. For multilevel models with random slopes, confidence intervals are not available for indirect relationships, preventing formal testing of their significance. An ad hoc analysis revealed no direct path between frequency of social media use and social distance. As such, there is more uncertainty about the statistical significance of the indirect relationships. Where the coefficients for the individual direct paths making up that effect are all significant, such as between network diversity and social distance, a significant indirect effect likely exists (Leth-Steensen & Gallitto, 2016).

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Notes on contributors

Keith N. Hampton, PhD, is a professor in the Department of Media and Information and Interim Director of the Quello Center for Telecommunication Management and Law at Michigan State University. Hampton is a network scholar who studies community, with a focus on digital media and social inequality. His research investigates the connections between digital access and disparities in areas such as gender, education, and well-being.

Kelley Cotter, PhD, is an assistant professor in the College of Information Sciences and Technology at The Pennsylvania State University. Her research explores how data-centric technologies shape social, cultural, and political life, and vice versa. She received her PhD in information and media from Michigan State University and a master's degree in library and information science from Drexel University.

ORCID

Kelley Cotter http://orcid.org/0000-0003-1243-0131

References

Allport, G. (1954). *The nature of prejudice*. Addison-Wesley.

Barberá, P. (2020). Social media, echo chambers, and political polarization. In J. A. Tucker, & N. Persily (Eds.), *Social media and democracy* (pp. 34–55). Cambridge.

Bogardus, E. (1933). A social distance scale. *Sociology & Social Research*, *17*, 265–271.

Bursztyn, L., Egorov, G., & Fiorin, S. (2020). From extreme to mainstream: The erosion of social norms. *American Economic Review*, *110*(11), 3522–3548. https://doi.org/10.1257/aer.20171175

Burt, R. (1992). *Structural holes*. University of Chicago.

Byun, S., Meece, J., & Irvin, M. (2012). Rural-nonrural disparities in postsecondary educational attainment revisited. *American Educational Research Journal*, *49*(3), 412–437. https://doi.org/10.3102/0002831211416344

Carr, D. (2018). The linked lives principle in life course studies. In D. F. Alwin, D. H. Felmlee, & D. A. Kreager (Eds.), *Social networks and the life course* (pp. 41–63). Springer.

Carr, P., & Kefalas, M. (2009). *Hollowing out the middle*. Beacon.

Chen, W. (2013). Internet use, online communication, and ties in Americans' networks. *Social Science Computer Review*, *31*(4), 404–423. https://doi.org/10.1177/0894439313480345

Chen, W. (2015). Mediatizing the network model of cultural capital: Network diversity, media use, and cultural knowledge along and across ethnic boundaries. *Social Networks*, *40*, 185–196. https://doi.org/10.1016/j.socnet.2014.10.003

Cote, R., & Erickson, B. (2009). Untangling the roots of tolerance. *American Behavioral Scientist*, *52*(12), 1664–1689. https://doi.org/10.1177/0002764209331532

Cox, A., Steinbugler, A., & Quinn, R. (2021). It's who you know (and who you are): social capital in a school-based parent network. *Sociology of Education*, *94*(4), 253–270. https://doi.org/10.1177/00380407211029655

Crowley, F., & Walsh, E. (2021). Tolerance, social capital, and life satisfaction: A multilevel model from transition countries in the European union. *Review of Social Economy*, *82*(1), 1–28. https://doi.org/10.1080/00346764.2021.1957994

Elder, G. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, *57*(1), 4–15. https://doi.org/10.2307/2786971

Eveland, W., & Appiah, O. (2021). A national conversation about race? Political discussion across lines of racial and partisan difference. *Ethnicity, and Politics*, *6*(1), 187–213. https://doi.org/10.1017/rep.2019.36

Fischer, C. (1982). *To dwell among friends*. University of California.

Fosnacht, K., Sarraf, S., Howe, E., & Peck, L. (2017). How important are high response rates for college surveys? *The Review of Higher Education*, *40*(2), 245–265. https://doi.org/10.1353/rhe.2017.0003

Gimpel, J. G., & Reeves, A. (2024). The urban-rural divide and residential contentment as antecedents of political ideology. *Cities*, *146*, 104720. https://doi.org/10.1016/j.cities.2023.104720

Hampton, K. (2016a). Persistent and pervasive community. *American Behavioral Scientist*, *60*(1), 101–124. https://doi.org/10.1177/0002764215601714

Hampton, K. (2016b). Why is helping behavior declining in the United States but not in Canada?: Ethnic diversity, new technologies, and other explanations *City & Community*, *15*(4), 380–399. https://doi.org/10.1111/cico.12206

Hampton, K. (2019). Social media and change in psychological distress over time: The role of social causation. *Journal of Computer-Mediated Communication*, *24*(24), 205–222. https://doi.org/10.1093/jcmc/zmz010

Hampton, K., & Chen, W. (2021). On social media. In M. L. Small, B. L. Perry, B. Pescosolido, & E. B. Smith (Eds.), *Personal networks* (pp. 718–733). Cambridge.

Hampton, K., Lee, C., & Her, E. (2011). How new media affords network diversity: Direct and mediated access to social capital through participation in local social settings. *New Media & Society*, *13*(7), 1031–1049. https://doi.org/10.1177/1461444810390342

Hampton, K., Shin, I., & Lu, W. (2017). Social media and political discussion: When online presence silences offline conversation. *Information. Communication & Society*, *20*(7), 1090–1107. https://doi.org/10.1080/1369118X.2016.1218526

Hampton, K., & Wellman, B. (2021). All the lonely people? In L. Lievrouw, & B. Loader (Eds.), *Routledge handbook of digital media and communication* (pp. 281–296). Routledge.

Heider, F. (1958). *The psychology of interpersonal relations*. Wiley.

Katz, E., & Lazarsfeld, P. (1955). *Personal influence*. Free Press.

Kirkpatrick Johnson, M., Elder, G., & Stern, M. (2005). Attachments to family and community and the young adult transition of rural youth. *Journal of Research on Adolescence*, *15*(1), 99–125. https://doi.org/10.1111/j.1532-7795.2005.00088.x

Leonardi, P. (2018). Social media and the development of shared cognition: The roles of network expansion, content integration, and triggered recalling. *Organization Science*, *29*(4), 547–568. https://doi.org/10.1287/orsc.2017.1200

Leth-Steensen, C., & Gallitto, E. (2016). Testing mediation in structural equation modeling. *Educational and Psychological Measurement*, *76*(2), 339–351. https://doi.org/10.1177/0013164415593777

Lin, N., & Dumin, M. (1986). Access to occupations through social ties. *Social Networks*, *8*(4), 365–385. https://doi.org/10.1016/0378-8733(86)90003-1

Lu, J., & Yu, X. (2020). Does The internet make us more intolerant? A contextual analysis in 33 countries *Information, Communication & Society*, *23*(2), 252–266. https://doi.org/10.1080/1369118X.2018.1499794

Marsden, P. (2018). Life course events and network composition. In D. F. Alwin, D. H. Felmlee, & D. A. Kreager (Eds.), *Social networks and the life course* (pp. 89–113). Springer. https://doi.org/10.1007/978-3-319-71544-5_5

McDonald, S., & Mair, C. (2010). Social capital across the life course: Age and gendered patterns of network resources. *Sociological Forum*, *25*(2), 335–359. https://doi.org/10.1111/j.1573-7861.2010.01179.x

McPherson, M., Smith-Lovin, L., & Cook, J. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, *27*(1), 415–444. https://doi.org/10.1146/annurev.soc.27.1.415

National Student Clearinghouse. (2024). High School Benchmarks. National Student Clearinghouse Research Center. https://nscresearchcenter.org/high-school-benchmarks/.

Parrillo, V., & Donoghue, C. (2005). Updating the bogardus social distance studies: A new national survey. *The Social Science Journal*, *42*(2), 257–271. https://doi.org/10.1016/j.soscij.2005.03.011

Peri, P. (1999). Education and prejudice against immigrants. In L. Hagendoorn, & S. Nekuee (Eds.), *Education and racism* (pp. 21–33). Routledge.

Pescosolido, B., & Rubin, B. (2000). The web of group affiliations revisited: Social life, postmodernism, and sociology. *American Sociological Review*, *65*(1), 52–76. https://doi.org/10.1177/000312240006500104

Pettigrew, T. (1998). Intergroup contact theory. *Annual Review of Psychology*, *49*(1), 65–85. https://doi.org/10.1146/annurev.psych.49.1.65

Putnam, R. (2000). *Bowling alone*. Simon & Schuster.

Raden, D. (1998). American blacks' and whites' preferred social distance from Jews. *Journal of Social Psychology*, *138*(2), 265. https://doi.org/10.1080/00224549809600380

Robertson, R., Green, J., Ruck, D., Ognyanova, K., Wilson, C., & Lazer, D. (2023). Users choose to engage with more partisan news than they are exposed to on Google Search. *Nature*, *618*(7964), 342–348. https://doi.org/10.1038/s41586-023-06078-5

Robinson, J., Neustadtl, A., & Kestnbaum, M. (2002). The online 'diversity divide'. *IT&Society*, *1*(1), 284–302.

Seebruck, R. (2013). Technology and tolerance in Japan: Internet use and positive attitudes and behaviors toward foreigners. *Social Science Japan Journal*, *16*(2), 279–300. https://doi.org/10.1093/ssjj/jyt017

Shin, I., & Hampton, K. (2021). New media use and the belief in a just world: Awareness of life events and the perception of fairness for self and injustice for others. *Information, Communication & Society*, *26*(2), 388–404. https://doi.org/10.1080/1369118X.2021.1950804

Simmel, G. (1922 [1955]). The web of group affiliations. In K. H. Wolff (Ed.), *Conflict and the web of group affiliations* (pp. 125–195). Free Press.

Small, M. (2009). *Unanticipated gains*. Oxford University.

Srinivasan, A. (2011). Local balancing influences global structure in social networks. *Proceedings of the National Academy of Sciences*, *108*(5), 1751–1752. https://doi.org/10.1073/pnas.1018901108

Stebbins, R. (1988). *Tolerable differences* (2nd ed.). McGraw-Hill.

Stern, M., Bilgen, I., & Dillman, D. (2014). The state of survey methodology. *Field Methods*, *26*(3), 284–301. https://doi.org/10.1177/1525822X13519561

Stuber, J. (2011). Integrated, marginal, and resilient: Race, class, and the diverse experiences of white first-generation college students. *International Journal of Qualitative Studies in Education*, *24*(1), 117–136. https://doi.org/10.1080/09518391003641916

Tuch, S. (1987). Urbanism, region, and tolerance revisited: The case of racial prejudice. *American Sociological Review*, *52*(4), 504–510. https://doi.org/10.2307/2095295

USDA. (2019). *Rural classifications*. https://www.ers.usda.gov/topics/rural-economy-population/rural-classifications/

USDA. (2022). Rural young women show increases in higher educational attainment compared to rural young men. https://www.ers.usda.gov/data-products/chart-gallery/gallery/chart-detail/?chartId=104900

Vacchiano, M., Hollstein, B., Settersten, R., & Spini, D. (2024). Networked lives: Probing the influence of social networks on the life course. *Advances in Life Course Research*, *59*, 100590. https://doi.org/10.1016/j.alcr.2024.100590

van der Gaag, M., & Snijders, T. (2005). The resource generator: Social capital quantification with concrete items. *Social Networks*, *27*(1), 1–29. https://doi.org/10.1016/j.socnet.2004.10.001

van Doorn, M. (2014). The nature of tolerance and the social circumstances in which it emerges. *Current Sociology*, *62*(6), 905–927. https://doi.org/10.1177/0011392114537281

Vogt, W. (1997). *Tolerance & education*. Sage.

Weber, M. (1958). *The city*. Free Press.

Wellman, B., & Wortley, S. (1990). Different strokes from different folks: Community ties and social support. *American Journal of Sociology*, *96*(3), 558–588. https://doi.org/10.1086/229572

Wu, Y., Li, L., Yu, Q., Gan, J., & Zhang, Y. (2023). Strategies for reducing polarization in social networks. *Chaos, Solitons & Fractals*, *167*, 113095. https://doi.org/10.1016/j.chaos.2022.113095

Wu, M., Zhao, K., & Fils-Aime, F. (2022). Response rates of online surveys in published research: A meta-analysis. *Computers in Human Behavior Reports*, *7*, 100206. https://doi.org/10.1016/j.chbr.2022.100206